



**THE WEST AFRICAN
EXAMINATIONS COUNCIL
FREETOWN, SIERRA LEONE**



**WEST AFRICAN SENIOR SCHOOL
CERTIFICATE EXAMINATION
MAY/JUNE 2019**

CHIEF EXAMINER'S REPORTS

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**A GENERAL RÉSUMÉ OF CHIEF EXAMINERS' REPORTS ON THE WEST
AFRICAN SENIOR SCHOOL CERTIFICATE EXAMINATION (WASSCE) FOR
SCHOOL CANDIDATES 2019 IN SIERRA LEONE**

1. STANDARD OF THE PAPER

A good number of the Chief Examiners reported that the papers, compared favourably with those of the previous years, were of the required standard.

There were no ambiguities, rubrics were clear and straightforward and reflected wide coverage of the syllabus.

However few Chief Examiners gave contrary views. The Chief Examiners for Chemistry 2(pg.163), Government 2(pg.64) and Christian Religious Studies 2(pg.37) stated that the standard of the paper was higher when compared to previous years.

2. CANDIDATES PERFORMANCE

The performance of candidates varied from one Chief Examiner to the other as reported below:

An improved performance in Geography 2(pg.51), Literature 2(pg.82) Building Construction 2(pg.252).

An unsatisfactory performance in Physics 3(pg.217) , Home Management 2(pg.265).

An average performance in Foods and Nutrition.

A decline in performance in Management-in-Living 2(pg.273), Further Mathematics (pg.106) , Physical Education 3(pg.226), Economics 2(pg.42).

A poor performance in Engineering Science 2(pg.258), Physics 2(pg.202), Home Management 3(pg.271), Biology 3(pg.155), Biology 2(pg.148), Geography 3(pg.55), Chemistry 2(pg.163) Agricultural Science 3(pg.142).

No marked improvement in French 2(pg.103)

3. CANDIDATES' STRENGTHS

The reports of the Chief Examiners noted the following as strengths of the candidates:

Adherence to rubrics Management-in-Living 2(pg.273), Agricultural Science 2(pg.133), Literature-in-English 2(pg.82), Government 2(pg.64), Geography 2(pg.51), Economics 2(pg.42), Christian Religious Studies 2(pg.37).

Adequate coverage of the syllabus – Science Core 2(pg.240), Home Management 2(pg.265), Agricultural Science 2(pg.133), Physical Education 2(pg.224).

Demonstration of adequate knowledge of the subject – Health Science 3(pg.192), Biology 3(pg.155), Further Mathematics 2(pg.106), French 2(pg.103), Literature-in-English 2(pg.82), Economics 2(pg.42).

Good command of English and good writing skills Health Science 3(pg.192), Physical Education 3(pg.226), French 2(pg.103), Government 2(pg.64), Economics 2(pg.42).

Adequate knowledge in Mathematical symbols, formulae and solving equations – Further Mathematics 2(pg.106), Economics 2(pg.42), Physics 3(pg.217), Physics 2(pg.202), Engineering Science 2(pg.258).

Good presentation of materials – Foods and Nutrition 2(pg.260), Health Science 3(pg.192), French 2(pg.103), Government 2(pg.64), Geography 2(pg.51).

Good drawing skills – Physics 3(pg.217), Biology 3(pg.155) and Geography 2(pg.51).

4. CANDIDATES' WEAKNESSES

The following weaknesses were identified by the Chief Examiners in their reports.

Non adherence to the rubrics of the examination – Christian Religious Studies 2(pg.37), Economics 2(pg.42), Geography 2(pg.51), Biology 3(pg.155), Physical Education 3(pg.226).

Inadequate coverage of the syllabus – Agricultural Science 2(pg.133), Biology 2(pg.148), Physical Education 3(pg.226), Physics 2(pg.202), Home Management 2(pg.265), Science Core 2(pg.240) and Woodwork 2(pg.289).

Disorganized work and poor presentation of materials – Government 2(pg.64), Management-in-Living 2(pg.273), Geography 2(pg.51), Economics 2(pg.432), Chemistry 2(pg.163), Metalwork 2(pg.285).

Inadequate preparation for the examination – Government 2(pg.64), Home Management 2(pg.265), Foods and Nutrition 2(pg.265) and Geography 3(pg.55).

Inability to understand and interpret the questions properly – Islamic Studies 2(pg.80), Further Mathematics 2(pg.106), Home Management 3(pg.271), Physics 2(pg.202), Foods and Nutrition 2(pg.260) and Metalwork 2(pg.285).

Poor grammatical expressions, communication skills and spelling mistakes – Government 2(pg.64), Literature-in-English 2(pg.82), Biology 3(pg.148), Physical Education 3(pg.226), Technical Drawing 2(pg.287), Health Science 3(pg.192), Science Core 2(pg.240) and French 2(pg.103).

Lack of in-depth knowledge on the subject matter – Foods and nutrition 2(pg.260), Literature-in-English 2 (pg.82), Agricultural Science 3(pg.142), Biology 3(pg.155), Home Management 3(pg.271), Physics 3(pg.217), Science Core 2(pg.240), Applied Electricity 2 & 3(pgs.248 & 250), Further Mathematics 2(pg.106), Agricultural Science 2(pg.133) and Chemistry 2(pg.163).

Illegible handwriting and poor drawing skills – Geography 2(pg.51), Further Mathematics 2(pg.106), Technical Drawing 2(pg.287), Health Science 3(pg.192), Foods and Nutrition 2(pg.260), Physical Education 3(pg.226) and Metalwork 2(pg.285).

Unavailability of relevant teaching and learning materials – Foods and Nutrition 2(pg.260), Geography 3(pg.55) and Home Management 2(pg.265).

Inadequate responses/scanty answers to questions – Agricultural Science 2(pg.133), Biology 2(pg.148), Management-in-Living 2(pg.273), Home Management 3(pg.271) and Technical Drawing (pg.287).

5. **SUGGESTED REMEDIES**

Invigilators to urge candidates to write answers in an orderly manner.

Teachers of Geography to compel students to embark on practical work on Map reading and Atlases.

Students should be encouraged to make use of libraries and textbooks relevant to their studies.

Make use of past examination papers to be au fait with the manner in which questions are drawn.

Where appropriate field trips should be organized in certain subjects.

Make available Chief Examiners' report and marking scheme to schools presenting candidates for the examination to help teachers prepare candidates.

Schools should endeavour to employ the services of trained and qualified teachers.

Efforts should be made by teachers and pupils to complete the examination syllabus and where applicable team teaching should be encouraged.

Recognition of teachers by WAEC and their schools whose candidates perform exceptionally well in certain subjects.

Place emphasis on more practical exercises for schools presenting candidates in Science, Home Sciences and other practical subjects.

Candidates should be encouraged to develop good reading mathematical and writing skills.

Contact hours should be increased especially in schools operating two shift systems.

BUSINESS SUBJECTS

a(i)

RÈSUMÈ OF THE BUSINESS SUBJECTS

1. STANDARD OF THE PAPER

The Chief Examiners reported that the papers were of the required standard, drawn within the scope of the syllabuses. The papers compared favourably with those of previous years.

2. CANDIDATES PERFORMANCE

The performance of candidates when compared to previous years fell way below expectation especially for majority of the candidates of Commerce 2(pg.7). Financial Accounting 2(pg.12), Principles of Cost Accounting 2(pg.24). However a few outstanding performances were recorded in Principles of Cost Accounting 2(pg.24).

3. CANDIDATES STRENGTH

Good performance of candidates were noticed in their answers to certain questions in Principles of Cost Accounting 2(pg.24).

4. CANDIDATES WEAKNESSES

The following weaknesses were highlighted in the Chief Examiners reports.

- Inadequate preparation for the examination – Financial Accounting 2(pg.12), Principles of Cost Accounting 2(pg.24) and Commerce 2(pg.7).
- Lacked indepth knowledge on topics relating to calculations – Principles of Cost Accounting 2(pg.24) and Financial Accounting 2(pg.12).
- Non adherence to rubrics – Commerce 2(pg.7).

- Incidences of collusion as a result of poor invigilation and supervision of the examination – Principles of Cost Accounting 2(pg.24).

a(ii)

5. SUGGESTED REMEDIES

- Proper invigilation and supervision of the examination;
- Candidates should have at last a credit in Maths at BECE before entering for these subjects;
- Teachers should teach well and ensure that basic steps relating to various topics are exhausted;
- Candidates should be taught to adhere to the rubrics of the examination.
- Candidates should prepare adequately for the examination.

BUSINESS STUDIES 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper, like in previous years, was of the required standard. A good number of the candidates had similar answers to all of the questions attempted. The answers of these candidates were of the same expressions. However, candidates' performances in this year's paper dropped significantly, compared with those of previous years.

2. CANDIDATES' WEAKNESSES

Inability of the candidates to read and understand what was required of them in answering the various questions. A good number of them answered on preconceived fixed ideas instead of giving actual answers to the questions.

Candidates should be encouraged to attend remedial classes in a bid to complete examination syllabus and must be encouraged to read more books as a way of improving their command of the English Language and be abreast with concepts and principles.

3. CANDIDATES' STRENGTHS

Candidates performance can be improved by studying very hard.

Performance of candidates in this subject can be improved if they are given additional attention and assistance nation-wide. Candidates should give valuable time to their studies and mock examinations or tests by institutions preparing candidates should be encouraged prior to the West African Examination Council Exams.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Mrs. Winifred Teye had worked since 1990 as a caterer in a restaurant of a large departmental store. She worked long hours and earned good wages. She saved regularly because she had the intention of starting her own business.

Her fortune turned around in September 2010 when she received financial support from her aunt, to complete her own savings. She invested it in an existing business, Kemoh Limited, that produces ice cream. She re-registered the business under a new name. Best Ice Cream Company Limited.

Mrs. Teye worked with high determination to ensure the success of the business. Some of the things she did were that, she came out with a trade name and logo, improved the interior design of the business premises, recruited and trained a number of sales persons.

By the third year after commencing operations on her own, Mrs. Teye had opened three sales outlets in addition to the one she initially bought. She now finds the business profitable and plans to open two new sales outlets by the fifth year. Her plans also include a mobile sales force that would do home and corporate deliveries. She has estimated the cost of expansion to be one hundred thousand dollars. She is confident to finance up to 50% of the cost from her existing business.

Mrs. Teye is now contemplating on the sources from which to raise the remaining 50% of the required finance for the expansion.

QUESTION 1

- (a) List three attributes of Mrs. Teye as an entrepreneur.*
- (b) Explain three factors that accounted for the success of Best Ice Cream Company Limited.*
- (c) State four features of Best Ice Cream Company Limited as a private limited liability company.*
- (d) State four sources from where Mrs. Teye can raise the remaining 50% of funds needed for the expansion.*

About 90% of the candidates answered question one which was a compulsory case study and performed poorly, while 10% answered the question correctly. However, those who answered the question supplied the same materials with almost same sentences and scored high marks throughout.

QUESTION 2

- (a) List three parties to a Bill of Exchange.*
- (b) List four features of a Bill of Exchange in international trade.*
- (c) State four functions of a commercial bank.*

Most candidates answered this question which required them to list three parties to a bill of exchange, four features of a Bill of Exchange in international trade and four functions of commercial banks. Candidates provided correct answers and earned themselves good marks.

QUESTION 3

- (a) List two techniques in time management.*
- (b) Explain the term trade union.*
- (c) Outline five functions of a trade union.*

This question was answered by a few candidates probably due to the fact that it required technical and practical knowledge rather than theoretical knowledge. They were required to list two techniques in time management, explain the term trade union and outline five functions of trade unions. Candidates who attempted this question did not score high grades.

QUESTION 4

- (a) What is marketing?*
- (b) Explain the elements of marketing mix.*

About 80 % of the candidates attempted this question. It required them to define marketing and explain the elements of marketing mix. A good number of the candidates got their ideas mixed up, because of poor organizations and coherence in their presentation. Candidates who attempted this question could not explain price, place, and product to merit the full mark. Promotion as an element of the marketing mix was clearly explained by 98% of the candidates.

QUESTION 5

- (a) List five external sources of recruitment to an organisation.*
- (b) Explain five duties of a Human Resource Manager.*

Majority of the candidates, about 98% of the candidates attempted this question and got the 5(a) aspect correctly i.e. the sources of external recruitment. About 90% of the candidates were unable to interpret the 5(b) aspect of the question, and so failed to score high marks. They were required to list five sources of external recruitment and explain five duties of a human resource manager, but candidates performed poorly nation-wide.

QUESTION 6

- (a) Explain five reasons for workers going on strike.*
- (b) List five methods that can be used to end a strike.*

A few candidates attempted this question. They were required to (a) explain five reasons for workers going on strike and, (b) list five methods that can be used to end a strike. Most of the candidates could not interpret the questions well and therefore incorrect answers were supplied. About 30% of the candidates who attempted the (b) aspect got the answer correctly, but 98% of

candidates were unable to list five methods that can be used to end a strike. They therefore scored poor grades.

QUESTION 7

- (a) Differentiate public corporation from public limited liability company on the basis of:*
- (i) formation;*
 - (ii) management;*
 - (iii) finance.*
- (b) State three disadvantages of public corporation.*

A good number of candidates attempted this question. They were required to differentiate public corporation from public limited liability company on the basis of (i) formation, (ii) management, (iii) finance, and (b) to state three disadvantages of public corporation. About 90% of the candidates who attempted the (a) aspect failed to supply correct answers that would have earned them full marks. The (b) aspect was also poorly answered by majority of the candidates nation-wide.

QUESTION 8

- (a) What is organizing as it relates to management function?*
- (b) Explain the following principles of organizing:-*
- (i) chain of command;*
 - (ii) span of control;*
 - (iii) unity of command;*
 - (iv) unity of objective.*

Most candidates answered this question and earned good marks. They were required to (a) define organizing as it relates to management function, and (b) to explain chain of command; span of control, unity of command; and unity of objective. Candidates fully comprehended the concepts and scored high grades.

CLERICAL OFFICE DUTIES

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was up to the standard requirement for WASSCE. The questions asked were diversified across the syllabus and not only one cognitive level (level of thinking) was tested. Rather, various questions were used to test various levels of thinking. The questions were also free from ambiguity and biasness.

2. CANDIDATES' STRENGTHS AND WEAKNESSES

Candidates performances clearly shown their strength and weaknesses in the areas of poor and shallow understanding of the subject matter.

3. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Tested candidates understanding on the topic Health and Safety. The candidates showed understanding of the requirement of the questions. However, they were unable to clearly distinguish between measures to prevent health hazard and accident at work place. Emphasis need to be placed on this area by teachers in their teaching methodology.

QUESTION 2

Was also straightforward and it tested candidates knowledge on office personnel. Though candidates were able to respond to the questions, they could not differentiate properly the duties of a receptionist, secretary and company secretary. These areas of the syllabus needs proper attention.

QUESTION 3

Required candidates to express their knowledge on industrial relations. Candidates showed that they had knowledge of the topic. However, they could not properly explain the terms human relations and internal relations. Some also found it difficult to list and explain personal skills of an employee.

Candidates were expected to be able to clearly explain these terminologies and also be able to categorise the various skills of an employee.

QUESTION 4

Tested candidates on stock procedures. It was clear and also to the level of the candidates. Their responses should have better been understanding of reasons for stock-taking but could not clearly explain cost price and market price.

QUESTION 5

Tested candidates knowledge on financial institutions. The questions were straightforward and candidates showed they understood them. Their explanations were unclear. Most were unable to state correctly any five functions of a community bank.

QUESTION 6

Candidates were tested on mailroom. The questions were clear and unambiguous. They were able to respond to the questions but with poor expressions of ideas.

QUESTION 7

Tested candidates ability/knowledge on both information and communication technology and duties of office personnel.

COMMERCE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

Questions were within the syllabus and were of the required standard. Candidates performed woefully as compared to previous years. There were so many zero scripts. Some candidates handed in blank answer booklets.

Questions were not evenly weighted. Questions two, five and eight seemed to have been over weighted.

2. CANDIDATES' STRENGTHS

This year there is no area that could be identified as strength of the candidates.

3. CANDIDATES' WEAKNESSES

Candidates seemly to be weak in all areas this year. They were not familiar with the syllabus. Some seemed to have never studied commerce.

Most of them could not interpret the questions. In other words, they did not understand the questions. Candidates' expression in English this year seemed to be the worst. It appeared as if some were not writing in English. The explanations and statements of most of them were incomprehensible.

Quite a lot of them did not adhere to the instruction five (5) on the front page of the answer booklet and this made it difficult for examiners to decipher which question they were answering.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) List four career opportunities available to a student of commerce.

A lot of candidates answered this question and surprisingly most of them performed very poorly.

Most candidates did not understand what career opportunities meant and therefore gave wrong answers. Answers should have included Accountancy/Accounting, Marketing, Tourism, Trading, Storekeeping.

(b) State two functions of an entrepreneur.

Quite a lot of them had one correct answer with regards to the function of the entrepreneur.

(c) Explain the following activities giving two examples of each:

- (i) extractive industry;**
- (ii) construction industry;**
- (iii) manufacturing industry;**
- (iv) tertiary industry.**

Very few candidates had the correct explanation with correct examples for extractive construction, Manufacturing and Tertiary industries. This was surprising as this aspect is commonly known as core commerce. For instance an extractive industry is not fish/fishermen but fishing.

QUESTION 2

The staff of Kander Manufacturing Company Ltd. established a cooperative society in order to access funds.

(a) Name the type of cooperative society they have formed.

This question was popular but again was poorly answered.

Most candidates could not name the type of cooperative society from the case study given. The expected answer was thrift and credit society.

(b) State four features of the cooperative society.

This part of the question asked for four features of the cooperative society. Again most candidates had no idea with the exception of a handful who gave one correct feature and that is profit is shared among members based on patronage.

(c) State three advantages and two disadvantages of the cooperative society.

This part of the question asked candidates to state three advantages and disadvantages of the cooperative society. This was poorly done and most candidates had no idea. One advantage is that, it grants loans to members and one disadvantage is that there is usually difficulty in recovering loans.

QUESTION 3

(a) State five reasons that would make a bank to dishonour a customer's cheque.

A lot of candidates answered this question and on average the performance was poor.

Many candidates gave two correct reasons for a bank to dishonor a cheque. Candidates repeated the reasons in different ways. Reasons not given by candidates were - if there are alterations without signature and when a court of competent jurisdiction freezes the account from which money is to be withdrawn and stated on the cheque.

(b) State five reasons countries introduce restrictions in foreign trade.

Most of the candidates who answered this question scored zero in this section which asked candidates to state five reasons why countries introduce restrictions in foreign trade. Some candidates did not answer the question in this part. An answer not given at all by candidates was foreign trade being used as a retaliatory measure to preserve a country's foreign reserves.

QUESTION 4

(a) State three benefits of a commodity exchange.

This question was very unpopular. Candidates had no idea. Answers were all wrong and inadequate.

Candidates were asked to state three benefits of a commodity exchange. Such benefits include –It generates foreign exchange earnings, it encourages standardization of products etc.

(b) Explain two methods of trading in a commodity exchange.

This part of the question asked candidates to explain two methods of trading in a commodity exchange. Again, candidates scored zero. The three methods expected to be the responses are Open outcry, E-trading and pit trading.

(c) State four requirements for trading in a commodity exchange.

Candidates had no idea on the requirements for trading in a commodity exchange. Requirements include –the item must be possible of being sold by description, the commodity must not be a perishable one that could be subject to deterioration, etc.

QUESTION 5

(a) List six advertising media used in business.

Most candidates answered this question and they performed poorly.

Candidates were asked to list six advertising media used in business. It was poorly done. Some candidates only scored one. They could not spell Radio, Television, Cinema, etc.

(b) What is a personal selling?

This part of the question asked for what is personal selling. A lot of candidates wrote about sole trading which was wrong. It is the face to face interaction of a salesman with

potential customers for the purpose of presenting products, answering questions or explaining features of products and procuring orders.

(c) State four advantages and two disadvantages of personal selling.

This part of the question asked for the advantages and disadvantages of personal selling. A few of them gave one correct advantage that it elicits immediate feedback. Other correct advantages include –it is used to introduce new products, it is also selective. Most of their disadvantages were wrong. Correct disadvantages include- it is costly to train and maintain the salesman, salesmen are often not welcome etc.

QUESTION 6

Country X is facing a situation where its total payments to other countries is greater than its total earnings from abroad.

(a) State the term that relates to the above situation.

This question was not popular but most candidates who answered this question scored about forty percent of the total scores.

Most candidates were able to identify the situation/case study.

(b) Explain six measures the country could take to correct the situation.

In this part of the question, candidates were asked to explain six measures the country could take to correct the situation. A lot of them gave two correct measures. Measures not given by candidates were; drawing on foreign reserves and sale of gold reserves / foreign investment etc.

QUESTION 7

(a) State four services rendered by courier companies.

Many candidates answered this question. The performance was just below average.

The question was – State four services rendered by courier companies. 96% of the candidates who answered this question scored zero and they had similar answers. Services include door to door delivery, provision of air cargo and shipping services, engaging in business reply service etc.

(b) State three advantages and three disadvantages of rail transport.

This part of the question asked for three advantages and three disadvantages of rail transport. Candidates' performance was on average. One advantage not given by candidates was that it provides convenient service for passengers.

QUESTION 8

The following information was extracted from the books of Jinka Enterprises as at 31st August, 2015.

*15 cartons of sweets at N 2000 per carton.
25 cartons of milk at N4000 per carton.
15 cartons of sugar at N3000 per carton.
17 cartons of soap at N 5000 per carton.*

A cash discount of 6% and 10% trade discount was allowed if payment was made within 7 days. The following payments were made:-

*Rents and rates N3,500
Salaries and wages N 8,000
Fuel N 2,000
Electricity N 1,500*

(a) Calculate how much cash was paid for the goods bought if payment was made within 7 days.

Very few candidates answered this question. 30% of those who answered this part of the question got it right. The question asked candidates to calculate how much cash was paid for the goods bought if payment was made within seven (7) days according to the terms of payment stated in the question.

Candidates needed to deduct first of all ten (10) percent trade discount from the total calculated. From the answer, the six (6) percent cash discount should then be deducted to arrive at the cash paid.

(b) If all the goods were sold at a mark up of 20%, determine the selling price.

This section of the question asked candidates to determine the selling price of the goods bought in (a) if there was a mark up of 20%. Most candidates who answered this question did not attempt this section and those who did, had it wrong.

Candidates should have calculated 20% of the answer in the (a) part and then add it to the (a) answer.

(c) Calculate the value of the net profit made.

This part of the question asked for the calculation of the net profit. Candidates merely listed the expenses. There was a cash discount calculated in the part (a) which should now be used as discount received. The discount received should be added to the mark up (profit) calculated in part (b) to get income before deducting expenses.

FINANCIAL ACCOUNTING 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was standard and questions were within the scope of the syllabus. The performance was below average compared to the previous years.

The paper in general tested the basic understanding of the principles of Financial Accounting and its applications show that candidates have the knowledge and figurative skills on how to solve problems relating to standard accounting practices.

2. CANDIDATES' STRENGTHS

Most of the candidates expressed their understanding in certain questions which was good especially in question numbers 3, 4, 6, 7 and 9. Some of these candidates even scored the maximum mark related to some of these questions.

3. CANDIDATES' WEAKNESSES

- Inadequate knowledge of the subject matter by some candidates caused them to have low grades which may affect their results.
- The theoretical aspect (Section A) in Financial Accounting is a problem as teachers mostly do not treat these areas before embarking on practical areas of the various topics. This caused candidates not to be familiar with questions related to this section of the paper presented for examination.
- Some candidates lacked the basic calculation skills and could not apply them on simple arithmetical concepts.
- Teachers should ensure that the basic steps related to the various topics are well understood by candidates when they are treated for better understanding, especially double entry concept.
- Candidate should be encouraged to practice questions related to various topics approved by the examining body either individually or as a group for them to be well grounded in the subject matters.
- Teachers should always use alternative methods for each topic treated in Financial Accounting questions. These methods will encourage candidates to have various ways to answer questions.

4. DETAILED COMMENT ON INDIVIDUAL QUESTIONS

QUESTION 1

Explain the following items and outline how they are Treated in the final accounts.

- (a) *Increase in provision for doubtful debt*
- (b) *Decrease in provision for doubtful debt*
- (c) *Provision for discount on debtors*
- (d) *Provision for discount on creditors*
- (e) *Provision for depreciation*

Suggested Answers:**(a) Increase in provision for doubtful debt**

- (1) This occurs when the current year's provision for doubtful debts is more than the previous year's provision.
- (2) The difference in the provision is debited to the profit and loss account as expenses but in the balance sheet, the increase is added to any previous provision and the total subtracted from the debtors balance.

1(b) Decrease in provision for doubtful debts

- (1) This occurs when the current year's provision for doubtful debts is less than the previous year's provision.
- (2) The Decrease in the provision is credited to the profit and loss account as income, but in the balance sheet it is deducted from the previous provision and the balance subtracted from debtors total.

1(c) Provision for discount on debtors

- (1) It is a percentage calculated on the total debtors after the reduction of provision for doubtful debts
- (2) It is debited to the profit and loss account, but in the balance sheet, the amount is deducted from the debtor's balance.

1(d) Provision for discount on creditors

- (1) It is a percentage calculated on the total amount of creditors
- (2) It is credited to the profit and loss account, but in the balance sheet the amount is deducted from the creditor's total.

1(e) Provision for Depreciation

- (1) This is the provision made for the part of a cost of a fixed tangible asset consumed during its period of use by an organization.
- (2) In the final account, it is debited to the profit and loss account, but in the balance sheet, it is deducted from the cost of the fixed tangible asset.

- Most candidates were not au fait with this topic as teachers tend to avoid it. Those who attempted it could not score high grades.

QUESTION 2**(a) What are closing entries?****Suggested Answers:**

- (a) Closing entries are journal entries made at the end of an accounting period which are later transferred to the income statement.

(b) Distinction between a branch and a department

A branch is a sequent/ unit of a business located outside the head office, but a department is a unit of an organization under the same roof operating a single line of production or service differs from other unit.

(c) State four reasons for the preparation of branch accounts.

- (1) Be used as a basis to reward hardworking staff
 - (2) Serve as basis for management decision making.
 - (3) Compare the result of performance of various branches.
 - (4) Know the profitable and unprofitable branches.
 - (5) Determine which of the branches could be closed down.
 - (6) Help Management control the organization activities.
- This was a clear-cut straight forward question in which most of the candidates who attempted it should have scored high grades but they misunderstood it for account instead of definition.

QUESTION 3***(a) State three effects of drawings on the business of a sole proprietor?*****Suggested Answers**

(a) The effects of drawings on the business of a sole proprietor are:

- (1) Decrease the stock of goods available
- (2) Lead to capital reduction
- (3) Lead to reduction in cash flows
- (4) Reduce the profit of the business
- (5) Reduce the fixed assets of the business
- (6) Slow down the growth of a business
- (7) May lead to collapse of a business.

(b) Explain how the following items are treated in the balance sheet

(1) accrued expenses

(2) prepaid expenses

(3) accrued income

(1) Accrued Expenses:

These are treated as accruals under the current liabilities in the balance sheet

(2) Prepaid expenses:

These are treated as current asset in the balance sheet.

(3) Accrued Income:

This is treated as current asset in the balance sheet.

- Most candidates performed well in this question as it was straight-forward but some mixed it up because they misunderstood the question.

QUESTION 4

- (a) *Outline three reasons for which a cheque would be dishonored*
- (b) *Explain the following terms*
- (1) *Petty cash float*
 - (2) *Contra entries*
 - (3) *Imprest system*
- (c) *State three advantages of keeping petty cash book using imprest system.*

Suggested Answers:**(a) Reasons for which a cheque would be dishonored:**

- (1) Insufficient funds in the drawer's account
- (2) Irregular signature of the drawer
- (3) Omission of date on the cheque
- (4) When the amount in figure differs from the amount in words
- (5) If there is any alteration that is not endorsed
- (6) When the cheque is stale
- (7) If the cheque is not signed by the drawer.
- (8) When a post-dated cheque is presented for payment before the due date.
- (9) When the bank is notified about the death of the drawer
- (10) When the drawer directs the bank not to honour the cheque
- (11) When the bank is notified about the insanity of the drawer.

(b) (i) petty cash float

It is the maximum amount a petty cashier is allowed to hold at any point in time for the payment of minor expenses.

(ii) contra entries

These are entries which are recorded on the opposite sides of an earlier entry to reverse or off-set their effects on their account balances. They are entries made for transactions whose debits and credit are the same.

(iii) imprest system:

This is a system whereby fixed amount of money is given to a petty cashier for payment of minor expenses and he is re-reimbursed with the amount dis-bursed over a period of time.

(c) Advantages of keeping petty cash book using imprest systems.

- (1) It saves the main cashier's time.
- (2) It provides training for young inexperienced cashier
- (3) Provides support for internal check /deletion of errors.
- (4) Minimizes delays in cash dis-bursement
- (5) Reduces burden of main cashier
- (6) Enables petty cashier to analyze expenditure as they occur

- (7) Decongests the main cash book
 (8) Classified petty expenses for easy identification.

- Most candidates were au fait with and well-grounded in this topic related to Books of original entries and scored high grades. It was a straight forward question.

QUESTION 5

The following transactions were extracted from the books of Adamu, a sole trader for the month of March, 2016.

March 4: Sole 80 bags of maize on credit to Papuk at GHc 255 per bag subject to a trade discount of 5%.

March 15 Received a cheque from Papuk for the amount due less a discount of 10%.

March 20: Received cash of GHc 900 from Abass.

You are required to prepare:

- (a) *Sales Journal;*
 (b) *Customers' Accounts in the Sales Ledger;*
 (c) *Sales Ledger Control Account.*

Suggested Answer

| <u>Date</u> | <u>Particulars</u> | <u>Details</u> | <u>Total</u> |
|--------------------|---|-----------------------|------------------------------------|
| March 4 | Papuk: 80 bags of rice @ GHC 255 pa bags Less: 5% discount | 20400 <u>1020</u> | 19380 |
| March 10 | Abass-Goods transfer to sales account | | <u>1170</u> <u><u>20220</u></u> |

(B) Sales Ledger
Papuk Account

| | | | | | |
|---------|-------|--------------|----------|------------------|--------------|
| 2016 | | GHC | 2016 | | GHC |
| March 4 | sales | <u>19380</u> | March 15 | Bank | 17442 |
| | | <u>19380</u> | | Discount Allowed | <u>1938</u> |
| | | | | | <u>19380</u> |

| (C) | | Abass Account | | | |
|-----------------------|---------|---------------|----------|-------------|-------------|
| 2016 | | GHC | 2016 | | GHC |
| March 10 | Sales | <u>1170</u> | March 20 | Cash | 900 |
| | | | March 31 | Balance c/d | <u>270</u> |
| | | <u>1170</u> | | | <u>1170</u> |
| April 1 st | Balance | 270 | | | |

QUESTION 6

- *Ubochi and Hassan stated a partnership business on 1st January 2015. They Contributed D300, 000 and D 250,000 respectively as capital. Their partnership deed stated that:*
 - *Interest of 8 % should be paid on capital per annual*
 - *Hashanah would be paid D 10,000 monthly salaries*
 - *Interest on drawings is 5v %*
 - *The profits are to be shared in the ratio 3:2 respectively*

At the end of the year the profit made was D 300,000. During the period Ubochi and Hashanah made Drawings of D20, 000 and D 15,000 respectively.

You are required to prepare

- (a) Profit and loss Appropriation Account for the year ended 31st December 2015*
- (b) Partners Current Accounts.*

Suggested Answer**Ubochi and Hashanah****Profit and loss appropriate account for the year ended 31st Dec 2015**

| D | | D | |
|----------------------------|---------------|-----------------------|---------------|
| PARTNER SALARY | | Profit for the year | 300,000 |
| HASSANAH | | Interest on drawings | |
| (10,000 * 12) | 120,000 | Ubochi (5/100*20,000) | 1000 |
| <u>Interest on capital</u> | | Hasanah(5/100*15000) | <u>750</u> |
| Ubochi | | | <u>1750</u> |
| (8/100*300,000) | 24000 | | |
| Hasanah | | | |
| (8/100*250,000) | <u>20,000</u> | | |
| | <u>44,000</u> | | |
| | 164,000 | | |
| Appropriation of profit | | | |
| Ubochi (3/5*13775) | 82650 | | |
| Hasanah (2/5*137750) | <u>55100</u> | | <u>301750</u> |
| | <u>137750</u> | | |
| | <u>301750</u> | | |

• Partners current account as at 31st December 2015

| | Ubochi D | Hasanah D | | Ubochi D | Hasanah D |
|-----------------------|---------------|---------------|----------------------|---------------|----------------|
| Interest on Drawings' | 1000 | 750 | Salary | | 120,000 |
| Drawings | 20,000 | 15000 | Interest on Capital | 24,000 | 20,000 |
| Balance C/D | <u>85,650</u> | <u>179300</u> | Profit Appropriation | <u>82650</u> | <u>55,100</u> |
| | <u>10650</u> | <u>195000</u> | | <u>106650</u> | <u>195,000</u> |

Most of the candidates were afloat with the structure of this topic and responded positively which earns them high grades.

QUESTION 7

On 30th September 2017 Adedeji cash book showed a debit balance of GHC 7600. However his bank statement showed an overdraft balance of GHC 1880. On investigation the following details were discovered:

- *A standing order of GHC 160 had not been entered in the cash book*
- *Bank charges of GHC 40 did not appear in the cash book*
- *Cash paid into the bank for GHC 400 had been entered in cash book as GHC 360*

- *A cheque of GHC 200 Received from a customer was dishonored*
- *The Bank received a credit transfer of GHC 400 from a customer*
- *A cheque of GHC 1360 paid to Dexter Ltd had been entered in the cash book as GHC 1720*
- *A receipt of GHC 40 shown on the bank statement had not been entered in the cash book*
- *A cheque drawn amounting to GHc 160 paid are still with the suppliers.*
- *A receipt of GHC 3600 paid into the bank on 30th September 2017 did not appear on the bank statement until October 2017.*
- *A cheque of GHC 1080 paid into the bank had been wrongly credited by the bank as GHC 600.*
- *A transfer of GHC 6000 had not been recorded in the cash book*
You are required to prepare;
(a) (adjusted cash book
(b) Bank reconciliation statement as at 30th September 2017.

Suggested Answers

| Adeoeji | | | | | |
|-----------------------------------|--|-------------|--------------------|--|-------------|
| 2017 | | GHC | 2017 | | GHC |
| 30 th Sept balance B/F | | 7600 | Standing Order | | 160 |
| Understated Receipts | | 40 | Bank charges | | 40 |
| Credit Transfer | | 400 | Dishonoured cheque | | 200 |
| Payment Overstated | | 360 | Amount Transferred | | 6000 |
| Payment Omitted | | <u>40</u> | Balance c/d | | <u>2040</u> |
| | | <u>8440</u> | | | <u>8440</u> |
| Balance B/D | | 2040 | | | |

- Bank Reconciliation Statement as at 30th September 2017

| | GHC | GHC |
|---|------------|-------------|
| Balance as per Adjusted cash book | | 2040 |
| Add: Unpresented cheque | | <u>160</u> |
| | | 2200 |
| Less: Uncredited Cheque | 3600 | |
| Bank Errors | <u>480</u> | |
| | | <u>4080</u> |
| Overdraft as per bank statement (30/09/2017) | | <u>1880</u> |

Candidates were well grounded and aufait with this topic which are normally treated by teachers. Some of the information was mistaken by the candidates but they scored high grades.

QUESTION 8

The following Trial Balance was extracted from the books of Dushimer ventures on 31st December 2015.

| <i>Trial Balance</i> | <i>DR</i> | <i>CR</i> |
|------------------------------------|---------------|---------------|
| <i>Fixed Assets</i> | | |
| <i>Stock</i> | 72200 | |
| <i>Debtors</i> | 13800 | |
| <i>Creditor</i> | 6300 | |
| | | 2456 |
| <i>Bank overdraft</i> | | 528 |
| <i>Provision for Deprecation</i> | | 10200 |
| <i>Sales</i> | | 102320 |
| <i>Capital</i> | | 106440 |
| <i>Purchases</i> | 72308 | |
| <i>Drawings</i> | 29960 | |
| <i>Sundry expenses</i> | 26616 | |
| <i>Provision for doubtful debt</i> | | <u>360</u> |
| <i>Suspenses Account</i> | <u>1120</u> | |
| | <u>222304</u> | <u>222304</u> |

The following errors were discovered:

- *The total of sales day book for December 2015 had been overstated by le 480.*
- *In January 2015 new office furniture was purchase for le 14400, this was debited to purchases account.*
- *A cheque of le 864 to a supplier was entered in the book as le 1044.*
- *A credit note of le 148 sent to a customer for returns were overlooked.*
- *Payment of sundry expenses of le 640 had been omitted from the trial balance.*

You are required to prepare the:

- Journal entries to correct the errors*
- Suspense Account.*

Suggested Answer

Dushmar Ventures

General Journal/ Journal Profit

| Particular | Debit Le | Credit Le |
|---|----------|-----------|
| Sales Account | 480 | |
| Suspense Account | | 480 |
| Being Correction of sales overcast | | |
| Office Furniture Account | 14400 | |
| Purchases Account | | 14400 |
| Being office furniture purchase debited to purchase | | |

| | | |
|--|-----|-----|
| account now corrected | | |
| Bank Account Creditors/Supplier Account Being payment of cheque to a supplier overstated, | 180 | 180 |
| Return Inwards Account Debtors / creditors Account Being Returns inward omitted now corrected. | 148 | 148 |
| Sundry expense Account | 640 | |

Suspense Account

| | LE | | LE |
|-----------------------------|-------------|-----------------|-------------|
| Difference in trial balance | 1120 | Sales | 480 |
| | | Sundry expenses | <u>640</u> |
| | <u>1120</u> | | <u>1120</u> |

- Candidates failed to answer this question as most teachers tend to avoid it. Those who were au fait with it scored high grades since it was straight-forward. The narrative was not included in most of the answers provided by candidates.

QUESTION 9

The following information was extracted from the books of Abudabhi and sons Ltd.

(A) Trading profit and loss Account for the year ended 31st December 2014.

| | N | N |
|----------------------------|----------------|-----------------|
| <i>Sales</i> | | |
| <i>Opening Stock</i> | 30,000 | 36,000 |
| <i>Add: Purchases</i> | <u>210,000</u> | |
| | 240,000 | |
| <i>Less: Closing Stock</i> | <u>40,000</u> | <u>(200000)</u> |
| | | 160,000 |
| <i>Salaries</i> | 92500 | |
| <i>Directors Fee</i> | 5000 | |
| <i>Insurance</i> | | 1600 |
| <i>Travelling Expenses</i> | 3400 | |

| | | |
|--|--------------|-----------------|
| <i>Utilities</i> | 4000 | |
| <i>General Expenses</i> | 1000 | |
| <i>Depreciation</i> | <u>12500</u> | <u>(120000)</u> |
| | | 40000 |
| <i>Taxation</i> | | <u>(10,000)</u> |
| | | 30000 |
| <i>Dividend</i> | | <u>(15000)</u> |
| <i>Retained Profit for the year</i> | | 15000 |
| <i>Retained Profit brought forward</i> | | <u>35000</u> |
| <i>Retained Profit carried forward</i> | | <u>50,000</u> |

All sales and purchase were on credit.

QUESTION 9*(B) Balance sheet as at 31st December 2014*

| | N | N | N |
|---|--------------|----------------|---------------|
| <i>400,000 Ordinary Share @ N 0.25 each</i> | | | 100000 |
| | | | <u>50000</u> |
| <i>Retained Profit</i> | | | <u>150000</u> |
| <i>Shareholders' Funds</i> | | | |
| <i>Represented by:</i> | | | |
| <i>Land and building</i> | | | 90000 |
| <i>Motor Vehicle</i> | | | <u>15000</u> |
| | | | 10500 |
| <i>Current Assets:</i> | | | |
| <i>Stock</i> | 40000 | | |
| <i>Debtors</i> | 30000 | | |
| <i>Bank</i> | | | 17000 |
| <i>Cash</i> | | | <u>3000</u> |
| | 90000 | | |
| <i>Less : Current Liabilities</i> | | | |
| <i>Creditors</i> | 20000 | | |
| <i>Dividend Payable</i> | 15000 | | |
| <i>Taxation</i> | <u>10000</u> | <u>(45000)</u> | <u>45000</u> |
| <i>Net Assets</i> | | | <u>15000</u> |

Suggested Answer*Abudabhi and Sons Ltd*

(a) Stock Turnover ratio = $\frac{\text{Cost of goods sold}}{\text{Average Stock}}$

$$\frac{\text{N } 200,000}{(\text{N } 40,000 + \text{N } 30,000)/2}$$

=5.71 times

(b) Gross Profit Margin = $\frac{\text{Gross Profit} * 100}{\text{Sales}}$

$$= \frac{\text{N } 160,000 * 100}{\text{N } 360,000}$$

=N 44.44 %

(c) Net Profit Margin = $\frac{\text{Net Profit} * 100}{\text{Sales}}$

$$= \frac{\text{N } 40,000 * 100}{\text{N } 360,000}$$

= 11.11 %

(d) Current Ratio = $\frac{\text{Current Asset} : 1}{\text{Current Liabilities}}$

$$= \frac{\text{N } 90,000 : 1}{\text{N } 45,000}$$

= 2:1

(e) Acid test ratio = $\frac{\text{Current Asset} - \text{stock} : 1}{\text{Current Liabilities}}$

$$= \frac{\text{N } 90,000 - \text{N } 40,000 : 1}{\text{N } 45,000}$$

= 1.11:1

Most Candidates that attempted this question failed to outline the formula correctly. As a result, candidates scored low marks.

PRINCIPLES OF COST ACCOUNTING 2

I. GENERAL COMMENTS ON THE PAPER AS A WHOLE

COMMENTS ON ANY SPECIAL DIFFICULTY THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

The questions were within the ambit of the syllabus. The general performance of the candidates was a little below those of previous years. However, there were some outstanding performances.

Some candidates were ill-prepared for the exams; some questions were misinterpreted. There were some instances in which candidates wrote answers for questions that were not asked. It is either the case that candidates were not properly screened by their schools or effective teaching was not done. There were also problems of correct substitution into the formulae. It was also evident that some candidates lacked basic mathematical skills. Schools should ensure that candidates offering this subject must have at least a credit in Mathematics at BECE.

2. CANDIDATES' STRENGTHS

Some candidates performed well in questions 2, 4 & 8 which was evident that some candidates had the basic skills required in these questions.

3. CANDIDATES' WEAKNESSES

- a. Collusion as a result of poor invigilation. Candidates lost marks by copying the wrong answers from others. Supervision and invigilation should be stepped up.
- b. Lack of understanding of topics. Candidates exhibited poor theoretical knowledge of the topics and thus could not apply it to do the calculations. Candidates should ensure that they understand the theory well before going ahead with calculations for every topic.
- c. Lack of basic mathematical skills. This led to poor calculations and answers. Candidates should have at least a credit at BECE in maths before entering for this subject.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) Explain Management Accounting.

Candidates were required to explain Management Accounting and six given qualities of Cost Accounting information.

Expected solution

Management Accounting is that aspect of accounting that focuses on providing information to management of a business for planning, controlling, and decision making to improve the efficiency of business activities.

(b) Explain the following qualities of Cost Accounting information:-

- a. i) **relevance**: cost accounting information must be useful for its intended purpose.
- ii) **timeliness**: cost information must be provided at the time it is required so that decision making can be effective.
- iii) **economy**: The cost of providing Cost Accounting information must not exceed the benefit to be derived from it.
- iv) **accuracy**: Cost information must be sufficiently correct for effective decision making
- v) **simplicity**: cost information must be easy for users to understand
- vi) **objectivity**: cost information must be presented from the view point of the form with uniform understanding. Element of subjectivity should be avoided.

Some candidates who attempted this question had problems with objectivity as a quality of cost information. Instead they referred to meeting the objectives of a firm. Others misunderstood 'accuracy' for adequacy. A few others couldn't explain management accuracy. They also just recopied the qualities which were already given as stated in the question.

Emphasis should be laid on these introductory items for continued understanding of the entire subject matter. A few candidate however scored 12 and above out of 15.

QUESTION 2***(a) Explain labour turnover.***

Candidates were required to explain 'Labor turnover';

Expected solution

Labor turnover is the rate at which workers leave an organization (and are replaced)
It is the rate of change in the composition of the labor force in an organization.

(b) State six causes of labour turnover.**Causes of labor turnover**

- Redundancy
- Dissatisfaction over work conditions
- Lack of career development/promotion
- Retirement
- Illness
- Death
- Relocation from an area

- Conflict between staff and management
- Marriage
- Leaving for greener pastures
- Lack of job security
- Dismissal

(c) Highlight three types of costs associated with labour turnover.

- Leaving cost
- Replacement cost
- Training cost
- Learning cost
- Prevention cost

Most candidates who attempted this question scored maximum marks. However it was evident that some candidates lacked knowledge of the cost of labor turnover. Some candidates wrote about job cost, contract cost, etc. which was far off from the answer. In some cases some candidates even discussed the differences between contract costing and batch costing which was a past question; meaning that they had preconceived idea of wrong concepts.

QUESTION 3

(a) Explain Standard Costing.

Candidates were required to explain ‘standard costing’, state four importance of standard costing and list four benefits of variance analysis.

Expected solution

Standard costing is a costing technique that involves the setting of target or standards of performance, comparing actual cost incurred with standard set, and analyzing the variances arising for corrective action to improve performance.

(b) State four importance of Standard Costing

Importance of standard costing

- It is an effective tool for planning and control
- It serves as a basis for instituting incentive schemes
- It helps to minimize wastages
- Standard costing serves as a basis for performance evaluation
- It helps in assigning responsibilities to executive and encourages delegations
- It increases cost consciousness among employees
- Standard costing enables management appraise production methods.
- It draws attention to deviations from plans
- It is used for stock valuation
- It enables corrective actions to be taken in time
- It is used as a tool to motivate worker
- It helps in communication

- It helps in motivation of workers
- It results to effective cost control
- It helps in performance evaluation
- It helps in effective utilization of resources
- It helps in defining responsibilities of workers
- It brings about management by exception
- It sets out the objectives of a business in clear terms

Some candidates just stated another name for principal budget factor but failed to come out with the definition. They also failed to bring out the role of the budget committee.

Most candidates scored good marks in listing the advantages of budgetary control. The proportion of candidates who attempted this question shows that the topic is not being treated or taught by most teachers.

(b) List four benefits of Variance Analysis.

Benefits of variance analysis

- Reveals deviations from target or plan
- Shows the exact reasons for deviation from targets
- Serves as a basis for taking corrective action
- Serves as a basis for revising targets or plans
- Provides a basis for evaluating performance of management
- Serves as a tool for improving efficiency
- Helps assign responsibility to relevant managers

Most candidates who attempted this question found it difficult to draw a distinct line between importance of standard costing and benefits of variance analysis. As such, the 'c' part was not answered well. Most candidates scored less than half of the total marks.

QUESTION 4

(a) What is a principal budget factor?

Candidates were required to define 'principal budget factor', explain budget committee and budget manual and state four advantages of operating a system of budgetary control

Expected solution

Principal budget factor is a key factor that limits the level of activity that can be carried out by an organization. It limits the total scope of the budget. It is the factor that must be assessed to ensure that the functional budgets are reasonably capable of fulfillment.

(b) Explain the following terms used in budgeting:-

- i) **Budget committee** is a committee that ensures that realistic budgets are prepared and satisfactorily coordinated. The committee is charged with the review and approval of departmental budgets and also oversees the process of budget administration.

- ii) budget manual is a document that contains the procedures for preparing the budget. It details the responsibilities of those charged with the preparation of the budget.

(c) *State four advantages of operating a system of budgetary control.*

Advantages of budgetary control

- It enables effective planning in the operation
- It helps in the coordination of the variances departments and activities
- It helps in effective decision making by managers etc.

QUESTION 5

The following cost details have been provided by Nerva Manufacturing Company for the year 2018.

| <u>COST ITEM</u> | <u>AMOUNT (D)</u> |
|------------------------------|-------------------|
| <i>Raw materials</i> | <i>44,300</i> |
| <i>Factory wages</i> | <i>30,600</i> |
| <i>Royalties</i> | <i>5,200</i> |
| <i>Management salaries</i> | <i>9,900</i> |
| <i>Stationary</i> | <i>1,600</i> |
| <i>Primary packaging</i> | <i>1,200</i> |
| <i>Secondary packaging</i> | <i>2,600</i> |
| <i>Advertising</i> | <i>4,200</i> |
| <i>Delivery van expenses</i> | <i>2,200</i> |
| <i>Machine Depreciation</i> | <i>6,200</i> |

You are required to classify the cost items under the following bases and compute the total of each class:

- (a) *production cost;*
- (b) *administration cost;*
- (c) *selling and distribution cost;*
- (d) *fixed cost*
- (e) *variable cost;*
- (f) *materials cost;*
- (g) *labour cost.*

Cost details were given from which candidates were required to classify the cost items under the given bases:

Expected solution

| | |
|---------------------------|----------|
| a) <u>Production cost</u> | <u>D</u> |
| Raw materials | 44,300 |
| Factory wages | 30,600 |
| Royalties | 5,200 |

| | |
|----------------------|---------------|
| Primary packaging | 1,200 |
| Machine depreciation | <u>6,200</u> |
| | <u>87,500</u> |

| | |
|-------------------------------|---------------|
| b) <u>Administrative cost</u> | <u>D</u> |
| Management salaries | 9,900 |
| Stationary | <u>1,600</u> |
| | <u>11,500</u> |

| | |
|---|----------|
| c) <u>Selling & distribution cost</u> | <u>D</u> |
| Advertisement | 4,200 |
| Secondary packaging | 2,600 |
| Delivery van expenses | 2,200 |

| | |
|----------------------|---------------|
| d) <u>Fixed cost</u> | <u>D</u> |
| Management salaries | 9,900 |
| Stationary | 1,600 |
| Advertisement | 4,200 |
| Machine Depreciation | <u>6,200</u> |
| | <u>21,900</u> |

| | |
|-------------------------|---------------|
| e) <u>Variable Cost</u> | <u>D</u> |
| Raw materials | 44,300 |
| Factory wages | 30,600 |
| Royalties | 5,200 |
| Primary packaging | 1,200 |
| Secondary packaging | 2,600 |
| Delivery van expenses | <u>2,200</u> |
| | <u>86,100</u> |

| | |
|-------------------------|---------------|
| f) <u>Material cost</u> | <u>D</u> |
| Raw materials | 44,300 |
| Primary packaging | 1,200 |
| Stationary | 1,600 |
| Secondary packaging | <u>2,600</u> |
| | <u>47,900</u> |

| | |
|----------------------|---------------|
| g) <u>Labor cost</u> | <u>D</u> |
| Factory wages | 30,600 |
| Management salary | <u>9,900</u> |
| | <u>40,000</u> |

Candidates were to confirm as to whether an express item can come under more than one heading. Some presented it in the form of an item. Emphasis should be laid on calculations under various headings rather than just the theory.

QUESTION 6

Green Mango Enterprise is considering which method to adopt in valuing stock issues in order to avoid oversiting profits.

Transaction for the first half of the year 2018 were provided as follows:-

| | | |
|---------------------|------------------------|--------------------------------------|
| <i>January 1:</i> | <i>Opening balance</i> | <i>600 units valued at GH¢ 5,400</i> |
| <i>January 10:</i> | <i>Issues</i> | <i>200 units</i> |
| <i>February 5:</i> | <i>Receipts</i> | <i>1,000 units @ GH¢ 8 per unit</i> |
| <i>February 20:</i> | <i>Issues</i> | <i>600 units</i> |
| <i>March 2:</i> | <i>Issues</i> | <i>300 units</i> |
| <i>April 1:</i> | <i>Receipts</i> | <i>800 units @ GH¢ 11 per unit</i> |
| <i>May 3:</i> | <i>Issues</i> | <i>900 units</i> |

You are required to prepare a stock ledger showing the cost of sales using:

- (a) First in first out method;
(b) last in first out method.*

From a given set of data candidates were required to prepare stock ledgers showing the cost of sales using: (a) first in first out method (b) last in first out method

Expected solution

a) GREEN MANGO ENTERPRISE

| Date | Receipt | | | Issues | | | Balance | |
|-----------|-----------------|------|---------------|----------|------|---------------|----------|---------------|
| | Quantity GH¢ | Rate | Amount GH¢ | Quantity | Rate | Amount GH¢ | Quantity | Amount GH¢ |
| 1/1/2018 | - | - | - | - | - | - | 600 | 5400 |
| 10/1/2018 | - | - | - | 200 | 9 | 1800 | 400 | 3600 |
| 5/2/2018 | 1000 | 8 | 8000 | - | - | - | 1,400 | 11,600 |
| 20/2/2018 | - | - | - | 400 | 9 | 3600 | 800 | |
| | | | | 200 | 8 | 1600 | 500 | |
| | | | | 600 | | 5200 | 800 | 6400 |
| 2/3/2018 | - | - | - | 300 | 8 | 2400 | 500 | 4000 |
| 1/4/2018 | 800 | 11 | 8800 | - | - | - | 1300 | 12800 |
| 3/5/2018 | - | - | - | 500 | 8 | 2400 | - | - |
| | | | | 400 | 11 | 4400 | - | - |
| | | | | 900 | | 8400 | 400 | 4400 |

Stores ledger account – last in first out

| Date | Receipt | | | Issues | | | Balance | |
|------------|----------|---|------|------------|------------|------|----------|-------|
| | Quantity | | Rate | Quantity | | Rate | Quantity | |
| | Amount | | | Amount | | | Amount | |
| 1/1/2018 | | | | | | | | |
| 10/11/2018 | - | - | - | - | - | - | 600 | 5400 |
| 5/2/2018 | - | - | - | 200 | 9 | 1800 | 400 | 3600 |
| 20/2/2018 | 1000 | 8 | 8000 | - | - | - | 1400 | 11600 |
| 2/3/2018 | - | - | - | 600 | 8 | 4800 | 800 | 6800 |
| 1/4/2018 | - | - | - | 300 | 8 | 2400 | 500 | 4400 |
| 3/5/2018 | 800 | | 11 | - | - | - | 1300 | 100 |
| | 8800 | | | 500 | 8 | | - | - |
| | - | - | - | 400 | 11 | | - | - |
| | | | | <u>900</u> | <u>400</u> | | - | - |
| | | | | | | | 400 | |

Candidates who attempted this question showed understanding of the theoretical difference between LIFO but lost marks on the issues column and thus the balances because of wrong calculations. There is still a problem with basic mathematical skills.

QUESTION 7

Oyibo High School has 1,200 students in the boarding house and 40 teachers. Cost incurred per week are as follows:-

| | |
|----------------------------------|---------------|
| <i>Food stuff</i> | 65,000 |
| <i>Teachers' salary</i> | 48,000 |
| <i>Non teaching staff salary</i> | 28,000 |
| <i>Maintenance on buildings</i> | 16,500 |
| <i>Transport</i> | 6,000 |
| <i>Electricity & water</i> | 4,000 |
| <i>Stationary</i> | 2,500 |
| <i>Other expenses</i> | 9,000 |

Oyibo High School runs a fifteen-week term and charges fees with 10% mark-up.

You are required to calculate:-

- (a) total cost of operations per term;*
- (b) cost per student per term;*
- (c) fees per student per term;*
- (d) total profit per term;*

- (e) profit per student per term.*

From a given set of data candidates were required to calculate total cost of operations per term; cost per student per term; fees per student per term; total profit per term and profit per student per term

Expected solution

a) Total cost of operation

| <u>OYIBO HIGH SCHOOL</u> | | <u>D</u> | | |
|---------------------------|----------------|----------|--|--------|
| Food stuff | (D65000 × 15) | = | | 975000 |
| Teachers' salary | (D48000 × 15) | = | | 720000 |
| Non teaching staff salary | (D28000 × 15) | = | | 420000 |
| Maintenance on buildings | (D16500 × 15) | = | | 247500 |
| Transport | (D6000 × 15) | = | | 90000 |
| Electricity & water | (D4000 × 15) | = | | 60000 |
| Stationary | (D2500 × 15) | = | | 37500 |
| Other expenses | (D9000 × 15) | = | | 135000 |

OR

TOTAL COST OF OPERATION

| | <u>D</u> | |
|-----------------------------|----------|--|
| Food stuff | 65000 | |
| Teachers' salaries | 48000 | |
| Non teaching staff salaries | 28000 | |
| Maintenance on buildings | 16500 | |
| Transport | 6000 | |
| Electricity & water | 4000 | |
| Stationary | 2500 | |
| Other expenses | 9000 | |
| | 179000 | |

Total cost of operation per term
 = cost per week × 15 weeks
 = D179000 × 15
 = D2186000

b) Cost per student per term

$$= \frac{\text{Total cost per term}}{\text{Number of students}} = \frac{D2685000}{1200} = \underline{\underline{D2237.50}}$$

c) Fees per student per term

$$= \text{cost per students per term} \times 110\% = \underline{\underline{D2461.25}}$$

d) Total profit per term

$$= \text{Total cost per term} \times 10\% = \underline{\underline{D268500}}$$

e) Profit per students per term

$$= \frac{\text{Total profit per term}}{\text{Number of students}} = \frac{D268500}{1200} = \underline{\underline{D223.75}}$$

OR

$$= \frac{\text{cost per student} \times 1}{10} = \frac{D2237.50}{10} = \underline{\underline{D223.75}}$$

OR

$$= \frac{\text{Fees per student} \times 1}{11} = \frac{D2461.25 \times 1}{11} = \underline{\underline{D223.75}}$$

Some candidates who performed well couldn't gain maximum marks because they did all the steps in their calculators and wrote down the final answers. Marks were awarded for the various steps. Some didn't even write the equations thereby losing marks. Marks were awarded for the equations, correct substitution and final answer. Some candidates attempted only 'a' & 'b' correctly. Due to lack of arithmetic skills, they could not solve the mark for 'c' and thus missed the rest of the marks.

QUESTION 8

Devon Manufacturing Company manufactures one product. The following information relate to the activities of the company for the year ended 31st December, 2018.

| | |
|---------------------------|------------------|
| <i>Unit produced</i> | <i>20,000</i> |
| | |
| <u><i>COST</i></u> | <u><i>Le</i></u> |
| <i>Direct Materials</i> | <i>154,000</i> |
| <i>Direct Labour</i> | <i>80,400</i> |
| <i>Variable overheads</i> | <i>54,000</i> |
| <i>Fixed overheads</i> | <i>33,600</i> |
| <i>Selling price</i> | <i>20</i> |

The company is considering how to reduce its output to 10,000 units for next year.

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You are required to compute for the company:

- (a) variable cost per unit;*
- (b) contribution per unit;*

- (c) *break-even point in units and value;*
 (d) *the profit or loss at the proposed output level of 10,000 units.*

From a given set of data, candidates were required to calculate:

- Variable cost per unit
- Contribution per unit
- Break-even point in unit & value
- Profit for producing and unit

Expected solution

DEVONMANUFACTURING

| | |
|---------------------|---------------|
| a) Variable cost: | Le |
| Direct materials | 154000 |
| Direct labor | 80400 |
| Variable overheads | <u>45600</u> |
| Total variable cost | <u>280000</u> |

$$\text{Variable cost per unit} = \frac{\text{Total variable cost}}{\text{Total unit produced}} = \frac{280000}{20000} = \text{Le}14$$

$$\text{b) Contribution per unit} = \text{selling price} - \text{variable cost per unit} = \text{Le}20 - \text{Le}14 = \text{Le}6$$

$$\text{c) (i) Break-even point in unit} = \frac{\text{fixed cost}}{\text{contribution per unit}} = \frac{\text{Le}33600}{\text{Le}6} = 5600 \text{ units}$$

$$\text{(ii) break-point in value} = \frac{\text{fixed cost} \times \text{selling price}}{\text{contribution per unit}} = \frac{\text{Le}33600 \times \text{Le}20}{\text{Le}6} = \text{Le}112000$$

OR

$$\text{Break-even point in value} \times \text{selling price} = 5600 \times \text{Le}20 = \text{Le}112000$$

d) Profit for producing 10000 units

$$\text{Total sales} - \text{Total cost} = (10000 \times \text{Le}6) - \text{Le}33600 = \text{Le}26400$$

Some candidates missed the calculation of the variable cost per unit hence got the rest wrong.

Nautical Industries uses the interlocking system of accounting. At the end of the year, the profit disclosed by the Financial Accounts was GHc 198,600 and this did not agree with that of the Cost Accounts.

Investigations revealed the following differences between the two sets of accounts.

| | <i>Financial Accounts (GHc)</i> | <i>Cost Accounts (GHc)</i> |
|-------------------------------------|---------------------------------|----------------------------|
| <i>Opening stock</i> | <i>38,500</i> | <i>36,450</i> |
| <i>Closing stock</i> | <i>45,900</i> | <i>42,360</i> |
| <i>Depreciation</i> | <i>12,000</i> | <i>10,000</i> |
| <i>Over-absorbed overhead</i> | | <i>6,200</i> |
| <i>Imputed rent</i> | | <i>5,000</i> |
| <i>Notional interest on capital</i> | | <i>15,000</i> |
| <i>Dividend paid</i> | <i>6,200</i> | |
| <i>Gain on disposal of asset</i> | <i>3,300</i> | |
| <i>Bad debt</i> | <i>900</i> | |
| <i>Discount allowed</i> | <i>1,200</i> | |
| <i>Discount received</i> | <i>2,600</i> | |
| <i>Interest on investment</i> | <i>3,600</i> | |

You are required to prepare a statement to reconcile the profits disclosed by the two sets of accounts, starting with the profit from Financial Accounts.

From a given set of data, candidates were required to prepare a statement showing the reconciliation of cost and financial accounts.

EXPEXTED ANSWER

NAUTICAL INDUSTRIES

Reconciliation of cost and financial account

| GHc | GHc |
|-----------------------------------|-------|
| profit per financial accounts | |
| 198,600 | |
| Add: Difference in opening stock | 2,050 |
| Difference in depreciation | 2,000 |
| Divided paid | 6,200 |
| Bad debt | 900 |
| Discount allowed | 1,200 |
| 210,950 | |
| Less: Difference in closing stock | 3540 |
| Inputted rent | 5000 |

| | |
|------------------------------|--------|
| National interest on capital | 15,000 |
| Gain on deposit of asset | 3300 |
| Discount received | 2600 |
| Over absorbed overhead | 6200 |
| Investment interest | 3600 |
| <u>39,240</u> | |

Profit per cost account _____
171,710

Candidates performed poorly in this question. A few however had marks above average. Most candidates couldn't do basic subtraction. Some didn't even have knowledge of the theoretical aspect of the topic. Tutors should ensure that candidates have a thorough understanding of the subject matter before going into the practical aspects.

GENERAL SUBJECTS

b(i)

RÉSUMÉ OF THE GENERAL SUBJECTS

1. STANDARD OF THE PAPER

The various Chief Examiners' reports stated that the papers compared favourably with those of previous years with the exception of Government 2(pg.64) and Christian Religious Studies 2(pg.37) which maintained that the standard of these papers were high when compared to those of previous years.

2. CANDIDATES PERFORMANCE

The performance of the candidates was carried from one paper to another as stated by the Chief Examiners in their reports.

An improved performance in Geography 2(pg.51), Literature-in-English 2 (pg.82) and Government 2(pg.64).

A poor performance in Geography 3(pg.55).

No marked improvement in Islamic Studies 2(pg.80).

A drop in performance when compared to previous years in Economics 2(pg.42)

3. CANDIDATES' STRENGTHS

Candidates showed knowledge in the subject matter in the following subjects – Economics 2(pg.42), Literature-in-English 2(pg.82).

Adherence to rubrics – Economics 2(pg.42), Christian Religious Studies 2(pg.37), Government 2(pg.64), Literature-in-English 2(pg.82) and Geography 2(pg.51).

Good presentation of work in Government 2(pg.64) and French 2(pg.103).

Good command of English and Writing skills – Government 2(pg.64) and Economics 2(pg.42).

Good drawing skills in Geography 2(pg.51).

b(ii)

4. CANDIDATES' WEAKNESSES

Some weaknesses which include the following were outlined by the Chief Examiners.

Non adherence to rubrics – Geography 2(pg.51), Christian Religious Studies 2(pg.37) and Economics 2(pg.42)

Disorganized work and presentation of materials – Government 2(pg.64), Geography 2(pg.51) and Economics 2(pg.42)

Inadequate preparation for the examinations - Government 2(pg.64) and Geography 3(pg.55)

Inability to understand and interpret the questions properly – Islamic Studies 2(pg.80).

Poor grammatical expressions, and spelling mistakes – Government 2(pg.64) and Literature-in-English 2(pg.82).

Indepth knowledge on the subject matter – Literature-in-English 2(pg.82).

Illegible handwriting and poor drawing skills – Geography 2(pg.51).

5. SUGGESTED REMEDIES

Candidates should be taught to present their work in an orderly manner.

Candidates offering Geography should be made to do more practical work on Map reading and Atlases.

Candidates should endeavour to make use of past papers to be au fait with the manner in which questions are drawn.

Schools should hire the services of trained and qualified teachers.

CHRISTIAN RELIGIOUS STUDIES 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

This year's paper for school candidates was of a higher standard as compared to previous years. Although the pattern of the question paper was strictly adhered to, our questions were preceded by Biblical questions. There were two questions in Section A, one in B, and one in C. Candidates who were not familiar with the passages from which the questions came did not attempt to answer the questions, and some who did could not score high marks.

The other challenge that candidates had was with questions 5 and 6. There was an error in the sequence of the above two questions. Question 6 which is about the arrest of Jesus should have come before question 5 which deals with the Jewish trial of Jesus. These two questions confused most candidates, and some could not even differentiate the Jewish trial and the Roman trial.

2. CANDIDATES STRENGTHS

Most candidates who attempted question one did well. I, however, observed that they started the narrative from the birth of Moses instead of concentrating on the Israelites crossing of the Red Sea. They would have done better if they only focused on the crossing of the Red Sea.

As usual, some candidates attempted the traditional four questions across Sections A, B and C, which was good. Candidates should be urged to attempt four questions as required by the rubrics of the paper so that they will have the opportunity to score higher marks.

3. CANDIDATES' WEAKNESSES

- ❖ Some candidates did not answer the four questions as required.
- ❖ Some did not answer any question from Section A, B or C.
- ❖ Some answered both questions 8 and 9 even though it is clearly stated in the sub-instruction under Section C that candidates should answer only the question from the Section. According to the rubrics of the paper, the higher mark was chosen and the lesser mark cancelled.

Candidates should try as hard as possible to answer four questions in all, thereby satisfying all three sections. They should avoid answering questions 8 and 9 as this would make them lose marks. They should endeavour to understand the intricacies of each and every question before attempting to tackle it.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) Highlight the story of how the Israelites crossed the Red Sea.

(b) State two lessons which Christians can learn from this incident.

Many candidates attempted this question and marks gained were encouraging. They would have scored better marks if they only concentrated on the Israelites crossing of the Red Sea rather than starting with the birth of Moses, his killing of an Egyptian, his flight to Midian, the burning bush experience and so on.

They would have earned more marks if they narrated that Pharaoh allowed the Israelites to leave Egypt after the tenth plague, God led his people by day with a pillar of cloud and a pillar of fire by night. Pharaoh later changed his mind and pursued the Israelites, God divided the water for his people to cross on dry ground, charioteers were killed by drowning them in the Red Sea etc.

QUESTION 2

(a) However I will not tear away all the kingdom; but I will give one tribe to your son, for the sake of David my servant.... Recount what led to the above pronouncement.

(b) In what three ways can the bad policies of a leader affect his followers?

Most candidates who attempted this question misunderstood it completely and hence they earned low or no marks at all. While some were giving account of Rehoboam's action that led to the division of the monarchy, others were talking about Solomon's introduction of forced labour, heavy taxation and infrastructural development that made the people's yoke heavy. The question required candidates to explain how God was angry with Solomon because he married many women from foreign lands, which God had earlier warned the Israelites not to have any form of social interaction with. He married seven hundred wives and had three hundred concubines who eventually turned his heart from worshipping Yahweh and led him into idolatry and apostasy in Israel. It was for this reason that God divided the Kingdom during the reign of Solomon's son Rehoboam.

QUESTION 3

(a) Outline Nehemiah's immediate reactions to the news about the state of affairs in Jerusalem.

(b) Identify three virtues that can be learnt from Nehemiah's reactions.

Candidates were required to highlight Nehemiah's immediate reactions to the news brought by Hanani and others from Judah about the state of affairs in his homeland. Some candidates mentioned briefly how Nehemiah wept, mourned and fasted for days,

confessing and repenting of the sins of his people, and asking God for favour in the eyes of the king to grant him permission to go to Judah and rebuild the walls of Jerusalem. Many, however, concentrated on Nehemiah's return home and the construction work that he undertook, which was not the focus of the question.

QUESTION 4

- (a) I am no prophet, nor a prophet's son; but I am a herdsman and a dresser of sycamore trees... Give an account of the events that led to this statement.*
- (b) Identify three reasons for which people complain about the activities of some men of God today.*

Few candidates attempted this question and could not do well because they were not familiar with the passage from which the question was drawn. The question did not ask about the whole social injustices that the prophet Amos condemned in Israel but rather, concentrated on Amos prophecy in Bethel which aroused the anger of Amaziah the priest who was in charge of King Jeroboam's sanctuary. Amaziah sent message to Jeroboam that Amos was conspiring against him and even ordered the prophet to go to Judah and prophesy and earn his living there. In response, Amos told Amaziah that his wife will be a harlot in the city, his children will be killed in battle and he himself will die in exile.

QUESTION 5

- (a) Relate the trial of Jesus before the Sanhedrin according to Mark's gospel.*
- (b) Give two reasons for which people bear false witnesses against others.*

Most candidates who answered this question could not distinguish between the Jewish trial and the Roman trial of Jesus. They would have earned higher marks if they stated that the high priest Caiaphas and the Sanhedrin tried Jesus for blasphemy. Witnesses alleged that Jesus said he will destroy the temple and in three days rebuild another, but their testimonies did not agree. The high priest asked Jesus whether he was the messiah, the son of God and he answered in the affirmative. He did not respond to the other questions but he told them that soon they will see the Son of Man seated at the right hand of power and coming with the clouds of heaven. This made the high priest tear his garment in holy anger and said that Jesus has uttered blasphemy and asked the Sanhedrin for their verdict etc.

QUESTION 6

- (a) My soul is very sorrowful, even to death, remain here and watch with me. Give an account of what happened to Jesus after he made this statement.*
- (b) Identify two ways by which one can assist a fellow Christian going through challenges.*

In sequence, this question should have preceded question 5 since it is dealing with Jesus' arrest in the garden of Gethsemane while question 5 is about the trial of Jesus before the high priest, Caiaphas. The order of these two questions confused the candidates. They would have earned more marks if they mentioned that Jesus took his disciples to the garden to pray. He left them at a point, went further and prayed. He repeated the same prayer three times, that if it is the Lord's will let the cup of suffering pass over him. Any time he came back to his disciples he found them sleeping. He urged them to pray to avoid temptation and that the spirit was willing but the flesh was weak.

QUESTION 7

- (a) Give an account of Stephen's defence before the Sanhedrin.*
(b) State three lessons that can be learnt from Stephen's defence.

Most candidates who answered this question did not score high marks because they did not know the necessary details about Stephen's defense before the Jewish authorities. They were expected to state that Stephen was one of the seven deacons appointed to oversee the daily distribution of relief items in the early church. Some Jews were jealous of him because he was full of wisdom, filled with the Holy Spirit and performed many signs and wonders. They alleged that Stephen had blasphemed against God and the prophet Moses. Stephen in his defense decided to trace the history of the patriarchs from Abraham to Joseph in order to prove to the Jews the universal nature of God and his faithfulness to his people etcetera.

QUESTION 8

- (a) Therefore confess your sins to one another, and pray for one another, that you may be healed..... What other teachings did James give on effective prayer?*
(b) In what three ways are Christians misusing prayers today?

Some candidates did not attempt any question from Section C, which required them to answer either question 8 or 9. Some of them who answered question 8 could not narrate James' teaching on effective prayer but rather gave their own idea about prayer generally. They were expected to state that Christians should pray in faith without doubting, for a person who doubts is like the wave of the sea driven and tossed by the wind. A person who doubts receives nothing from the Lord. If anyone lacks wisdom he should ask God who gives generously to everyone and it will be given to him. If anyone is sick the elders of the church should be called upon to pray and anoint the sick person with oil in the name of the Lord, and the person will be healed.

QUESTION 9

- (a) Highlight the attitude Peter recommended for Christians living among people of other faiths.*

(b) State two factors that can make Christians turn away from pleasing God.

Some candidates confused Peter's teaching on Christians living among non-Christians and that of his admonition to Christians about their interpersonal relationship. Question 9 required them to state that Christians are a chosen race, a royal priesthood and a holy nation. Formerly, they were no people but now they are God's own people.

They should therefore, abstain from the desires of the flesh that wage war against the soul. They should maintain good conduct among people of other faiths so that the Gentiles will see their good works and glorify God. Their good works will silence the ignorance of foolish men. They should subject themselves to every human institution, love the brotherhood, fear God, honour the emperor and never use their freedom as a pretext to do evil etcetera.

ECONOMICS 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper compared favourably with those of the previous years.

2. COMMENT ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE.

- There was no problem whatsoever with the standard of the paper. The questions were simple and straightforward.

In the opinion of Examiners, the performance of candidates fell below the level of previous years.

- There were no difficulties that might have affected candidates' performance.

3. CANDIDATES' STRENGTHS

Some candidates did the right things in various areas. They demonstrated good understanding of English in that they interpreted questions correctly and gave correct answers. They expressed themselves in reasonably good English.

Some demonstrated proficiency in Mathematics by performing well in the Data Response questions, which are largely mathematical.

Some followed the rubrics, answering questions as required, i.e. the correct number of questions overall, and from the various sections.

Again, some organized their work properly, finishing one question before going on to another, and also numbering questions and their parts correctly.

4. CANDIDATES' WEAKNESSES

Candidates' weaknesses have been the same over the years and these have been highlighted over and over again. This makes one wonder if teachers do make use of Chief Examiners' reports.

1. PROBLEM WITH ENGLISH

The problem with English is getting worse. This affects candidates' performance in various ways. Candidates cannot interpret questions correctly and so do not answer question the way they should be answered. Also, they do not express themselves in proper English, to the extent that Examiners could not make sense out of their answers.

It is suggested that the speaking of English should be made compulsory, and the rule rigorously enforced.

2. **PROBLEM WITH MATHEMATICS**

Section A of the paper is Data Response, which is largely mathematical in that calculations have to be done, graphs or charts have to be drawn or interpreted. Candidates have problems with these. Some of these questions even come in Section B, which are structured questions. These questions involving mathematics are on the topic ‘Tools of Economic Analysis’. It is suggested that teachers teach this topic rather exhaustively.

3. **POOR HANDWRITING**

Some candidates’ handwriting is so bad that examiners find it extremely difficult to read. One wonders how such candidates rose through the lower stages up to attempting the WASSCE.

Teachers should find ways of making pupils improve their handwriting.

4. **NON-ADHERENCE TO THE RUBRICS**

Candidates do not follow instructions either on the question paper or the answer booklet. They are required to answer four questions in all, i.e. one out of two in Section A and three in Section B. Some candidates answer all two in A and two in B. Some do not answer any in A and four in B. Some answer more, and some less than the four required overall.

It is suggested that schools make answer booklets like the W.A.E.C type, which candidates can use in their Mock Examinations.

5. **DISORGANIZED WORK**

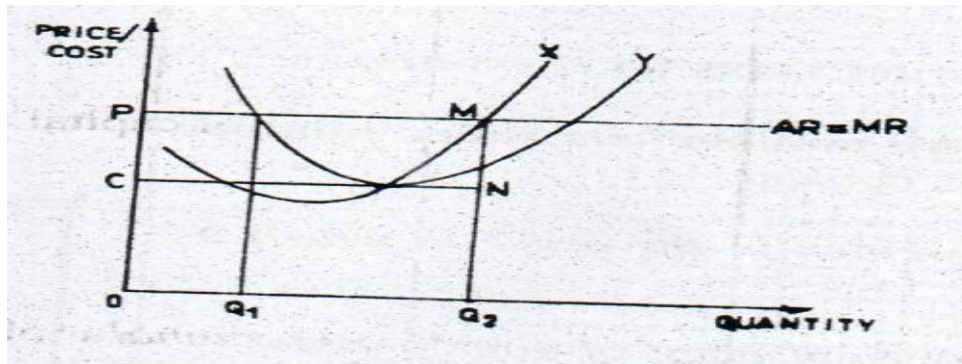
Candidates do not follow the instruction that they should answer different questions on different pages. They answer parts of the same question on different pages, and with parts of other questions in between. To make matters worse, some do not number the different parts of the questions, making it difficult for Examiners to know which answer was for which question.

It is suggested that teachers, in preparing candidates for the examinations, should stress to them the importance of following instructions, finishing one answer before moving on to another and numbering their answers correctly.

5. **DETAILED COMMENTS ON INDIVIDUAL QUESTIONS**

QUESTION 1

The diagram illustrating the short-run equilibrium position of a perfect competitor. Use it to answer the questions that follow.



- (i) *At what point does the competitor maximize profit?
Give a reason for your answer.*
- (ii) *What does the rectangle PMNC represent in the diagram?*
- (iii) *What happens to this rectangle PMNC in the long run?*

Give a reason for your answer.

- (iv) *What do the curves X and Y represent in the diagram?*
- (v) *Which area of the diagram represents the total revenue of the perfect competitor?*

- (b) *Calculate the profit of the perfect competitor if price is \$9.00 output is 80kg and cost per unit is \$5.00.*

For (a)(i) the answer is point M. The reason, at this point, $MC = MR$.

(ii) It represents the supernormal profit in the short run.

(iii) The rectangle is totally wiped off. The reason is that because of free entry, new firms will be attracted to the industry, who will compete away the profits.

(iv) Curve X is the MC and curve Y is the AC curve

(v) The area $OPMQ_2$

$$TR = P \times Q = \$9 \times 80\text{kg} = \$720$$

$$TC = \text{Cost} \times Q = \$5 \times 80\text{kg} = \$400$$

$$\text{Profit} = (\$720 - 400) = \$320$$

Very few candidates answered this question and those who answered did perform relatively well only in (b).

QUESTION 2

The table below shows the utility schedule of a consumer for a brand of ice cream. Study the table and answer the questions that follow:-

| Unit consumed (cone) | Total Utility (TU) | Marginal Utility (MU) |
|----------------------|--------------------|-----------------------|
| 1 | 11 | 11 |
| 2 | 20 | R |
| 3 | P | 8 |
| 4 | 33 | 5 |
| 5 | 37 | S |
| 6 | Q | 2 |
| 7 | 39 | 0 |
| 8 | 36 | -3 |

- Calculate the values of P, Q, R and S
- Given that the price of ice cream is \$2, at what level of consumption is the consumer in equilibrium? Give a reason for your answer
- State the law which explains the behaviour of marginal utility as shown in the table
- Draw the graph of the consumer's marginal utility.

$$\text{For (a) } P = TU_2 + MU_3 = 20 + 8 = 28$$

$$\text{Or } P = MU_1 + MU_2 + MU_3 = 11 + 9 + 8 = 28$$

$$Q = TU_5 + MU_6 = 37 + 2 = 39$$

$$\text{Or } Q = MU_1 + MU_2 + MU_3 + MU_4 + MU_5 + MU_6 = 11 + 9 + 8 + 5 + 4 + 2 = 39$$

$$R = MU_2 = \frac{TU_2 - TU_1}{Q_2 - Q_1} = \frac{20 - 11}{2 - 1} = 9$$

$$S = MU_5 = \frac{TU_5 - TU_4}{Q_5 - Q_4} = \frac{37 - 33}{5 - 4} = 4$$

The performance of candidates in these varied. Some candidates got the calculations right. Others mixed things up not knowing what to add or subtract in the various cases.

For (b), the consumer attains equilibrium at the 6th unit of consumption. The reason is that equilibrium is attained when price = MU.

A good number of candidates got this wrong, stating that it is the 7th unit, with the reason that equilibrium is attained at the level of highest TU.

(c) The law of diminishing marginal utility.

Candidates made serious blunders in drawing the graph. Some interchanged the axis, some took the wrong scale, some did not label the axes.

QUESTION 3

a. Who is an entrepreneur?

For (a) 'An entrepreneur is a person who organizes, manages and coordinates other factors of production and bears the risks associated with business, with the aim of making profit.'
Most candidates did not give the full complement of the key elements in the definition.

b. Outline any three entrepreneurial functions.

For (b), candidates should have given functions like:

- i. Risk bearing
- ii. provision of capital
- iii. decision making etc.

Candidates did relatively well in this

c. With an example each, explain the three forms of capital available to an entrepreneur

For (c) i), Fixed Capital – Producers' goods which are durable and do not change their forms in the course of production e.g. factory buildings, machinery etc

(ii) Circulating/working capital: goods which change their forms in the course of production e.g. raw materials, fuel, work in progress etc.

(iii) Social capital: Capital goods owned by the state which facilitate production e.g. roads, hospitals etc. Many candidates misinterpreted this form of capital to mean sources of capital and so gave points like personal savings, loans from friends, loans from financial institutions etc

QUESTION 4

a. Define supply of labour

For (a) This is the 'total number of people of working age offering themselves for employment at a given wage rate at a particular time.

Many candidates simply stated that it is the people working at a particular time

b. Distinguish between geographical and occupational mobility of labour

For (b) Geographical mobility is the ease with which labour can move from one location to another to settle and work permanently, while occupational mobility is the ease with which labour can move from one occupation or job to another.

In both cases, most candidates omitted the phrase 'ease with which'. This is considered to be important.

c. Outline any four factors that can discourage mobility of labour

For (c), candidates should have given factors such as:

- i. Family/social ties
- ii. Cost of movement
- iii. Age of employee etc.

Some candidates could not give as many as four factors. Some candidates rather gave factors that can encourage mobility.

QUESTION 5

a. Define (i) a firm (ii) an industry

For (a) (i) A firm is a business unit involved in production.

(ii) An industry is a group of firms producing similar products.

A good number of candidates got this right.

b. Distinguish between privatization and commercialization

Privatization refers to the transfer of a state owned industry or firm to private ownership, while commercialization refers to a policy aimed at making a government owned enterprise more self sufficient and profit oriented.

Most candidates got the privatization right but the commercialization wrong, stating that it is the transfer of private - owned enterprise to government ownership.

c. Identify any four reasons for the domination of small and medium scale enterprises in W.A.

For (c) candidates should have given reasons like

- i. Entrepreneurs cannot raise enough capital
- ii. Where demand for goods and services is low

- iii. Fear of taking big risks, etc.

Here again, most candidates could not give up to four reasons as required

QUESTION 6

a. Distinguish between money market and a capital market

For (a) A money market is a financial market involved in short term lending and borrowing of funds, while a capital market is a financial market involved in long term lending and borrowing of funds.

b. Explain two functions of the stock exchange

For (b) candidates should have given points like:

- i. It provides long term loans to investors
- ii. It provides job opportunities for participants in the stock markets
- iii. It provides information to investors etc

c. Outline any four functions of the money market

For (c) candidates should have given functions like:

- i. It provides short term loans to investors
- ii. It provides investment advice to investors
- iii. It provides employment to participants

None of the candidates whose scripts were marked by examiners answered this question

QUESTION 7

a. Describe the following measures for restricting trade

- i. Tariffs, ii. Quotas, iii. Embargoes, iv. Devaluation***

For (a) (i) A tariff is a tax imposed on selected imported or exported commodities.

(ii) A quota is a limit on the quantity of goods that can be imported into, or exported out of a country.

(iii) An embargo is a complete ban placed on a specific commodity, which cannot be imported or exported.

In all these three cases, candidates limited their definition to imports, leaving out the exports.

(iv) Devaluation is a deliberate measure by a government to reduce the exchange rate of a country's currency in terms of other currencies.

Most candidates left out the word 'deliberate', which is important.

b. Explain four reasons why international trade may be restricted.

For (b), candidates should have given reasons like:

- i. To protect infant industries
- ii. To raise revenues
- iii. To discourage the consumption of harmful products
- iv. To solve balance of payments problems etc.

Most candidates gave only two or three reasons

QUESTION 8

a. Distinguish between:

- (i) economic growth and economic development.*
- (ii) Short - term and long - term development plan.*

b. Outline any four reasons developing countries should engage in economic planning.

For (a) (i) This is a situation of sustained increase in real output over a period of time, while economic development means increase in real output plus structural changes resulting in improved standard of living.

Very few candidates answered Question 8.

Candidates defined the two concepts as if they are the same, failing to mention the distinguishing element of 'Structural Changes'.

For (ii) A short term plan is a framework within which government expects to achieve set targets within five years, while a long term plan is one within which targets are expected to be achieved between ten to twenty years.

Candidates did not get the time limits right, some merely played with the words 'short' and 'long' in the question, stating the short - term plan is for a short time and the long - term plan is for a long time.

For (b), candidates should have given reasons like

- i. To ensure even growth of all sectors.
- ii. To ensure improvement in the standard of living.

Candidates were not able to give up to four reasons as required.

GEOGRAPHY 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was quite up to standard. The questions were drawn within the framework of the WASSCE syllabus. The marking scheme was also exhaustive, showing all the points and the marks fairly allocated. Overall performance was slightly better than that of May/June 2018. Few candidates did fairly well but majority performed far below average. Some candidates were not able to answer more than two complete questions. The questions were straight forward with no difficulties in understanding the use of language.

In sections B and C questions which required the drawing of sketch maps were poorly handled. There were several awkward map outlines, drawn by candidates with wrong insertions of features to place on the maps. This is a clear indication that most candidates doing Geography in schools are very ignorant in the use of Atlas. Question 5 in Section (A) and Question 7 in Section (C) were attempted by very few candidates with weak or no marks scored for either question.

2. CANDIDATES' STRENGTHS

Very few candidates were able to show evidence of good preparation for this paper, scoring the minimum 40 marks out of the maximum 80 marks required. Those candidates were able to answer four complete questions out of the eight questions drawn on the paper.

Good map sketches were drawn for questions 4, 5 7 and 8 and the answers given to individual questions were arranged in perfect order (e.g. Q4, a, b, etc). This orderly manner of answering questions is a very good practice which WASSCE candidates should strictly adhere to when writing examinations.

3. CANDIDATES' WEAKNESSES

The weaknesses of most candidates for this paper (Geography 2) could be summarized as follows:

- Failure to follow instructions on the question paper such as indicating in the rectangular box on the front page of the answer booklet the questions attempted in the order they were written,
- Failure to begin answers on a new page,
- Answers to sub-questions for a particular question mixed up with another different question in another page, making it difficult for examiners in the allocation of marks during the marking of scripts.

- Presentation of poor map sketches by most candidates, some of whom cannot, for instance distinguish between the maps of Sierra Leone (i.e. the candidates' home country), Africa and West Africa.

SUGGESTED REMEDIES

Proper guidance to be given to candidates by invigilators to make sure they follow the instructions correctly during examinations.

- Invigilators to urge candidates to write their answers in an orderly manner, with the main question and the sub-questions put together, and not to combine them with another separate question(s) on another page.
- Geography teachers in schools to compel students studying geography to the reading of Atlases and to let them know the study of maps is an obligation to geographers.
- Students studying geography to be encouraged to visit libraries and read textbooks on geography rather than wholly relying on pamphlets, some of which may not be up to standard.
- Candidates to be reading past examination papers to know the way and manner questions are set.
- Map sketching and insertions to be part of geography practical lessons in schools.
- Schools to organize field trips for geography students at least once in each academic year to places of geographical interests in the country.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

The paper is divided into 3 sections (A, B, C). Section A is Human Geography with questions 1, 2, 3. The questions were straight forward and attracted a great majority of candidates. Correct answers were presented especially for questions 1 and 3. Some candidates however got confused with the (b) and (c) parts of question 2.

QUESTION 2

- (b). Explain four factors that influence the distribution of world human population.*
(c). Outline three factors that cause increase in world human population.

In some cases candidates interchanged the answers, while some wrote the same answers for both (b) and (c) which made them to lose marks where answers seemed to be wrong.

Most candidates were able to attempt two full questions from this section.

Section B is Regional Geography also with three questions (Q3, 4, 5) focusing on the candidates country, in this case Sierra Leone. Questions 4 and 5 required the drawing of sketch maps of Sierra Leone with names of features or places to insert. The map work aspects for these questions were very poor to a large extent. Most candidates scored no marks for the map work in Q4(a) and Q5(a).

QUESTION 4

(b) Describe the Physical Conditions necessary for the cultivation of groundnut.

Here, most candidates were just explaining the process of preparing the land for planting groundnut.

QUESTION 5

Question 5 was attempted by very few candidates who obtained very weak or no marks at all. The (b) and (c) part of Q5 was also misunderstood widely.

(b) Outline four factors that retard tourism in Sierra Leone.

Almost all candidates misunderstood this question, and outlined instead “the effects of tourism”

(c) Suggest three ways by which tourism can be promoted in Sierra Leone.

Here, “the benefits of tourism” were highlighted.

QUESTION 6

Write a geographical account of mining in Sierra Leone under the following headings:-

- (a) four mineral deposits;*
- (b) one town that is important for the mining of each of the minerals in 6(a).*
- (c) three benefits of mining in Sierra Leone.*
- (d) three negative effects of mining on the environment of mining areas.*

Question 6 had no map work. It attracted many candidates giving the correct answers as required.

Section C also a Regional Geography, focuses on the rest of Africa with three questions (Qs, 7, 8, 9). This was for candidates in Ghana, Gambia, Liberia and Sierra Leone only.

QUESTION 7

(a) Draw an outline map of Africa. On the map, locate and name:-

- (i) one area that records rainfall over 3,000mm,*
 - (ii) one area that records rainfall less than 250mm,*
 - (iii) one town in each of the areas shown in (a)(i) and (ii).*
- (b) Outline four negative effects of the Tropical Continental (cT) air mass in Africa.*
- (c) Describe two methods used for conserving water for agriculture in Africa.*

Questions 7 and 8 required a sketch map of Africa (7a) and the Map of West Africa (Q8a). As far as Geography 2 is concerned, Q7 was the least attempted for this paper. The few who attempted it could not score any mark for this question.

QUESTION 8

(a) Draw a sketch map of West Africa. On the map, locate and name:-

(i) one ECOWAS member country along the coast;

(ii) one ECOWAS member country in the interior;

(iii) the capital towns of each of the country in 8(a)(i) and (ii).

(b) Highlight four benefits which countries have derived from their membership with ECOWAS.

Question 8. Some candidates correctly drew the outline map of West Africa but inserted the countries incorrectly. Some only answered the (b) and (c) parts of the question.

QUESTION 9

Question 9 required no map work. Most candidates were able to write the correct answers. Few however, misunderstood the (b) part of the question.

(b) Explain the factors that encourage lumbering in Equatorial Africa.

The problems affecting lumbering in Africa were outlined instead of factors that encouraged in lumbering Equatorial Africa. .

GEOGRAPHY 3

1. GENERAL COMMENTS ON THE EXAMINATION AS A WHOLE

Generally, the questions were well set and there was no ambiguity observed in any of the questions set.

The questions covered a wide area of the syllabus and if only candidates were well prepared for the examination, they would have done justice to the paper. The standard of the paper was quite good and compared favorably with past standards. The questions were primarily designed to test the candidates' ability both to recall facts, content materials and apply such theoretical facts to reality. Unfortunately, candidates' performance was much poorer than one would expect for this type of paper. It would seem that candidates were somewhat complacent and many did not answer the questions properly as expected. Many did not actually go according to the demands of the questions. And as usual, many of the answers were just one word or just short statements, instead of giving thorough and clear explanations. This weakness therefore cost them valuable marks. There were cases when they were required to answer a question that has three or more sub-sections as in question one; they would just attempt perhaps section one only or one and two others, and forget about the other questions and as such lose valuable marks. It was also observed that many of the candidates answered more than one question on a page of the booklet provided. This created a lot of problems. At the front page of the booklet provided, which gave instructions to candidates that they should not write more than one answer on a line, this was completely ignored. Candidates could not write properly for examiners to read their work/answers.

2. CANDIDATES' WEAKNESSES

As has been emphasized, premium should be placed on Map reading in our schools. It was quite obvious that almost all the candidates avoided question one which was a compulsory question. Those who attempted it, made it their last question to be answered. It is absolutely necessary that more work is done on Map work if students of geography would wish to succeed in this paper.

Prominent among pupils weaknesses is their inability to write English or to read and understand what they have read and then be able to interpret what the question demands from them. Also poor spelling of words on the question paper and incorrect information were common. Although the questions were relatively simple, pupils' answers to most of the questions were rather scanty, and it was clear that the pupils were not well grounded on the subject matter. It would seem appropriate to say that preparation was definitely inadequate.

Teachers must be committed to the teaching of the subject. It seems that there is lack of teaching materials; e.g suitable text books in physical geography and map reading in the school today. Teachers should ensure that those relevant tools of the subject be made available in the school or geography library.

3. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Study the map extract provided on a scale of 1:50,000 and answer the questions that follow.

- (a) *On the graph paper provided, draw an annotated cross-section from the road junction at AFIENYA to the road junction at Daawhenya (Darwenya).*
- (b) *In your answer booklet, describe three:*
- (i) *relief characteristics of the mapped area;*
 - (ii) *drainage characteristics of the mapped area.*
- (c) *With evidence from the map, identify two functions of Doryum settlement.*

MAP-WORK

This was a compulsory question which carries 25 marks, while the other questions carry 15 marks each. This question was very poorly answered by the few pupils that attempted it. It was absolutely not known by the candidates.

The (A) part of Question One was that, candidates draw an annotated cross section from road junction of AFIENYA to the road junction at Dawhenya. Most candidates did not understand how to draw a cross section of a map, when two pupils were given. Of those pupils who attempted the question, some even attempted to reduce the map to what scale they chose and drew the outline of the map. It could be seen that teachers avoided that aspect of the syllabus, and therefore the candidates did not know what to do.

In the (B) part of the question, pupils were to describe:

- i. Three relief characteristics of the mapped area.

It was rather shocking that the pupils simply did not understand the geographical word 'relief', and they therefore did not know what to do.

It was a simple question and what was expected from it was:

- The area is generally low.
- Valleys are wide except those on the ridge.
- There is a ridge to the North-West.
- The ridge is dissected.

In (B) (ii) pupils were to describe the drainage characteristics of the mapped area.

EXAMPLE

- River Lalue/Gblekpo in the south-west has been dammed to form a lake
- Presence of many tributaries
- Drainage density is high
- Drainage pattern is dendritic

- Many confluences exist

In the case of question 1(c), the pupils were requested to state with evidence from the map, two functions of Doryum settlement

FUNCTIONS

- Commercial function due to the presence of market
- Educational function due to the presence of school
- Religious functions due to the presence of church

QUESTION 2

The table X below shows the number of farm units in three villages of Oju District in the year 2010. Use the data in table X to answer the questions that follow.

Table X

| <i>Village</i> | <i>Number of farm units</i> |
|----------------|-----------------------------|
| <i>A</i> | <i>81</i> |
| <i>B</i> | <i>100</i> |
| <i>C</i> | <i>64</i> |

- (a) *Using the map of Oju District provided on page 4 and a radius of 1cm to represent 3 farm units, construct proportional circles to represent the data.*
- (b) *State two disadvantages of proportional circles.*

Question 2 was another section of the syllabus which is not taught in the schools. Hardly did any candidate attempt this question. The few who attempted it had no idea of what proportional circle meant.

From enquiries made, the concept of proportional circle construction is not taught in schools; that aspect is left with the Mathematical Department of the school. Teachers and pupils should be encouraged to learn statistical analysis and data response in geography, as it is part of the geography syllabus. As observed, only candidates with mathematical background may continue to do well in answering such questions.

QUESTION 3

Describe chemically formed sedimentary rocks under the following headings:-

- (a) *mode of formation;*
- (b) *three examples;*
- (c) *four importance.*

This question was a straight forward question, and a factual one; but incidentally, candidates scored fairly low grades. Many thought that the question demanded that they described just

sedimentary rocks. The question actually requested them to describe “chemically formed sedimentary rocks. This mistake was the reason why many were caught napping and resulted in the loss of important marks.

The question was that they describe chemically formed sedimentary rocks under the following:

- a) Mode of formation
- b) Three examples
- c) Four importance

Mode of formation of chemically formed sedimentary rocks

- Major agent is water
- Water reacts with existing rocks
- Solutions are formed
- Formed from the accumulation of materials derived from other rocks
- Mineral salts are precipitated e.g iron stone/limonite from hydrated iron oxide etc

Examples of chemically formed sedimentary rocks

- Rock salt (sodium chloride or common salt)
- Nitrates
- Alabaster
- A form of limestone
- Gypsum/calcium sulphate
- Anhydrite
- Dolomite
- Potash etc

In the (C) section, many candidates were able to score high grades.

Importance of chemically formed sedimentary rocks

- Source of minerals
- Construction purposes
- Tourist attraction
- Provide employment
- Soil formation
- Foreign exchange earning etc

QUESTION 4

- (a) *What is a lake?*
- (b) *Describe the formation of lakes by wind erosion.*
- (c) *Identify three benefits of lakes to man.*

Most of the candidates who answered this question scored high marks. A few were unable to describe the meaning of a lake and therefore could not describe in (b) the formation of lakes

by wind erosion. The (c) part of the question was well answered and most candidates were able to score all six marks.

However, the following were expected from the candidates:

Meaning of a lake: a lake is a body of water, accumulated in a depression or basin and surrounded by land – 3 marks

Formation of lakes by wind erosion

- Occurs mainly in arid regions
- Rocks deeply weathered
- Loose non-consolidated soil run deep below surface
- No wind breaks
- Wind speed is high
- Winds have strong erosive power
- Wind deflation sets in etc

Benefits of lakes to man

- Means of transportation
- Source of fish
- Source of common salt
- Source of water for reared animals
- Regulates flow of river
- Attracts settlements in arid and semi-arid regions etc

QUESTION 5

(a) *Highlight four characteristics of each of the following:*

(i) *Time zones;*

(ii) *International Date line.*

(b) *If two towns A and B are located on different time zones and the time in town A is 9.00am while the time in town B is 6.00pm the same day, calculate the longitude of town B if the longitude of town A is 30°W.*

Few candidates attempted this question. Those candidates who attempted it were able to clearly state the Time zone and International Dateline.

The (b) part of the question which was a calculation of longitude was not known. Most of the candidates failed to understand that they were required to calculate the longitude of Town B. most of the answers were on the time at Town B which had already been given. Pupils should be taught to calculate longitude and time showing the various steps that should be taken. If only candidates have said that if One Hour = 15° or 1° = 4 minutes, that would have handed them one bonus mark.

This however was what was expected of them.

Characteristics of Time Zone

- Refers to a region where the same standard time is used
- Spans 15° of longitude
- There are 24 time zones in all
- Each has its own standard time etc

Characteristics of International dateline

- It is at the 180° meridian
- An imaginary line
- Located half-way round the world from the prime meridian
- Passes through the Mid-Pacific Ocean
- It avoids cutting through Oceanic Islands and countries etc

Calculation of longitude of Town B

- Longitude of Town – 30° W
- Time in Town A = 9.00AM = 9:00 hours
- Time in Town B = 06:00 pm = 18:00 hours
- Longitude of Town B?
- 15° of longitude is = 1 hour
- Difference in time between Towns A & B is 18 hours – 9 hours
- Difference in longitude 9 hours x 15° = 135°
- Time of Town B is to the east of Town A
- Longitude of Town B = 130° – 30° = 105° E

QUESTION 6

With the aid of diagrams, describe the mode of formation of the following features:

(a) stack;

(b) fold mountain.

This was another least attempted question and the performance was very poor. The candidates' knowledge about the two geographical features was scanty.

Candidates were requested that with the aid of diagrams, they were to describe the mode of formation of the following features: a) was feature stack and, b) was feature Fold Mountain.

Stack was practically not known and the candidates simply drew any type of diagram they thought was appropriate for them. Therefore, those who attempted the (a) section of the question almost all scored zero mark.

In the case of (b), Fold Mountain, most of the answers were just few sentences or just a short statement that awarded them a point or two and nothing else.

This was however what was expected of the candidates:

Mode of formation of stack

- Formed near a coast
- Formed by wave erosion
- Presence of headland
- Wave erosion attacks headland at both sides
- Cracks of line of weakness develop on both sides of the headland
- Cracks wider
- Hydraulic action
- Wave abrasion etc.

Mode of formation of fold mountains

- formed from large scale earth movement
- horizontal movement of crustal blocks
- formed by compression forces with the earth's crust
- the forces cause stress within the crust
- presence of large depression called geosyndines
- depression of geosyndines caused by down warping of the crust etc

QUESTION 7

- (a) With the aid of a labelled diagram, describe the weather instrument used to measure the amount of rainfall.*
- (b) State three precautions which must be taken when using the instrument described in (a).*
- (c) Explain how the instrument described in (a) is used to obtain total annual rainfall.*

This was the most widely and commonly attempted question. The (a) section was that, the candidates with the aid of a labelled diagram were to describe the weather instrument used to measure the amount of rainfall. However, some of the candidates were able to identify the weather instrument as the rain-gauge, but many could not spell it correctly. Most of them spelt it as rain gage and that was common. Candidates of geography must be made to spell geographical terminologies correctly or be penalized.

Almost all the candidates who attempted section (b) and (c) of the question were able to score at least five out of seven marks.

Generally, the diagram of the rain-gauge was poor and candidates lost good marks.

The following was required of the pupils:

Description of rain-gauge

- it is called rain-gauge

- it is a cylindrical metal instrument
- unit of measurement is mm or inches
- it consists of a funnel
- the funnel is either 13cm – 20 cm
- the funnel leads to a glass bottle etc

Precautions which must be taken when using the rain-gauge

- must be erected high above the ground
- must be fitted above 30cm above the ground
- must be sited in an open space
- must be fitted firmly to the ground
- reading must be taken daily at a fixed time etc

Explanation on how the instrument is used to obtain total annual rainfall

- funnel is removed daily
- any water in the glass bottle is poured into a calibrated measuring cylinder
- the reading is taken at eye level
- reading is taken to an accuracy level of 0.25mm or 0.01 inches
- components are fixed back immediately after reading
- the reading is recorded, etc.

QUESTION 8

(a) Define food chain.

(b) Describe the energy flow within a terrestrial ecosystem.

(c) Highlight three ways by which nitrogen cycle is maintained in the terrestrial ecosystem.

This question was answered by almost all the candidates, but it was generally poorly answered. However, some candidates did justice to it.

The following was what was required of the pupils.

The question demanded in 8 (a), that candidates defined food chain.

Definition of food chain

Refers to the process of energy transfer from green plants to herbivores and carnivores and to decompose within an ecosystem.

The (b) part of the question was that, candidates should describe the energy flow within a terrestrial ecosystem.

Description of energy flow within a terrestrial ecosystem

- sun provides the energy
- green plants trap solar energy via chlorophyll during photosynthesis

- photosynthesis takes place in green plants using carbon-dioxide, water and mineral salts etc

In 8 (c), candidates were to highlight ways by which nitrogen cycle is maintained in the terrestrial ecosystem.

Ways by which nitrogen cycle is maintained in the terrestrial ecosystem

- **78% of the atmosphere is nitrogen**
- Bacteria in nodules of leguminous plants fix nitrogen
- Fixation by leguminous plants
- Fixation from lightening
- Fixation through denitrifying bacteria etc.

GOVERNMENT 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper was high and could be favourably compared to those of the previous years. The general performance of the candidates was better than the past years, even though more candidates took the paper. The examiners who marked the scripts were properly monitored and supervised by their team leaders; since the marking was done at conference level.

The questions provided by the examining body, The West Africa Examinations Council (WAEC) gave the candidates the opportunity to score passing grades. The questions were drawn from topics which were familiar to candidates.

The marking scheme was well detailed, very specific and in conjunction with the questions provided. The rubrics were clearly stated and marks evenly distributed.

However, it was clearly observed that few candidates relied on examination malpractice in their centres as an aid to their success. These candidates were not prepared for the examination and this led to their failure. There was also clear evidence from the scripts of few candidates that they were not fit to take this examination.

2. CANDIDATES' STRENGTHS

Most of the good candidates performed very well, they presented adequate materials for various questions which indicated that they were well prepared for the examination. They attempted the required number of questions as indicated by the rubrics in simple and clear English. They displayed a comprehensive knowledge of the subject and the examination which earned them very good grades. They answered two questions from section A and two questions from section B only.

Candidates scored high marks for questions 1,2,4,7 and 8 which contributed immensely to their success. Their answers were well organised, legible and in logical sequence which facilitated easy marking of their scripts. They had good command of their English Language.

3. CANDIDATES' WEAKNESSES

Some candidates were not prepared for the examination as evident in their manner of answering questions. They either wrote half a page for answers that required at least a page, or provided answers which were not on the marking scheme.

It was also observed that most of the candidates from the same school answered the same questions with the same ideas. Some candidates had two different handwritings in answering questions on the answer booklets.

Few candidates did wrong numbering in their attempt to answer questions. Some candidates indicated question one (1) on their papers but the answer provided for is that question two (2).

It was also observed that few candidates did not write their names, and sometimes both their names and their index numbers were not written on the answer booklets.

Candidates' answers were also marred with a lot of grammatical errors and poor spellings. This problem was also compounded by poor handwriting and the inability of the candidates to understand the questions. This was manifested in the out-of-context answers presented.

Some candidates also listed points but failed to develop them; leading them to scoring low grades.

It turned out to be more straight to the point because they did not explain them.

SUGGETED REMEDIES

The chief examiner's report and marking scheme should be made available to all schools preparing for the examination to create a plain level field for all candidates taking the examination. It will also help teachers preparing the candidates for the examination to add to their knowledge of the subject and to grade the candidates on the examination rubrics.

Schools should employ the services of trained and qualified teachers in the discipline to properly teach the candidates effectively. The teachers should also cultivate reading habits of text books, journals, magazines, and listening to both local and international news to improve on their performances.

All effort should be made by both the teachers and the pupils to complete the syllabus to their advantage in the examination. Topics to be taught should not be selected by the teacher or pupils. The administrators of senior schools should introduce team teaching to enable teachers handle the pupils well. Some teachers are not familiar with some topics, or do not like teaching them. This will enable the candidate to get a thorough and total grasp of the topics in the syllabus.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Explain five reasons for the study of government.

Most of the candidates attempted this question. It was a popular question for the candidate since it was presented in the examination less than three years ago. It is also in the first topic of the syllabus which every pupil should be aware of.

The question required candidates to explain the reasons for studying government. The candidates were able to present points like:

- i. It teaches objectivity in the analysis of power issues.
- ii. It develops a positive political culture.
- iii. It enables an individual to know his/her duties, responsibilities and obligations of citizens.
- iv. It boosts interests in active political participation.
- v. It provides knowledge of how the state is managed and governed.
- vi. It provides basis to compare government.
- vii. To be abreast with national and international developments.
- viii. It offers opportunities for leadership training.
- ix. Provides knowledge of the political history of a state.

QUESTION 2

a) Who is a good citizen

b) Outline four responsibilities of a citizen to the state

This was a straightforward question and was attempted by many candidates. Many candidates presented good answers for both parts of the questions.

The first part required the candidates to define a citizen which was done. A citizen is a legal member of a state who enjoys all rights and privileges and owns allegiance to the state.

The second part of the question required the candidates to outline four responsibilities of a citizen to the state. The responsibilities were very good- which gave them in total outstanding grades in the examination. Candidates mentioned the following points:

- i. Obedience to the laws of the state
- ii. Payment of taxes
- iii. Vote during election
- iv. Defence of the state against any external attacks and internal insurrection.
- v. To serve as a witness or a juror when called upon.
- vi. To respect the rights, freedom, and legitimate interest of others.
- vii. Performance of services to the state / national services.
- viii. Assist law enforcement agencies in exposing crimes and criminals.
- ix. Respect for national symbols; i.e. leaders, national flag and national anthem.
- x. Loyalty and patriotism to the state.

QUESTION 3

Highlight five roles played by the mass media in strengthening modern democracy.

Very few candidates attempted this question, and the performance was not encouraging. The question required the candidates to highlight the roles played by the mass media in promoting modern democracy. This was entirely a new question and the candidates had little or no knowledge to perform well in it. Candidates were expected to mention the following points:

- i. It serves as instrument for political education
- ii. Assist the government in policy formulation, implementation and evaluation.
- iii. Dissemination of information
- iv. Serves as a link between the government and the people.
- v. Encourages political participation.
- vi. Exposes the ills in the society.
- vii. Serves as a check on the government to ensure good governance.
- viii. Protects fundamental Human Rights.
- ix. Mobilize support for government policies and programs.

QUESTION 4

a) What is local government?

b) Outline four reasons for the creation of local government.

Many candidates attempted this question and they scored very good grades. The question was straightforward, as it is drawn from popular topics in the syllabus. The candidates were able to define local government as a sub – government unit created by the central / state government through an act of parliament to administer a local area. The second part of the question required the candidates to outline four reasons for the creation of local government. Some candidate also presented good answer to this part of the question. However, important points not mentioned include:

- i. Decentralized power from the centre.
- ii. Help in the preservation of traditional institutions in local areas.
- iii. Encourages local participation in governance.
- iv. Give the local people a sense of belonging.
- v. Mobilize human and material resources at the local level for rapid development.
- vi. Serves as a training ground for future leaders.
- vii. Make and enforce bye-laws.
- viii. Maintain laws and orders at the local level.

QUESTION 5

a. State three types of elections

b. Explain four purposes elections serve in a democratic state.

This question attracted a good number of candidates, and the scores for the first part of the question were below average for most of them. They could not properly identify the types of elections such as:

- i. Staggered election
- ii. Run – off / Second ballot
- iii. Re-run election
- iv. Supplementary =/ Inclusive
- v. General Election
- vi. Bye- election
- vii. Indirect election / Electoral college system
- viii. Primary election
- ix. Direct election.

The second part of the question required the candidates to explain four purposes election serve in the state. A considerable number of the candidates were able to maintain important points such as:

- i. Promotes good governance and central dictatorial tendencies of governments.
- ii. Ensures smooth changes of government.
- iii. Promotes political education through campaign.
- iv. Confers legitimacy on government.
- v. Helps to promote accountability and transparency in governance.
- vi. Promotes political participation.
- vii. Serve as an index to measure the popularity of both party and candidates.
- viii. Helps to measure the level of citizen’s political commitment to the political system.

QUESTION 6

a) What is the New Partnership for Africa’s Development (NEPAD)?

b) Identify four objectives of the New Partnership for the socio-economic and political development of Africa.

Only a handful of candidates answered the question and it was partly answered. What came out of it clearly indicated that this topic was not clearly taught. This is a new topic and most teachers who do not consult their syllabus were not aware of its existence. However, some were able to earn few marks. Candidates were expected to define NEPAD as a vision and strategic framework for the socio-economic and political development of Africa.

The second part required candidate to mention four objectives of New Partnership for Africa’s Development (NEPAD). Candidates should have mentioned the following objectives:

- i. A commitment to good government as a requisite for economic growth.

- ii. Eradication of poverty from the Africa Continent with a stipulated time.
- iii. Strengthening democracy and the rule of law in Africa.
- iv. Ensure the acceleration of gender quality through the empowerment of women in Africa.
- v. Reduction of corruption in Africa.
- vi. To make Africa alternative to both domestic and foreign industries.
- vii. To increase investment in human resource development.
- viii. Promotion of sound economic management and people central development.
- ix. To achieve and sustain an average of GDP growth of 7% per annum for 15 years.
- x. To straightening Africa's capacity to mobilize external resources for its development.

QUESTION 7

Outline five negative effects of colonial rule on the people of Africa.

This was a popular and straightforward question as most of the candidates attempted it, candidates were required to outline the negative effects of colonial rule. Important points which most candidates failed to mention include:

- i. Exploitation of West African labour.
- ii. Creation of inferiority complex among the Africans.
- iii. Promotion of foreign language above the indigenous languages.
- iv. Widened the gap between rural and urban areas.
- v. Encouraged the production of cash crops at the expense of foreign exchange.
- vi. Creation of division among the indigenous people.
- vii. Destruction of indigenous West African Industries.
- viii. Imposition of foreign culture.

QUESTION 8

Highlight five negative effects of military rule on the people of Sierra Leone.

This was a popular question and the scores earned by most candidates were above average. Candidates were asked to highlight the negative effects of military rule on the people of West Africa. Most of them were able to mention these points:

- i. Abuse of citizen's rights.
- ii. Limited press freedom.
- iii. Ban on partisan politics
- iv. Mismanagement of the economy
- v. High level of corruption
- vi. Imposition of laws through decrees political instability / counter courps
- vii. Detention of political opponents.

- However, most of them were not able to mention points like:
- i. Over-staying in power / refusal to hand over power. Thieves on violence or use of force.
 - ii. Disregard for probity, accountability and transparency in governance.
 - iii. Favouritism and nepotism in the appointment of public officers.
 - iv. Interference in the judicial system.

QUESTION 9

- a) List three political parties in Sierra Leone before independence.***
- b) Identify four features of the 1961 constitution of Sierra Leone.***

A good number of candidates attempted this question and the general performance was encouraging. Some candidates were able to mention three political parties formed in Sierra Leone before independence. However, some were able to mention one or two, and few could not distinguish the political parties formed before independence and those formed after the first Republic. Candidates were expected to mention the following political parties:

- i. The Sierra Leone People's Party (S.L.P.P)
- ii. United Progress Party (U.P.P)
- iii. People's National Party (PNP)
- iv. All People's Congress (A.P.C)
- v. Sierra Leone Independence Movement (SLIM)
- vi. Kono Progressive Movement (KPM)
- vii. Sierra Leone Progress Independence Movement (SLPIM)

The second part of the question required candidates to identify four features of the independence constitution. The candidates were able to mention the following points:

- i. It introduced a parliamentary system of government.
- ii. It provided for a unicameral legislature
- iii. It provided for the position of governors – general
- iv. Provided for a multi- party system.
- v. It defined citizenship.
- vi. The constitution granted fundamental Human Rights.
- vii. Consolidated fund was established.
- viii. Provision was made for the election of the speaker by members of parliament.
- ix. Amendment procedure was provided for.
- x. Provided for universal adult suffrage.

QUESTION 10

Outline five achievements of the Sierra Leone People's Party in government from 1961 – 1967.

This question attracted a relatively small number of candidates and the performance for most of them was below average. A good number of them did not understand the demand of the question. It was asking for the achievement of the Sierra Leone People's Party within a specific period (1961-1967). Some of them based their answers on the achievement of the party between 1952 – 1960, when the country had not attained independence or the achievement of the party between 1996- 2007 during the second Republic. This then led to their poor grades and subsequent failure of this paper. Candidates were expected to mention the following achievements':

- i. It led the country to archive independence.
- ii. Provided the first and second prime ministers for Sierra Leone.
- iii. It won the 1962 general elections.
- iv. It established Njala University College of education to improve agriculture.
- v. Provided teacher training college like the established training Milton Margai College of Education, to improve trained teachers.
- vi. It established the Central Bank of Sierra Leone in 1963.
- vii. The party introduced national currency, the Leone in 1964.
- viii. Embarked on industrialization of the country through the establishment of cement factory and oil refinery in Freetown.

HISTORY 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper set was good and comparable to those of previous years. The Questions were also well within the ambit of the syllabus.

95% of the Questions were well framed in simple terms without any ambiguity. The rubrics were clear and making sense. The scheme was detailed and easy to follow and understand.

The overall performance for this paper was average; only a few schools performed above average.

2. CANDIDATES WEAKNESSES

- Vague knowledge of subject matter
- Poor expressions and wrong spellings of words
- Failure to understand Questions. Question one (1) was wrongly answered by 95% of the candidates who attempted that question because of lack of indepth knowledge on that particular topic.
- Students answered more questions than required
- Wrong numbering of answers

RECOMMENDATIONS

Effecting teaching of newly introduced topics

Effecting coverage of the syllabus by the schools

- Candidates should read the prescribed text books for History and study hard.
- Qualified and experienced teachers should be recruited in the schools

3. CANDIDATES' STRENGTH

There were no commendable features in candidate's answers.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTION

QUESTION 1

Highlight any five ways in which Information Communication Technology can assist in historical studies;

This is a new topic and as such the question was not popular among the candidates. The few who attempted this question did poorly as they could not make the correlation between Information Communication Technology (ICT) and Historical Studies.

A good number of the candidates provided answers based on their knowledge on Information Communication Technology instead of stating how ICT can assist in historical studies. Candidates were expected to provide answers such as

It can be used for effective teaching and learning of history

It can give wider coverage of events.

QUESTION 2

(a) Name any three Ministers of government and their portfolios among the Temnes.

This was a Popular Question which almost every candidate attempted but with an average performance.

The candidates were asked to name any three Ministries of government and their portfolios. A good number of the candidates did not spell the names of the Ministers and their portfolios correctly. Some candidates only answered part of the question. 45% of the candidates gave the names of the Ministers but could not tell the portfolios they held.

The expected answers from candidates as provided in the marking scheme were.

- (a) Kapr Mesim /Masim –Prime Minister
- (i) Karp Soya – Minister of Defence
 - (ii) Karp Kuma – Minister of Finance
 - (iii) Karp Fenthe –Minister of Health and Sanitation.

(b) Outline the functions of the Obai among the Temne

In part B, candidates satisfactorily outlined the functions of the Obai

- (i) The Obai was the principal ruler of the Temne Kingdom
- (ii) He was responsible for the protection and security of his people
- (iii) He was the custodian of the country's land
- (iv) He was the keeper of the sacred items of rulership
- (v) The Obai in concert with the council of Elders made laws for his people according to their customs and traditions.
- (vi) He ensured the maintenance of law and order
- (vii) He was responsible for the appointment of his ministers
- (viii) He presided over the election of sub –chiefs in the various sections of the kingdom
- (ix) He was the chief judge
- (x) He was the chief patron of the secret societies though he was not the head
- (xi) He also performed some religious functions e.g pouring of libration
- (xii) He signed treaties agreements with foreign bodies /agents on behalf of his people

QUESTION 3

(a) Name any three European Countries whose Nations took part in the Atlantic slave trade.

This was not a popular question and the candidates who attempted it did not do well. In part (a), the answers were satisfactory although there were few spelling mistakes.

In part (b), candidates were expected to highlight any four stages through which the slaves passed before arriving in the new world. The candidates were not able to correctly identify the stages as prescribed in the marking scheme.

- (i) Portugal
- (ii) France
- (iii) Britain /England
- (iv) Denmark
- (v) Spain
- (vi) Germany /Bradenburg /Prussia
- (vii) Holland

(b) Highlight any four stages through which the slaves from Sierra Leone passed until they arrived in the new world.

- (i) Slaves were kept on the coast in large wooden cages called baracoons while awaiting shipment across the Atlantic to the New World.
- (ii) They were handcuffed and bound in chains and shackles to prevent any protest or mutiny.
- (iii) They were packed onboard the ship like sardines.
- (iv) The men were separated from women and children.
- (v) They were given very little food to eat on the ships.
- (vi) Those that fell seriously ill or died during the voyage were thrown into the sea.
- (vii) On arrival in the New World, they were examined to guarantee their physical fitness before being sold.

QUESTION 4

(a) Name any three Parishes established by Governor Sir Charles McCarthy in the Colony in his Parish Plan of 1817

Majority of the candidates attempted this question but they did not perform too well especially in part (a) A good number of the candidates could not name the Parishes established by Governor McCarthy in the colony. These Parishes included:-

- (a) (i) St Charles, Regent
- (ii) St Patrick, Kissy
- (iv) St Andrew, Gloucester

- (iv) St Paul, Wilberforce
- (v) St George, Freetown
- (vi) St John, Charlotte
- (vii) St Peter, Leopold
- (viii) St James, Bathurst

However, Part (b) was satisfactorily done as candidates were able to identify the contributions of the Recaptives to the development of the colony as listed in the scheme.

(b) Identify any four contributions of the Recaptives to the development of the Sierra Leone Colony.

- (i) The Recaptives helped to expand their settlement by building several villages near Freetown.
- (ii) Their number increased the population of the colony settlement significantly.
- (iii) They produced crops on their farms which they sold to other colony residents.
- (iv) They promoted trade in the colony and along the coast.
- (v) They built houses for dwelling and also let out others to new migrants.
- (vi) They reared animals like sheep, fowls, pigs and rabbits which they sold to the colony residents.
- (vii) The Recaptives helped to improve security as some of them were drifted into the British army and navy.
- (viii) Construction of housing estates.
- (ix) Some also helped to spread Christianity, especially in the villages where there were no white missionaries.
- (x) They contributed to the development of the Krio language and culture.
- (xi) They produced the first African representatives in the Legislative Council of the colonial government.
- (xii) They founded secret societies like 'Ojeh' which did not only enrich their culture but also regulated social behavior in the community.
- (xiii) The Recaptives took part in the construction work in Freetown at the time.

QUESTION 5

(a) Name any three groups of Freed Slaves that were settled in the Sierra Leone Colony

This question was also a popular question. A good number of the candidates answered this question but it was poorly done. Part (a) did not pose any challenge for the candidates as they were able to name the groups of Free Slaves that were settled in the Sierra Leone Colony although some of the names were wrongly spelt.

The greatest challenge here was with part (b) wherein candidates completely misunderstood the question. Candidates were asked to give reasons for the establishment of contact between the colony and the hinterland but they gave answers relating to the early contact with the Europeans.

The scheme provided the following points as suitable answers to part (b)

- (i) Black poor
- (ii) Nova Scotians

- (iii) Maroons
- (v) Recaptives/ Liberated Africans

(b) Give any four reasons for the establishment of contact between the colony and the hinterland of Sierra Leone.

- (i) The British Colonial government established contact between the colony and the hinterland in order to increase the revenue base of the colony.
- (ii) The colonial government in Freetown wanted to direct the agricultural and other natural resources in the hinterland to the colony for shipment to Britain.
- (iii) The colony residents wanted to engage in the trade with the people of the hinterland.
- (iv) The colonial government wanted to suppress the slave trade that was still going on in the hinterland.
- (vi) The Christian missionaries in the colony wanted to extend their religion into the interior.
- (vii) The colonial government wanted to explore the interior part of the country for other economic benefits.
- (viii) The British government wanted to secure and protect the colony settlement.

QUESTION 6

Outline any five ways by which Missionaries spread Christianity in Sierra Leone.

This was by far the most popular question and every candidate attempted this question.

The overall performance was average. Candidates were asked to outline the ways by which the Missionaries spread Christianity. Many of the activities of the missionaries that helped to spread Christianity were left out and some candidates focused on the problems encountered by Missionaries. However there were some very good answers given by some candidates. The scheme addressed the following points.

- (i) The Christian Missionaries preached against some inhuman practices and this encouraged some people to embrace Christianity.
- (ii) They establish schools to promote Christianity.
- (ii) The bible was translated into different Sierra Leonean Languages.
- (iii) The promotion of legitimate trade to promote slave trade.
- (iv) Introduction of new crops and farming techniques.
- (v) Hospitals or medical centres were established to reduce or eradicate diseases.
- (vi) They introduced vocational institutions.

- (vii) Training of Sierra Leonean clergymen.
- (viii) They built churches.
- (ix) Establishment of Orphanages.
- (x) Experimental farms were set up to promote agriculture.
- (xi) Evangelism through preaching and distribution of bibles and Christian tracks.
- (xii) Focusing on the conversion of rulers as a means of reaching their subjects.

QUESTION 7

(a) Name any three district headquarter towns along the railway lines in Sierra Leone

This was not a Popular Question only a handful of students attempted this question and the answers received were poor. It was believed that part (a) of this section was not well structured to attract students to the question.

- (i) Bo
- (ii) Kenema
- (iii) Makeni
- (iv) Magburaka
- (v) Moyamba

(b) In what four ways did the colonial government improve transportation in Sierra Leone?

- (i) The colonial government constructed trunk roads to link all provincial and district headquarter towns in the country.
- (ii) It also built a railway from Freetown on the west coast to Pendembu in the east and branch line from Bauya in the south –west to Makeni in the north.
- (iii) It also constructed and improve feeder roads in the interior to link the railway.
- (iv) It also laid out motor roads and streets in Freetown and all the district headquarter towns.
- (v) It built bridges across some major rivers where they passed and provided ferries on others.
- (vi) It constructed the Queen Elizabeth II Quay in 1945 to improve the Freetown natural harbor as well as many wharf's and jetties in other parts of the country.
- (ix) It also provided for air transportation by constructing an international airport at Lungi in 1947 and smaller airfields in several parts of the country for domestic use e.g. Hastings, Bo, Kenema, Kono and Bonthe.

QUESTION 8

(a) Name any three political parties formed in Sierra Leone before Independence.

This was a Popular Question the performance of candidates was satisfactory. A good number of them demonstrated mastery of the subjects in the answers given even though their expressions were poor.

The candidates were not able to write the names of the political parties in full. Their grades were also affected by poor spellings.

In part (b) the Candidates Performed better by outlining the features of the 1947 Constitution.

In part (a) the scheme required them to write the names of the Political Parties before Independence and not after.

(1) National Council of Sierra Leone (*NCHSL*) 1950

- (a) (i) National Council of Sierra Leone (NCSL) -1950
- (ii) Sierra Leone People's Party (SLPP) -1951
- (iii) United Progressive Party (UPP) -1951
- (v) Kono Progressive Movement (KPM) – 1954/5
- (vi) People's National Party (PND) -1958
- (vii) All People's Congress (APC) -1960

(b) Outline any four features of the 1947 Constitution of Sierra Leone.

- (i) The 1947 Constitution provided for a Governor, an Executive and Legislative Councils.
- (ii) The Governor remained the president of both the Executive and the Legislative Councils.
- (iii) It provided for a majority of 16 unofficial members as against 7 officials in the Legislative Council.
- (iv) The unofficial members included 2 Europeans, 4 elected from the colony and 10 from the Protectorate.
- (v) The Executive Council was to remain an official body with 2 nominated Africans.
- (vi) No literacy qualification was required for Protectorate representatives.

QUESTION 9

(a) *List any three international organizations outside West Africa that Sierra Leone joined after Independence.*

This was a very popular question which was answered by 95% of the Candidates. However despite its popularity the overall performance was below average.

The (a) part of the Question required candidates to list three organizations outside West Africa that Sierra Leone joined. Some Candidates listed organizations that were within West Africa and candidates who were able to give the correct answers did not give the correct spellings of the organization. For the part (b) Candidates stated the functions of the organization rather than the benefits Sierra Leone derived as a member.

Candidates could have provided the following points as answers

- (a) (i) The Common Wealth /The Commonwealth of Nations
- (ii) The United Nations Organization (UNO/UN)
- (iii) The Non –Aligned Movement (NAM);
- (iv) The Organization of African Unity/ African Union (OAU/AU)

(b) *State any four benefits Sierra Leone derived from her membership of the Economic Community of West African States (ECOWAS).*

- (b) (i) Sierra Leone had her industrial base expanded
- (ii) More job opportunities for the working population.
- (iii) Sierra Leone had a strengthened relationship with the member countries.
- (iv) Sierra Leone enjoyed free movement of goods and persons.
- (v) ECOWAS games have strengthened regional relationship.
- (vi) Financial assistance from ECOBANK.
- (vii) ECOWAS meeting provided opportunities for sharing issues of common interest with other heads of states.
- (viii) Restoration of democracy in Sierra Leone.
- (ix) Gained prestige by hosting ECOWAS meetings.
- (x) Benefitted from peace keeping activities of ECOWAS.
- (xi) Enjoyed relative peace among member nations.
- (xii) Sierra Leone enjoyed wider markets for its products.

ISLAMIC STUDIES 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The whole paper was not too bad. It was only the problem of candidates to be able to interpret questions and give the correct answers to the questions. Some even misinterpret question as they fail to know what really a particular question was all about. At the end they gave wrong answers for certain questions. Some were confused because question one was made compulsory.

2. CANDIDATES' STRENGTHS

Really as mentioned earlier questions were very straightforward not seeing an ambiguity. For certain centres you will find out that majority of the candidates will attempt certain questions that are simple for their level of understanding. However, there was large comparison in answers among candidates.

3. CANDIDATES' WEAKNESSES

There are a good number of weaknesses some fail to interpret questions, so you find out that candidates will give answers which are not in line with questions. The question will require one thing, then a candidate will answer that question in a different way which does not even have a link to the question. Question 2 was a poorly answered question.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) Mention the Khulafa ur-Rashidum.

(b) Write the biography of the first of them.

A good number of candidates answered it with majority passes and it was satisfactory.

Since it's a compulsory question everybody tried to attempt it and the performance was encouraging.

QUESTION 2

Examine the position of Islam on fortune telling.

Was badly done as candidates could not interpret it properly. Only few were able to earn reasonable marks.

As stated earlier question two was a problem for all candidates.

QUESTION 3

(a) Write Suratun-Nas either in Arabic transliteration (Q.114).

Was well done.

QUESTION 4

(a) Define Takbiratul-‘ Ihram.

(b) Explain the significance of Takbi ratul-‘ Ihram in Salat.

QUESTION 5

(a) Write Hadith 13 of an-Nawawi preferably in Arabic or transliteration.

(b) Translate it into English.

(c) Comment on it.

They were not well done.

Individual questions for questions 1, 2 and 6 were answered by almost all the candidates, but questions 2, 4 and 5 were a bit difficult and candidates were unable to interpret them. Candidates answered questions 1, 3 and 6 the same way which showed evidence of composition.

QUESTION 6

Highlight six conditions of women in pre-Islamic Arabia

Was perfectly done and almost a good number of candidates attempted it including question one which almost every candidate attempted.

LITERATURE-IN-ENGLISH 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper compared favourably with those of the previous years.

2. COMMENTS ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE.

The questions were set to match the competence of candidates as in previous years. The words used in the rubrics made for clarity in understanding and were appropriate for the ability of candidates to interpret and respond to. Words like 'comment' and 'examine' as were used in some questions on the paper made it less challenging for pupils than in previous years.

PERFORMANCE:

There was no specific difficulty in the question paper to have adversely affected the performance of candidates. Candidates had free choice of one question from one text in each section. Candidates should not therefore, under the circumstances, attempt both questions from the same text or section.

The questions should not have, in any way, presented any ambiguity.

3. CANDIDATES' STRENGTHS

Few candidates performed very well and scored excellent marks. These were the candidates who had thorough knowledge of the text coupled with the ability to communicate well using the English Language. The candidates were also able to apply the knowledge of the text to adequately respond to the questions.

In order to improve on performance, candidates must first and foremost have a good knowledge of the texts. They must read the texts exhaustively. They must also be able to communicate well in English Language. This will help them interpret and respond to questions and rubrics.

4. CANDIDATES' WEAKNESSES

PAUCITY

The main weakness observed was that the knowledge candidates had of the various texts was very superficial. There was evidence in some of the responses to suggest that candidates had either failed to read the texts at all or they were only exposed to some abridged version of the texts, probably in the form of notes and pamphlets. Most scripts reflected the same erroneous references and ideas.

POOR COMMUNICATION SKILLS

There was a clear demonstration that candidates had poor communication skills and could not make effective use of the English Language. This affected their understanding and interpretation of the questions and ultimately their capacity to perform well as they could not adequately express their thoughts and ideas in their responses.

This weakness could be overcome if candidates try to read more especially materials written in English Language.

Pupils must also try to use the English language more often in verbal communication to help them express themselves better using the language.

NARRATION

The inability of candidates to apply their knowledge of the texts to the demands of the questions contributed to the weak performance of the candidates. Some candidates resorted to mere narration of the plot. In so doing, they failed to directly address the question and this adversely affected their overall performance.

REPETITION

Some candidates demonstrated the tendency to repeat the same point in their entire response to the question. They therefore failed to score marks after the initial mention of a particular point.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

How is Sodom and Gomorrah portrayed in the novel?

The question demanded that candidates look at how Sodom and Gomorrah is portrayed in the novel. Being the setting of the novel, candidates were supposed to give the significance of the name, a brief history, its geographical location and the insanitary condition that prevailed there. The background to the establishment of Sodom and Gomorrah was highlighted together with the Biblical reference because of its vices, squalor, deprivation, misery and lawlessness were generally highlighted by candidates.

Candidates were able to discuss characters like Fofu and her friend, Odarley, her murdered sister, Baby T, and Mama Tsuru, her mother.

The other characters, as brought out by candidates, who inhabit the enclave Sodom and Gomorrah include Poison, Macho and Maami Broni and their life of crime for survival.

The other operatives in Sodom and Gomorrah, who are there for genuine reasons like shoppers and shop owners, especially the hairdresser Kabria chats with, were largely ignored by candidates.

QUESTION 2

Examine the significance of Kabria's second visit to the Agblobloshie Market.

In response to this question, candidates were expected to examine the significance of Kabria's second visit to Agblobloshie Market. This presupposes that there was a first visit.

Candidates must therefore give the background to the second visit which will invariably make reference to the first visit. Kabria's encounter with Fofo in the first visit to Agblobloshie Market precipitates her second visit. From the first visit, Kabria gets to know that the murdered Baby T is Fofo's sister and that sets the machinery in motion for an investigation into the matter.

Another significance of Kabria's second visit to the Agblobloshie Market which candidates were expected to highlight was her encounter with the hairdresser which contributes to unraveling the mystery surrounding Baby T's death. The conversation between the hairdresser, who laments her irresponsible runaway man and Kabria who resorts to the tactic of making up a similar story, brings up the issue of irresponsible men.

Candidates largely ignored the issues of "kayayoo"s and the brutality and violence faced by street children, evident in the appearance of the badly beaten Fofo.

Most candidates however brought out the significance of the visit as a major contribution to Fofo's rehabilitation as it gets the attention of MUTE which marks the turning point in her life.

QUESTION 3

Comment on the writer's use of song in the novel.

This question demands that candidates comment on the writer's use of song in the novel. Song permeates all aspect of life in Kufi and candidates are to refer to at least five songs (5) and discuss their effective use in the plot.

Candidates were able to bring out songs that were mostly used by women in the Kufi society, for various reasons like intimidating rivals, tantalizing husbands, attracting lovers, praising achievements and the songs widows sang on their lonely road.

They also made reference to Yaremi's song of fire which helps to cope with the pain of losing Ajumobi. The number of songs which helped her to teach Woye to count and at the same time to work faster was also mentioned by candidates.

Some candidates however misinterpreted the question and discussed the use of music in the novel.

QUESTION 4

Examine the relationship between Segi and Yaremi.

This question required candidates to examine the relationship between Yaremi and Segi and were expected to first and foremost establish the relationship between Yaremi and Segi.

Segi is not only a daughter, but also the first child of her mother, Yaremi. According to tradition, both of them share a very close relationship, a strong unbroken tie.

Most candidates however identified the relationship as merely mother and daughter.

Another point of emphasis brought out in the responses of candidates was the fact that Segi provides the support for her mother at the death of Ajumobi.

She allows her son, Woye to stay with Yaremi as a companion in her loneliness.

Many candidates also brought out the point of Segi going to Kufi unannounced to see her mother a week after the cap – picking ceremony, to lend support to her mother’s decision on the issue a second marriage.

QUESTION 5

What impression do you form of Bigger Thomas in the novel?

This question required the impression candidates form of Bigger Thomas in the novel based on assessment on his character and role.

The candidates were to bring out Bigger’s background which must include his age, social status and level of education. Generally, most of them were able to highlight these points and included the fact that he lives with the rest of his family in the same house in a deprived area in South side Chicago.

A lot of candidates who responded to this question stated the impression they formed about Bigger based on him as an embodiment of fear as is demonstrated by his discomfiture in the presence of Mr. Dalton and other whites. They also brought out the fact that his fear and suspicion of others influences his interaction with his fellow gang members. This ultimately results in his violent encounter with Gus in the poolroom. He also kills Bessie out of fear.

Some of the responses given by candidates revealed that Bigger is violent and selfish as he exhibits in terrorizing his sister, Vera, battering the rat, decapitating Mary's corpse and killing Bessie.

Candidates also considered Bigger as intelligent as he attempts to divert attention from himself to Jan Erlone as the prime suspect in the disappearance of Mary Dalton. Also the ransom note he got to extort money while diverting attention from himself.

A few candidates however mis- interpreted the question to mean Bigger's impression of the society he lives in.

Points on Bigger's individuality and his relationship with the other members of his family were largely ignored.

QUESTION 6

Examine the significance of Bigger's relationship with his mother in the novel.

This question required candidates to examine Bigger's relationship with his mother. They were to establish the fact that Bigger is the eldest child and first son of his mother, Mrs. Thomas which they mostly did. Candidates also did indicate first and foremost that the relationship is a strained one. Bigger lives with the rest of his family in a one – room apartment and finds his mother too nagging. She always tells him that he will come to a bad end and this breeds the fear and mistrust in him which eventually (ultimately) leads to his crimes, the inadvertent murder of Mary Dalton and killing of his girlfriend ,Bessie.

A few candidates were also able to bring out the fact that despite the strained relationship between them, Bigger's mother is concerned and cares about Bigger. She manifests this when she asks the Daltons for forgiveness on Bigger's behalf, for him to escape the death penalty and his life to be spared.

Generally, candidates did highlight the loveless relationship shared by Bigger and his mother though the answers lacked depth.

QUESTION 7

Comment on the role of Marquis Frederic in the novel.

This question required candidates to comment on the role of Marquis Frederic in the novel. As such, candidates were expected to identify the character and explain his contribution to the development of the plot especially towards the fulfillment to the ancient prophesy of restoration of the principality to the rightful prince.

By way of identification, candidates must bring out to be the fact that Frederic as the long lost father of Isabella, and has a legitimate claim to the throne of Otranto. A few candidates however wrongly identified Frederic to be Manfred.

Many candidates who attempted this question, failed to mention the chain of events which occasioned his return to Otranto. He had to leave Otranto to participate in the crusade against “infidels” after the death of his wife, his eventual capture and the prompting by the apparition which forces him to return to Otranto.

They did however highlight the announcement of Frederic’s mission to rescue Isabella and reclaim the throne of Otranto. Manfred’s unsuccessful attempt to prevent that from happening triggers the chain of events which leads to his dethronement.

Candidates were also able to establish that the dramatic arrival of Frederic at the Castle of Otranto coupled with the supernatural occurrences serve to destabilize Manfred.

The marriage between Isabella, Frederic’s daughter, to Theodore instead of Manfred or his son Conrad, thwarts Manfred’s attempt to legalize his hold on the Throne of Otranto and results in his exile from the castle.

QUESTION 8

Comment on the character of Hippolita in the novel.

This question demanded that candidates comment on the character of Hippolita. They were therefore expected to bring out aspects of Hippolita’s character as portrayed in the novel.

Most candidates who attempted this question correctly identified her as wife of Manfred, Prince of Otranto and mother of their two children Matilda and Conrad.

In relation to her husband, candidates extolled Hippolita’s virtues of an affectionate as well as a caring wife. This is evident when, at the sudden and ghastly demise of their son, Conrad, she is more concerned about her husband’s emotions than she is about her own. Hippolita is submissive and obedient to the extent of acquiescing to Manfred’s proposal to divorce her and marry Isabella.

Candidates also presented Hippolita as a doting and responsible mother. She cautions Manfred against the proposed marriage between Conrad and Isabella on grounds of Conrad’s age and health.

She is peace loving and demonstrates this when in an attempt to resolve the impasse in the family, she proposes a double marriage.

The negative aspects of her character were largely ignored by candidates. Her extremely docile nature was not highlighted. She fails to stop Manfred arranging the wedding for Conrad even though she is aware of his shortcomings.

Over all, candidates concentrated mostly on the positive aspects of her character.

LITERATURE-IN-ENGLISH 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper compared favourably with those of the previous years.

The paper demanded candidate's understanding of the texts and poems and tested candidates ability in presenting facts for each question.

Unfortunately, though about eighty percent (80%) of the entire candidates for the 2019 did not show or indicate these principal elements. The same shabby photo-copied answers spread to all the four regions of Sierra Leone.

Some self-created difficulties that could and would obviously negatively affect candidates' performances include; candidates could not read and comprehend the passage adequately.

More seriously is the lack of competent literature teachers, as well as dedicated ones.

2. CANDIDATE'S STRENGTHS

The very few good candidates are the serious and dedicated students.

Moreover, the countrywide sudden crack-down against examination malpractices resulted to candidates' awful performances. This strategy surfaces only the numerous examination malpractices but it does not indicate any improvement of candidates' performance above thirty-five percent (35%).

3. CANDIDATES' WEAKNESSES

Some of the main glaring weaknesses or examination immaturity point to the lack of knowledge of the prescribed texts in the country or their high prices.

Negative attitudes of candidates to learning dampened candidates' performances. The lusts for games, video-shows, block learning and studying habits just to share written answers.

The use of phones in examination halls or rooms is rampantly increasing. Implementing punitive measures are necessary to negate these practices.

Strict measures can prevent, or reduce or stop frequent visits to toilets by candidates in examination halls/rooms.

Additional incentives to supervisors and invigilators can go a long way to minimizing examination malpractices.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

How does the arrival of Whitehead in Mando land contribute to the development of the plot?

Questions 1 to 4 were very popular but majority of the candidates failed to pay justice to the demands of these questions. The conflict between tradition – as portrayed by kind and evil (as demonstrated by Maligu, Soko, Whitehead) were not highlighted by most candidates.

QUESTION 2

Discuss the use of irony in the play.

Narration of Whitehead’s coming dominated question 2 by majority of the candidates without stating the peaceful atmosphere that prevailed before his arrival.

QUESTION 3

Comment on the meeting in Akpara Hotel.

“Illusion” in question 3 was completely ignored by candidates that attempted it. Most candidates failed to provide instances in the play that are illusive.

QUESTION 4

Relate the visit of Aloho to Wazobia Hospital to the development of the theme.

The three main meetings of Aloho and Ochuole, with their different purposes, were not brought out by almost all the candidates that attempted question 4.

QUESTION 5

Examine the significance of Clybourne Park in the play.

Was not popular, probably Mrs. Johnson is not known or recognized by most candidates.

QUESTION 6

Examine the significance of Mrs. Johnson’s visit to the Youngers in the play.

Was shabbily attempted by very few candidates because of the “theme of assimilation in the question.

QUESTION 7

How does Mr. Hardcastle contrast with Mrs. Hardcastle in the play?

Almost all candidates that attempted question 7 dwelled mainly on Tony's enjoyment at the Ale house.

QUESTION 8

What role does Tony play in the relationship between Hastings and Constance?

Parents' role for question 8 were based on attitudes of parents in Sierra Leone. Answers were also inadequate.

All answers for poems, as usual, were not adequately addressed by the very few candidates that attempted this section. Additional attention or method is demanded in teaching poems at schools.

LANGUAGE SUBJECTS

c(i)

RÉSUMÉ OF THE LANGUAGE SUBJECTS

1. STANDARD OF THE PAPER

The Chief Examiners of the language subjects reported that the papers compared favourably with those of previous years. They maintained the standard expected of candidates attempting these examinations. They were within the scope of the syllabus.

2. CANDIDATES PERFORMANCE

The Chief Examiner for English Language 2(pg.95) reported that the performance of candidates was satisfactory, for French 2(pg.103) the Chief Examiner stated that candidates for the Western Area and Northern Region performed better than those in the Southern and Eastern Regions.

There were also exceptional candidates from some private schools.

3. CANDIDATES STRENGTHS

According to the Chief Examiner for French, some outstanding candidates showed mastery in grammatical rules and in the chronological order in which their essays were done.

For English Language 2(pg.95) an observation strength was seen in the mastery of the rubrics of the informal letter in terms of format, style and story writing.

4. CANDIDATES WEAKNESSES

As reported by the Chief Examiners the following weaknesses were noticed.

Weaknesses in the knowledge and use of the grammar of the language.

Indiscriminate use of the wrong tenses and too many errors in punctuation and spelling.

They were ill-prepared for the examination.

In French the outright use of English in writing the essays and lacked the French convention in writing letters.

c(ii)

5. SUGGESTED REMEDIES

Teachers should ensure candidates master grammatical structures.

Candidates should be serious and committed to their work.

Candidates should be encouraged to practice writing different types of essays with correct formats.

Candidates should be taught to express their thoughts in paragraphs.

Candidates should be careful to avoid errors in spelling, punctuation and grammar.

Candidates should be drilled in Summary and Comprehension.

Candidates should develop the habit of reading widely.

ARABIC 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper compared favourably with those of the previous years.

2. QUESTION ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

This entire process of the examination is one of standards. But to wrap it up, this year's performance is an exposition of excellence of individual candidates which secures them prospect in future academic task in this area. Inversely, it is this manifestation that determines how much of the weak qualities inherent in certain candidates. Some are not being prudent in dotting the characters of various words used. In Arabic at any time these characters are not dotted it exhibits different meaning to certain words. This naturally deprives them of marks to be earned.

There are instances wherein some candidates could start their composition with good facts but mid-way they totally lose their composure and go on writing songs, poems, old adages, or whatever that came to mind that sounds Arabic.

In letter writing, the inability of some candidates to use ordinary words of Arabic communication propelled them to use Qur'anic injunctions that have no connection because the discipline itself is about literature and grammar not Islamic jurisprudence.

3. CANDIDATES' STRENGTHS

It has been viewed with extreme sensitivity that there are some outstanding candidates whose talents are worth tapping through academic guidance.

Heads of Arabic department should technically serve as mentors and worth emulating through intellectual dynamism with keen sense of encouragement in whatever little way to keep them on their toes for future academic success.

Candidate must be admonished that with hard work there is a way to academic success.

The discipline has to be redesigned from the early mentality of youngsters or candidates to a living discipline with international and professional projections.

4. CANDIDATES' WEAKNESSES

Calculating candidates weaknesses is a remarkable pointer to their failure at the exams which clearly manifested on the scripts. It is like no proper tuitioning was given to them because they could not even spell or construct simple sentences with a conjunction or any other part of speech. Their weakness could be a mirror of the instructor or tutor **viz-aviz their** unlimited and unconditional right to make, interpret and instill the necessary stuffs in them.

The syllabus of this noble discipline should be humbly presented to all Arabic departments in various schools. To ensure that the instructors recruited must have been thoroughly researched as trained dynamic and qualified to proffer the academic development of future academics. The synthesis therefore is to embark on creating a fine intellectual environment with instructors having some amount of English background to be able to pass their teaching methodologies well.

It is of no doubt that Arabic as a foreign language could be of interest to the young. With the availability of audio tapes in teaching Arabic we will overcome the difficulty in listening, speaking and writing. A language develops as society evolves from lower to higher evolution trend. But in a contemporary society like ours computer is not part of the learning of Arabic. It is imperative therefore to make available computers with Arabic characters.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

In critically assessing question (1) it is of the required standard matched to the level of the examination.

A lot of candidates responded to it with brilliant responses.

However, there were some candidates whose responses to certain questions were not entirely adequate.

As a result of the way questions were formed, candidates found it different to reason smoothly and provide relevant responses to questions.

The responses of some candidates were really discouraging and answers were not clearly worded as required. Altogether, there were remarkable responses of some candidates in the most appropriate and excellent way to some questions.

ENGLISH LANGUAGE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The 2019 WASSCE for school candidates English Language paper 2 maintained the usual standard expected of candidates for this examination. The number of questions set in each section was consistent with the requirements of the syllabus; the quality of the questions set in each section was appropriate for the experience and linguistic ability of candidates at Senior Secondary School level and the total time of 2 hours was sufficient for, at least, a satisfactory treatment of the whole paper.

2. CANDIDATES' STRENGTHS

The general performance of candidates was satisfactory. Observable strengths of candidates were in the mastery of the rubrics of the informal letter.

Majority of candidates displayed a good knowledge of the format and style of the informal letter and of story writing. (These were the most popular questions – 1 & 5)

3. CANDIDATES' WEAKNESSES

SECTION A – ESSAY

Five essay topics on different writing skills were set and the candidate was to write on only one.

Writing good or standard essays seems to pose a great challenge for many candidates. Most candidates failed to treat the content of the essay adequately. Most fail to write the minimum of 450 words demanded for each essay. In some instances, the topic of the question was misunderstood or misinterpreted. Structural imbalance was common in most essays. Candidates failed to organise their essays well. Also, the inability to express their ideas lucidly and coherently coupled with incorrect format and writing style was glaring.

Furthermore, most candidates displayed a weakness in the knowledge and use of the grammar of the language. There was indiscriminate use of wrong tenses and too many errors in punctuation and spelling. The quality of their writing was affected by poor expressions which were mostly influenced by the L1. More often than not, most candidates scored below average to weak marks under the aspect of Expression and zero for Mechanical Accuracy.

SECTION B – COMPREHENSION

In this section, one comprehension passage was given and the candidates were required to read the passage carefully and answer all the questions set on it.

It was evident that most candidates failed to read the passage carefully and intelligibly enough to be able to extract the facts required as answers to the question.

Some candidates, it seems, did not bother to do any individual work but relied on collusion. The answers to the questions were the same for many candidates and these answers were not necessarily correct. It was observed in some instances that the answers were dictated to the candidates.

SECTION C – SUMMARY

One Summary passage was set and candidates were to read the passage and summarise the answers to the questions in six sentences.

Here most candidates failed to summarise the salient or main points as was required.

In all three sections, candidates' answers were marred by a lot of errors in punctuation, grammar and spellings.

Judging from the performance of the candidates on the whole, it was observed that the candidates were ill-prepared for the exam. Many factors may be responsible for this ranging from the inadequacies in the teaching and learning process to the fact that they spent a shorter time in Senior Secondary School preparing for the WASSCE.

SUGGESTIONS FOR IMPROVEMENT

SECTION A - ESSAY

- (a) Candidates should pay attention to understanding what a question demands and plan the contents of an essay well so that they will be able to treat it in depth.
- (b) Writing different types of essays with correct formats and suitable medium should be given much more practice.
- (c) Candidates should be taught to express their ideas vividly in coherent paragraphs and in a variety of sentence patterns and structure.
- (d) Candidates must be careful to avoid errors in spelling, punctuation and grammar.

SECTION B – COMPREHENSION

- (a) Candidates should be given intensive practice in reading comprehension passages carefully and intelligently and in answering different types of factual questions on the passage correctly.

- (b) Emphasis should be placed on answering questions based on inference or interpretation, grammatical structure of sentences and vocabulary replacement.
- (c) Candidates must be dissuaded from copying several sentences from the passage as answers.
- (d) Collusion in the examination halls must be discouraged.

SECTION C – SUMMARY

- (a) Candidates must be taught the art of summarising.
- (b) They should be drilled on how to answer summary questions correctly: i.e. to read the passage very carefully, analyse the question(s) intelligibly to get the salient points they should extract from the passage, write their answers in sentences as stipulated without the inclusion of irrelevant and/or extraneous material and to avoid making grammatical and expression errors when writing their answers.

On the whole, students must develop a habit of reading. Schools, starting from the primary level, must try harder to institute the culture of reading. Students must be encouraged to read widely and pay close attention to the mechanics of the English Language, proper or appropriate expressions, sentence construction and spellings.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Your friend wants to travel abroad for university education. Write a letter expressing your views about his intention and advising him on what to do.

This was one of the popular questions and was attempted by a very large percentage of candidates. On the whole, this essay was satisfactorily done. A large number of essays scored an average mark of 5 under the aspect of Content. This indicates that the topic was very much within the candidate's experience. Some candidates, however, failed to express their views about the friend's intention to travel for university education abroad. Most just started off by giving lots of advice.

About 40%, scored very good marks (6 or 7) for Content while some others had poor marks mainly because their essays were short, below half of the required length of 450 words or because they dealt with only one part of the question.

The aspect of Organization can be rated average to good in almost all the scripts whereas the aspect of Expression was mainly weak and below average.

Most candidates scored zero under Mechanical Accuracy.

QUESTION 2

A social club in your state is organizing an essay competition on the subject: "Prevention is always better than cure in health matters." Write your entry.

Only a small percentage of candidates attempted this question. The few candidates who attempted this question demonstrated knowledge of the correct writing style of an essay for entry in a competition.

Marks scored under the aspect of Content were below average to average as candidates did not quite bring out how or in what ways preventive measures in health matters are better than curative ones.

The aspects of Expression and Mechanical Accuracy posed their usual challenge.

QUESTION 3

There is a recent outbreak of disease in your school. Write a letter to the District Education Officer complaining about the unsanitary conditions of your school and suggesting at least three ways of improving the situation.

This question attracted a fair number of candidates. Most of them demonstrated knowledge of the correct writing style of formal letters.

The aspect of Content was however averagely treated. Many candidates did well in addressing the two parts of the question – complaining about the unsanitary condition of the school and suggesting ways of improving the situation. Although the subject matter of the essay seemed to be within the candidates' experience, they failed to consider the demands of the question; many dwelt on the outbreak of disease – what caused it, its effect and how it can be remedied.

The aspects of Expression and Mechanical Accuracy posed their usual challenge.

QUESTION 4

As the sports Prefect of your school, write a speech you will deliver to the newly admitted students on the benefits of participating in sporting activities.

This question was also attempted by a small percentage of candidates. In most cases, mastery of content and style was displayed. Candidates developed good points about the benefits of participating in sporting activities.

The aspect of Expression was average but that of Mechanical Accuracy posed its usual challenge.

QUESTION 5

Write a story that ends with the statement: And Dad was right after all.

This question was a popular question and was treated satisfactorily in most scripts. The narratives reflected the theme of regret, made for interesting reading and followed the pattern of having a beginning, a climax and a conclusion. The question seemed straightforward enough and was easily understood by the candidates.

The aspects of Expression and Mechanical Accuracy posed their usual challenge.

COMPREHENSION**QUESTION 6**

Read the following passage carefully and answer the questions on it.

Kola's parents were quite loving and kind. They wanted to bring up their only son well. They worked hard to make ends meet but provided him and his siblings with all their material needs. Also, they taught him to respect elders by never questioning their authority or looking into their eyes when they spoke. It was the height of disrespect to say an elder was wrong or to stand head raised when being addressed by him. Heads must be bowed and nodded in respectful affirmation of the wisdom emanating from the lips of the elderly. A young person was not expected to be as knowledgeable as an elder. According to an adage, what an elder sees lying down, the young cannot see from the top of a tree. Any infringement of these rules attracted instant reprimands.

Many people grew up in this atmosphere a few decades ago. The few recalcitrant ones who always broke the rules paid dearly for it and were labelled rude and incorrigible, kola wanted to be termed good and well behaved. He did all that was expected of him and enjoyed additional affection from his parents and elders. But he paid a price for it – fear. He was always afraid to express views that could be contrary to those of elders no matter how strongly he felt about them. The fear grew and spread even to his relationship with his mates. He was afraid of being pronounced rude or wrong. Gradually, he lost his self –confidence. This affected his speech as he started to stutter and later stammer. The condemnation of his parents and elders, combined with the ridicule of his mates, worsened the matter.

At the end of his secondary school career, kola realised that his strength was academics. He was among the best five in class. He gained admission to a renowned university and applied himself to his studies. Apart from his textbooks, he read novels and biographies and listened to

discussions on topical issues on radio and television. His lecturers soon recognised his academic proWess and encouraged him. His mates admired and sought after him especially when given difficult assignments in the courses they had in common. His speech improved, and by the time he graduated with a Second Class Upper in English Language, he had become a powerful speaker who could also use eye-contact and body language to sway his audience.

- (a) In what two ways were young people expected to show respect when an elder spoke?
- (b) How does the writer show that rules mentioned in the passage are no longer imposed?
- (c) What two factors gave rise to Kola's speech problems?
- (d) State two things that helped Kola to regain his confidence.
- (e) Contrast the attitude of Kola's mates in secondary school with that of his university mates.
- (f) "... to make ends meet ..." What does this expression mean?
- (g) "... to be termed good and well-behaved."
 - I. What grammatical name is given to this expression as it is used in the passage?
 - II. What is its function?
- (h) For each of the following words, find another word or phrase which means the same and which can replace it as it is used in the passage:
 - I. The height of;
 - II. infringement;
 - III. recalcitrant;
 - IV. renowned;
 - V. prowess;
 - VI. sway.

On the whole the comprehension questions were averagely done; although many were answered by colluding.

However, Question (a) was answered incorrectly in almost all the scripts. Some merely copied from paragraph one and failed to pick out the correct answers. Others wrote vague or empty sentences. Example: 'They should not look them in the eyes' and the answer required was: 'Young people were not to look elders in the eye'

SUMMARY

QUESTION 7

Read the following passage carefully and answer the questions on it.

Why do most academics, with sound qualifications and technical know-how, hardly ever venture into business? One would have thought that with their vast knowledge and discoveries in the technical world, they would do well as founders and owners of businesses. But that is not so, and for good reasons.

To begin with, consider the university academic with a chain of degrees, living in the staff quarters. His salary and allowances are fairly high and come in regularly. Thus, all things considered, he hardly has any cause to look outside. Besides, the environment in which he lives, located in a secluded area as it is, keeps him far removed from the real society. So, he may not be in touch with the stresses and strains which common people experience in the larger society and so may not have any cause to think of founding an outfit to solve any problem from which he can benefit financially.

Let us face it: the average entrepreneur thrives on loans, often raised from banks. So, he is a risk taker who is ready to part with his properties used as collateral should the business fail. Most university academics are scared of taking loans. In any case, even if they want to take risks, academics hardly ever have the type of properties that banks demand for collateral. We have to realise that an academic has spent a great part of his life acquiring qualifications, after which he tries to settle down in a rented staff apartment and save on a monthly basis to acquire a car, educate his children and manage to live comfortably. No bank would take a car, even if it is new, as collateral.

Then think of an academic who has spent most of his life researching into issues. Day by day, he thinks of how to address problems. With all these findings stored up in his brain, his one and foremost intent is to impart the wealth of knowledge at his disposal. That is where his joy lies, not in making millions in the business world. I know of a professor of Botany who lives virtually among plants and trees, the various botanical names ringing in his brain. He can tell you which species of trees would do well as furniture material, while pharmaceutical companies consult him on which herb would best cure what disease. But that is where it ends; he cannot be persuaded to go into lumbering, furniture making or drug production.

Then there are academics who do not believe that their discipline can fit into business. Consider a professor of Language Studies who insisted that his field could not lend itself to entrepreneurship. But he realised how wrong he had been when a girl who had earned her degree from his stable started part-time institutions in various parts of the city, and was living far more comfortably than he.

There are also some academics who tried to translate their research works into business enterprises without considering the reality in the larger society. Here was an academic who had earned his doctorate by studying goats. He tried his hand at raising goats for commercial purposes but discovered that his goats were not the type the marketers wanted. The goats were too beautiful to be slaughtered for meat and were too costly to be considered by local restaurants. He soon beat a retreat and tried his hands successfully at piggery, which he did not study for his awards.

- (a) In **five** sentences, **one** for **each**, state the reasons why most academics do not venture into business.
- (b) In **one** sentence, state why some academics fail when they venture into business.

The summary questions were averagely answered with much evidence of collusion. Many answers contained the main points required but they were not summarized; they included irrelevant or extraneous facts.

FRENCH 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The questions were standard and were meant to test the candidates knowledge in grammar and vocabulary. The questions were also logical and contemporary and the candidates were to use their imaginative skills to answer them.

The marking scheme was fair and well developed and that made marking easy. It captured almost everything that candidates were to provide as answers.

COMMENTS ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

The paper is considered as a standard one and was commensurate to the aptitude of the pupils even though some candidates did not perform as expected. Generally, candidates from schools in the Western Area and Northern Region performed better than those in the South and Eastern regions. The performance of pupils/candidates in the 2019 examination in French was not too different from other years due to the number of candidates who did not score the minimum score. On the other hand, there were exceptional candidates who scored far above the average and those candidates were from both private and public schools.

SUGGESTED REMEDY

As a way of suggesting, it would be wise for teachers to do their work diligently and see that the pupils master the grammatical structures, that will enable pupils write some amount of French in the essays. For pupils, they should also take their work seriously in order to write well because if they are to be proficient, they must master the rules of grammar.

2. CANDIDATES' STRENGTHS

Schools which had outstanding candidates showed that the teachers did their job well. It was observed that those outstanding candidates mastered the grammatical rules and did not make unnecessary mistakes. Their use of vocabulary was appropriate and that made the marking process easy. The essays were in a chronological order and they showed mastery in the way the essays were written.

These hardworking teachers must be recognized by both WAEC and their schools so that other schools will emulate their hardwork and dedication to duty.

3. CANDIDATES' WEAKNESSES

Contrary to the previous remark, there were candidates who were very weak. Among the weaknesses spotted were:

- The inability to use the correct tenses when writing

- The wrong use of English in writing their essays. That showed how they were lacking in both grammar and vocabulary.
- Some did not know the French convention in writing letters and that was responsible for the low grades in Section B (questions 4 - 6) which were letter writing.

As a way of suggesting, it will be wise for teachers to do their work diligently and see that the pupils master the grammatical structures. This will enable candidates write some amount of French in the essays. For pupils, they should also take their work seriously in order to write well because if they are to be proficient, they must master the rules of grammar.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Was one that demanded candidates to write about reasons for rural-urban migration.

La plupart des jeunes gens n'aiment pas vivre dans le village. A votre avis, pourquoi préfèrent-ils les grandes villes?

Those who answered this question did their best to bring out some of the reasons which included better education and job opportunities.

QUESTION 2

Was requesting candidates to write about a town they liked and why.

Parlez de la ville que vous aimez le plus.

A number of candidates responded well to the question. Among the points highlighted were good infrastructure, water supply and electric supply which were unique. Some even went further to talk about good leadership and better economy in those towns they stated. A good number of candidates did not answer question (3) which required them to discuss an adage with respect to an imaginative story. The few who attempted missed the point and did not score good marks.

QUESTION 3

Racontez une histoire pour illustrer le proverbe: Après la pluie, le beau temps.

A good number of candidates did not answer question three which required them to discuss an adage with respect to an imaginative story. The few who attempted missed the point and did not score good marks.

QUESTION 4

Were based on letter writing and the performance was fair.

Vous êtes en vacances et vous aidez votre mère dans son magasin. Ecrivez une lettre à votre ami(e) pour lui parler de votre expérience.

Most of the candidates did not know the difference between the French and English conventions in writing letters with regards to address, salutation and conclusion. Question 4 required candidates to write to a friend describing what they did during the vacation in a mother's shop. In other words, they were to narrate how they assisted their mother in the shop during the vacation. Few were within the context but a good number went out of context and narrated things that were not in the marking scheme.

QUESTION 5

Was asking candidate to write to an uncle narrating what happened during his/her 18th birthday.

Vous venez de fêter votre 18^{ème} anniversaire. Ecrivez une lettre à votre oncle pour lui parler de cette fête et pour le remercier de son cadeau.

In addition, candidates were asked to equally thank the uncle for a gift which he sent. This was the popular question in that section and the candidates were able to express themselves well. In fact about 60% of the candidates answered questions 5.

QUESTION 6

The final questions (question six) requested candidates to write to the Principal suggesting ways to use the money won from a competition.

Votre école a gagné une grande somme d'argent suite à un concours de débat. Ecrivez une lettre au directeur pour lui suggérer ce que l'école peut faire de l'argent.

Few candidates attempted this question and from speculation, the problem of vocabulary prevented them from responding to the question. Those who answered the question did their best in bringing out some interesting points which ranged from buying school materials to providing scholarships for needy pupils.

MATHEMATICAL SUBJECTS

d(i)

RÈSUMÈ OF THE MATHEMATICS SUBJECTS

1. STANDARD OF THE PAPER

The standard of the papers were comparable to those of the previous years, the questions were clear and straightforward and were within the scope of the syllabus.

2. CANDIDATES' PERFORMANCE

The Chief Examiner for Further Mathematics 2(pg.106) reported that there was a drop in the candidates performance.

The Chief Examiner for Mathematics 2(pg.113) mentioned that there was a slight improvement when compared to previous years.

3. CANDIDATES' STRENGTHS

For Further Mathematics 2(pg.113) candidates strength was shown in their adequate knowledge on mathematical symbols, formulae methods in solving equations.

In Mathematics Core 2(pg.113) candidates strengths were in the area of cross multiplication, fraction, quadratic equations, and arithmetic progressions.

4. CANDIDATES' WEAKNESSES

Candidates weaknesses for Further Mathematics 2(pg.106) questions were misunderstood or misinterpreted.

Poor diagrams, incorrect recordings of answers to the accurate level, incorrect use of formulae, incorrect measurement of angles in trigonometry and mechanics.

In Mathematics graph work, calculating percentage profit, construction using compasses, manipulation of numbers in standard forms, probability and fractions.

d(ii)

5. SUGGESTED REMEDIES

Teachers should endeavour to complete the syllabus. School authorities should endeavour to employ the services of trained and qualified teachers.

Contact hours should be increased for Mathematical subjects and where applicable team teaching should be encouraged.

Candidates should show interest in the subject and have a good grasp of the subject matter.

Candidates should adhere to examination rubrics.

FURTHER MATHEMATICS 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper was similar to that of previous examinations. The questions were drawn according to the rubrics of the syllabus. They were clearly stated.

The performance of the candidates was below that of previous examinations. One possible reason could be inviting students in SSS 3 to write the examination without adequate preparation.

SOME OF THE DIFFICULTIES OBSERVED IN CANDIDATE PAPERS WERE

- i) Use of wrong formulae in answering questions.
- ii) Not being able to interpret the questions.
- iii) Failure to draw suitable diagrams which would have helped them solve problems.
- iv) Coverage of the examination syllabus.

2. CANDIDATES' STRENGTHS

- i) A number of candidates were able to resolve vectors into column vector and found the Magnitude of the resultant force correctly. There was need for them to be assisted in finding the direction of the resultant force using bearings.
- ii) A number of candidates were able to state the equation of a straight line correctly but couldn't calculate the coordinates of a point that divides a line segment in a given ratio. More work needs to be done on internal and external divisions.
- iii) A number of candidates were able to state the half angle formula for $\tan \frac{\theta}{2}$ correctly but could not develop the correct quadratic equation to find $\tan 22.5^\circ$ in surd form.
- iv) In solving quadratic inequalities, a number of candidates were able to state the end points but failed to find the range of values of the variable used.
- v) Candidates could use the formula method in solving quadratic equations but should also be knowledgeable in using factors to do so as well.

3. CANDIDATES' WEAKNESSES

The following were observed as some of the factors that made candidates not to answer certain questions correctly:

- (i) Interpretation of key phrases and words such as "at least", "independent events", "ascending", "using the result in", "nearest whole number", "without using tables or calculator". Exercises should be done using the phrases and words and even include other words or phrases like "hence", "not more than", "at most", "descending" etc,

- (ii) Failure to draw suitable diagrams. Where possible, candidates should be encouraged to be drawing suitable diagrams which will aid them in solving problems.
- (iii) Failure to write answers correctly to the level of accuracy required.
- (iv) Resolving vectors in column form correctly. The correct use of the cosine and sine ratios in exercises will help them to overcome this difficulty.
- (v) Use of wrong formula in solving problems. Practice on this will aid them in solving problems in future examinations.
- (vi) Confusion on how angles are measured in trigonometry and mechanics. For forces, angles are measured using bearings to determine the direction of the resultant force.

4. DETAILED COMMENT ON INDIVIDUAL QUESTIONS

QUESTION 1

Two independent events K and L are such that $p(K) = x$, $p(L) = (x + \frac{1}{5})$ and $p(K \cap L) = \frac{3}{20}$. Find the value of x .

Most candidates failed to understand the meaning of the phrase “independent events”, . Instead of multiplying they added the probabilities ie $x(x + 1/5) = 3/20$

QUESTION 2

Seven participants in an art contest were ranked by two judges as follows:

| <i>Participant</i> | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> | <i>E</i> | <i>F</i> | <i>G</i> |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|
| <i>1st Judge</i> | 3 | 4 | 1 | 6 | 5 | 7 | 2 |
| <i>2nd Judge</i> | 3 | 6 | 2 | 5 | 7 | 4 | 1 |

- (a) *Calculate, correct to three decimal places, the Spearman’s rank correlation coefficient for the scores of the judges.*
- (b) *Comment on your results.*

The values given in the table were already ranked. A number of candidates re-ranked the values. Some did not use the correct formula for Spearman’s correlation coefficient. Most candidates did not make correct comments even though they calculated the correct value

QUESTION 3

F_1 (3 N, 030^0), F_2 (4 N, 090_0), F_3 (6 N, 135^0) and F_4 (7 N, 240^0) act on a particle. Find, correct to two decimal places, the magnitude of the resultant force.

Interchanging the sine and cosine ratios of the angles, in developing their column vectors for the forces made them to lose a number of marks.

The column vector should be expressed in this form

$$\begin{bmatrix} \sin \phi \\ \cos \phi \end{bmatrix} \text{ instead of } \begin{bmatrix} \cos \phi \\ \sin \phi \end{bmatrix} \text{ when using their scientific calculators.}$$

QUESTION 4

A uniform pole, PQ, 30 m long and of mass 4kg is carried by a boy at P and a man m away from Q. Find the distance from P where a mass of 20kg should be attached so that the man's support is twice that of the boy, if the system is in equilibrium.

[Take $g = 10\text{ms}^{-2}$].

Failure to develop the wrong diagrams made a number of candidates not to calculate the distance of the 20 kg mass from P correctly

QUESTION 5

Solve: $3x^{1/2} + 5 - 2x^{-1/2} = 0$.

Most candidates failed to express $2x^{-1/2}$ as $2/x^{1/2}$, hence couldn't develop the correct quadratic equation by substituting say P for $x^{1/2}$. Only a few candidates were able to find the values of x as $1/9$ and 4.

Some had problem with $x^{1/2} = -2$ (ie by squaring both sides to find the value of x

QUESTION 6

A point P divides the straight line joining X (1, -2) and Y (5, 3) internally in a ratio 2 : 3, Find the:

(a) coordinates of P;

(b) equation of the straight line that passes through N (3, -5) and P.

A number of candidates were unable to find the coordinate of point P that divide X(1, -2) and Y(5,3) in the ratio 2:3,. Hence, could not develop the correct equation of the line through N (3, -5).

Others found the coordinates of P as $(13/5, 0)$ but used either X (1, -2) or Y (5, 3) instead of N (3, -5) to develop the equation of the line.

QUESTION 7

(a) Find the sum of the series: $32 + 8 + 2 + \dots$

(b) Simplify: $\frac{1 - \sqrt{2}}{\sqrt{5 - \sqrt{3}}} - \frac{1 + \sqrt{2}}{\sqrt{5 + \sqrt{3}}}$

For question 7a, the terms of the series were taken as an arithmetic progression (AP) instead of an exponential sequence by some candidates (ie G.P). Hence, they used the wrong formula to find the sum.

QUESTION 8

Without using Mathematical tables or calculator, find, in surd form (radicals), the value of $\tan 22.5^\circ$.

Some candidates stated the half angle formula for $\tan \theta$ correctly ie $\tan \theta = \frac{2 \tan \theta/2}{1 - \tan^2 \theta/2}$,

but failed to substitute 45° for θ into the formula. This would have given them $\tan 22.5^\circ$ as $\sqrt{2} - 1$ after solving the quadratic equation.

Some candidates used the formula $\tan \theta/2 = \sin \theta / (1 + \cos \theta)$ which was brilliant of them, to solve for $\tan 22.5^\circ$ as $\sqrt{2} - 1$. This method was not originally part of the marking scheme. The following marking scheme was then developed and adopted

$\tan \theta/2 = \sin \theta / (1 + \cos \theta)$ B1 for $\theta = 45^\circ$
where $\theta = 45^\circ$
 $\tan 22.5 = \sin 45 / (1 + \cos 45)$ M1 for substituting
 $= \sqrt{2} / (2 + \sqrt{2})$ A1 for $= \sqrt{2} / (2 + \sqrt{2})$

$= \sqrt{2} (2 - \sqrt{2}) / (2 + \sqrt{2}) (2 - \sqrt{2})$ M1 for rationalizing
 $= (2\sqrt{2} - 2) / 2$ M1 simplifying
 $= \sqrt{2} - 1$ A1 for $\sqrt{2} - 1$

A large number of candidates only used their scientific calculators to find the value of $\tan 22.5^\circ$ as $\sqrt{2} - 1$. These candidates were denied the marks for this question since they didn't abide by the instruction in the question.

QUESTION 9

(a) Find the range of values of x for which $2x^2 \geq 9x + 5$.

For question 9a, almost all the candidates that attempted this question failed to carry out some form of working to determine the ranges of values of x .

- (b) (i) Write down in ascending powers of x the binomial expansion of $(2 + x)^6 - (2 - x)^6$.
 (ii) Using the result in (b)(i), evaluate $(2.01)^6 - (1.99)^6$, correct to four decimal places.

For question 9b, candidates was expected to substitute $x = 0.01$ into $384x + 320x^3 + 24x^5$ (i.e $(2 + x)^6 - (2 - x)^6$ instead substituted $x = 0.1$ in $(2 + x)^6 - (2 - x)^6$ and use their calculators to find the value of $(2.01)^6 - (1.99)^6$. Some candidates did not express their final answer correct to four decimal places as required

QUESTION 10

A circle $x^2 + y^2 - 2x - 4y - 5 = 0$ with centre O is cut by a line $y = 2x + 5$ at points P and Q . Show that QO is perpendicular to PO .

Candidates were able to find the coordinates of the center of the circle correctly but could not find the coordinates of the point of intersection of the line and circle. Hence, candidates were unable to prove that QO and PO are perpendicular.

QUESTION 11

(a) Given that $M = \begin{pmatrix} 3 & -5 \\ 4 & 2 \end{pmatrix}$, find:

- (i) M^{-1} , inverse of M .
 (ii) the image of $(1, -1)$ under M^{-1} .
 (b) Two linear transformations P and Q , are defined by $P: (x, y) \rightarrow (5x + 3y, 6x + 4y)$ and $Q: (x, y) \rightarrow (4x - 3y, -6x + 5y)$.
 (i) Write down the matrices P and Q .
 (ii) Find the matrix R . Defined by $R = PQ$.
 (iii) Deduce Q^{-1} , the inverse of Q .

For question 11b, instead of having matrices P and Q as $\begin{bmatrix} 5 & 3 \\ 6 & 4 \end{bmatrix}$ and $\begin{bmatrix} 4 & -3 \\ -6 & 5 \end{bmatrix}$ respectively.

Some candidates had P and Q as $\begin{bmatrix} 5 & 6 \\ 3 & 4 \end{bmatrix}$ and $\begin{bmatrix} 4 & -6 \\ -3 & 5 \end{bmatrix}$ respectively.

Hence lost marks for this section.

QUESTION 12

A box contains 5 blue, 7 green and 4 red identical balls. Three balls are picked from the box one after the other without replacement. Find, the probability of picking.

- (a) two green balls and a blue ball;
 (b) no blue ball;
 (c) at least one green ball;
 (d) three balls of the same colour.

For question 12b, ie Prob (no blue balls), some candidates interpreted this as prob (green balls + probability of (red balls) ie $7/26 + 4/26 = 11/26$

For question 12c, the phrase “at least “ was interpreted as,” “at most”, by a number of candidates.

For question 12c, Prob (three balls of the same colour) was understood as Prob (just one colour)

QUESTION 13

The ages, x (in years), of a group of 18 adults have the following statistics:

$\Sigma x = 745$ and $\Sigma x^2 = 33951$.

(a) Calculate the:

(i) mean age;

(ii) standard deviation of the ages of the adults, correct to two decimal places.

(b) One person leaves the group and the mean age of the remaining 17 is 41 years. Find the:

(i) age of the person who left;

(ii) standard deviation of the remaining 17 adults, correct to two decimal places.

A number of candidates answered question 13a correctly ie \bar{x} as 41.39 and S.D = 13.16. some candidates who attempted question 13b, were able to find the age of the person that left as 48 years but instead of subtracting 48^2 from 33951 (ie $33951 - 48^2$) A number of them subtracted just 48 from 33951 and were therefore unable to calculate the new standard deviation (S.D) required.

QUESTION 14

Three forces $0i - 63j$, $32.14i + 38.3j$ and $14i - 24.25j$ act on a body of mass 5kg. Find, Correct to the nearest whole number, the:

(a) magnitude of the resultant force;

(b) direction of the resultant force;

(c) acceleration of the body.

Candidates that attempted this question, were able to calculate both the resultant force and its magnitude but couldn't find the correct direction of the resultant force using bearings.

There was some confusion in candidate about whether to use their knowledge in trigonometry of how to find direction or use bearing as required in mechanics.

QUESTION 15

Two particles P and Q move towards each other along a straight line MN, 51 metres long. P starts from M with velocity 5ms^{-1} and constant acceleration of 1ms^{-2} . Q starts from N at the same time with velocity 6ms^{-1} and at a constant acceleration of 3ms^{-2} . Find the time when the:

(a) particles are 30 metres apart;

(b) particles meet;

(c) velocity of P is $\frac{3}{4}$ of the velocity of Q.

4

For question 15a and 15b, most candidates failed to develop the correct equations relating P and Q when they are:

- i. 30 meters apart: ii. Together as $2t^2 + 11t - 21 = 0$ and $2t^2 + 11t - 51 = 0$ respectively. Hence could not solve for correct the values of the time (t)

For question 15c, most candidates failed to express the velocities of P (ie V_P) and Q (ie V_Q) as $V_P = \frac{3}{4} V_Q$

MATHEMATICS (CORE) 2

1. GENERAL COMMENT ON THE PAPER AS A WHOLE

The paper compared favourably with those of the previous years.

2. COMMENT ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES PERFORMANCE.

The paper was friendly and the questions were clear and not ambiguous. The instructions were clear, the questions were within the syllabus. The marking scheme was friendly and sympathetic and to the point.

The overall performance of the candidates showed a little improvement as compared to previous years, though there were zeros and grades below 10%. But there were also reasonable grades above 80% and 90%. The number of passes this year should exceed last year's passes by a reasonable percentage. More question were drawn from number and numeration and algebraic processes, at least one question was drawn from the other areas of the syllabus excluding modular arithmetic and introductory calculus.

3. CANDIDATES' STRENGTHS

The responses of the candidates exhibited the following strengths.

- Cross multiplication and expansion.
- finding the LCM to clear fractions.
- reducing surds to a common surd.
- conversion from any base to base 10.
- use of the quadratic formula to solve quadratic equations.
- making one letter the subject of the formula.
- completing the table of values of a given relation.
- calculating coordinates of transformations.
- knowing that the common ratios of a GP are equal and forming equation out of them.
- knowing that distance = speed x time.
- calculating the volumes of cubes and cones.
- forming the quadratic equation using sums and products of roots.
- solving word problems of an arithmetic progression (AP) .
- adding and subtracting simple fractions using LCM.
- substituting values into a given relation.

4. CANDIDATES' WEAKNESSES

The under mentioned were some of the candidates weaknesses.

- manipulation of numbers in standard form.
- expressing the equation of the variation to find the constant of variation.
- substituting into an expression.
- Factorizing using like terms and common factors.
- calculating percentage profit.
- calculating the probability of an event chosen at random from two subsets of a set.
- additions and subtractions of vectors.
- drawing graphs of given relations.
- reading from graphs of relations.
- construction using a pair of compasses and drawing and labelling graph of transformation.
- drawing venn diagrams.
- finding angles of triangles enclosed in a circle using circle theorem and angle sum of triangles.
- expressing currency values by adding two zero after the decimal point.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) *Without using tables or calculators, evaluate $\frac{0.015 \times 0.567}{0.05 \times 0.189}$*

$$\begin{aligned} \frac{0.015 \times 0.567}{0.05 \times 0.189} &= \frac{15^3 \times 10^3 \times 567^3 \times 10^{-3}}{5 \times 10^{-2} \times 189 \times 10^{-3}} \\ &= \frac{3 \times 3 \times 10^{-6}}{1 \times 10^{-5}} \\ &= 9 \times 10^{-6+5} \\ &= 9 \times 10^{-1} \end{aligned}$$

Many candidates who attempted this question got the first step correct but failed to cancel. Instead they used calculator to arrive at the answer and so lost marks. Majority did not know what to do and they too lost precious marks. Many more others used the calculator and so gained no marks.

(b) *If $\frac{5y-x}{8y+3x} = \frac{1}{5}$, find, correct to two decimal places, the value of $\frac{x}{y}$.*

$\frac{x}{y}$

This question required candidates to find the ratio of x to y and give the answer correct to two decimal places. To do this, candidates were required to find the value of x/y to two decimal places, candidate could either find the values for x and y separately and find the value of x/y or find x/y from solving the equations $5y - x = 1$ and $8y + 3x = 5$

$$\begin{aligned} \text{thus: } \frac{5y-x}{8y+3x} &= \frac{1}{5} \\ 5(5y-x) &= 8y+3x \\ 25y-5x &= 8y+3x \\ 25y-8y &= 5x+3x \\ 17y &= 8x \\ 17 &= \frac{8x}{y} \text{ divide by } y \\ \frac{17}{8} &= \frac{x}{y} \text{ divide in } 8 \\ \therefore \frac{x}{y} &= 2.13 \text{ to } 2 \text{ do.} \end{aligned}$$

Here almost all candidates got 17/8 as answers but failed to convert to decimal and so lost good marks.

An alternative method is for candidates to use simultaneous equation method to find x and y separately, and then find x/y and convert to decimal

$$\begin{aligned} 5y - x &= 1 \dots\dots\dots (i) \\ 8y + 3x &= 5 \dots\dots\dots (ii) \\ \text{Solve for } x \text{ and } y \text{ find } \frac{x}{y} \end{aligned}$$

Try and see what you can get.

QUESTION 2

(a) Z varies directly as x and inversely as twice the cube root of y. If Z = 8, when x = 4 and y = 1, find the relation for y in terms of x and Z.

8

This question required candidates to formulate the equation of the variation introducing the constant and proceed to simplify.

$$\text{thus: } Z \propto \frac{x}{2(3\sqrt{y})}$$

$$Z = \frac{kx}{2(3\sqrt[3]{y})}$$

Substitute $8 = \frac{kx}{2(3\sqrt[3]{\frac{1}{8}})}$

$$2(3\sqrt[3]{\frac{1}{8}}) = 8 = \frac{4k}{2(\frac{1}{2})}$$

$$4k = 8$$

$$\therefore k = 2$$

$$Z = \frac{2x}{2(\sqrt[3]{y})}$$

Making y the subject we have

$$\sqrt[3]{y} = \frac{x}{Z}$$

Raising both sides to the power 3 we have

$$Y = \left(\frac{x}{Z}\right)^3 \text{ or } \underline{y = \frac{x^3}{Z}}$$

Many candidates could not express Z are being equal to $\frac{kx}{2(3\sqrt[3]{\frac{1}{8}})}$ and so could not find the

correct value of k , the constant of variation. There by losing good marks for the questions

(b) Factorize completely: $4b^2 - ab + (a + 9b)^2 - a^2$.

This question required candidates to factories fully. They were required to first expand $(a + 9b)^2$, what like terms and finally factorise.

$$\begin{aligned} \text{Thus : } & 4b^2 - ab + (a + 9b)^2 - a^2 \\ & = 4b^2 - ab + a^2 + 18ab + 81b^2 - a^2 \\ & = 4b^2 + 81b^2 - ab + 18ab \\ & = 85b^2 - ab + 18ab \\ & = 85b^2 + 17ab - 17b(5b+a) // \end{aligned}$$

Majority of the candidates were not able to expand $(a + ab)^2$ correctly. There who expanded correctly failed to collect like terms currently marks were lost as a result of this failure.

QUESTION 3

(a) Solve: $\frac{5x-7}{6} + \frac{2x-3}{4} = -\frac{2}{3}$

Candidates were required to solve the fractional equation by finding the LCM and clear all fractions, then expand and solve for x .

$$\begin{aligned} \text{thus: } \quad \frac{5x-7}{6} + \frac{2x-3}{4} &= -\frac{2}{3} \\ \text{LCM} = 12 \rightarrow 2(5x-7) + 3(2x-3) &= 4(-2) \\ 10x - 14 + 6x - 9 &= -8 \\ 16x &= 15 \\ \therefore x &= \frac{15}{16} \end{aligned}$$

For this question different candidates used different LCMS. Some used 12, other used 24 and yet others used 48 and 36. But most failed to expand and collect like terms correctly. But the whole most candidates got the marks while many others lost marks as a result of failing to simplify correctly.

$$(b) \text{ Evaluate: } \frac{\sqrt{28} + \sqrt{343}}{2\sqrt{63}} + \frac{5}{3}$$

This question required candidates to express the values in the expression to root 7, simplify the roots and simplify the ensuing fractions.

$$\begin{aligned} \text{thus: } \frac{\sqrt{28} + \sqrt{343}}{2\sqrt{63}} + \frac{5}{3} &= \frac{2\sqrt{7} + 7\sqrt{7}}{6\sqrt{7}} + \frac{5}{3} \\ &= \frac{9\sqrt{7}}{6\sqrt{7}} + \frac{5}{3} \\ &= \frac{9}{6} + \frac{5}{3} = \frac{9+10}{6} = \frac{19}{6} \\ &= 3\frac{1}{6} \end{aligned}$$

Most candidates were able to express the values in the expression to root 7 correctly, some who could not simplify the fractions correctly lost marks. However a good number got the marks.

QUESTION 4

A car dealer made a profit of 22.5% by selling a car for GHc 58,000.00. Find, correct to two decimal places, the percentage profit if the car had been sold for GHc 61,200.

This question required candidates to first find the cost price when the car was sold for GHc 58,000.00 at a profit of 22.5%, then find the percentage profit when the car was sold for GHc 61,300.00.

Thus: Let x be Cost price

$$\text{then } \frac{122.5}{100} x = 58,000$$

$$x = \frac{58,000 \times 100}{122.5}$$

$$x = 47,346.94$$

$$\therefore \text{cost price} = \text{GH } 47,346.94$$

$$\begin{aligned} \therefore \text{Profit} &= 61,200.00 - 47,346.94 \\ &= \text{GH } 13,853.06 \end{aligned}$$

$$\begin{aligned} \therefore \text{Profit \%} &= \frac{13,853.06}{47,346.94} \times 100 \\ &= 29.2586 \\ &= 29.26\% \end{aligned}$$

Many candidates were able to find the correct cost price and the subsequent percentage profit. But a good number had the correct ideas and could not simplify correctly and so lost marks.

QUESTION 5

(a) A number is chosen at random from $Q = \{1, 2, 3, \dots, 10\}$. Find, the probability that the chosen number is either a prime factor of 42 or a multiple of 3.

Candidates were required to extract from the set $\{1, 2, 3, \dots, 10\}$ the subset of (i) Prime factor of 42 and (ii) Multiple of 3 and to find the probability of selecting either a prime number or a multiple of 3.

thus: From the set $\{1, 2, 3, \dots, 10\}$

prime factors of 42 = $\{2, 3, 7\}$.

multiples of 3 = $\{3, 6, 9\}$

but 3 occurs both as a prime factor and also as a multiple.

$$\begin{aligned} \therefore \text{prob (a prime or multiple)} &= \frac{3}{10} + \frac{3}{10} - \frac{1}{10} \\ &= \frac{5}{10} \\ &= \frac{1}{2} \end{aligned}$$

Most candidate who attempted this question failed to realise that if an element belongs to the intersection of two sets, that element must be subtracted to find the probability of either/ or. So most candidates failed to subtract $\frac{1}{10}$ from the probability of either a prime factors of 42 or a multiple of 3, so they lost marks as a result.

(b) If $110_x = 1020_{\text{four}}$, find the value of x .

This question required candidates to expand both sides to bring them to base 10, and solve for x . For the answer, candidates were required to ignore the negative solution of x and use the position value only as answer.

thus: $110_x = 1020_{\text{four}}$

$$\rightarrow (1x^2) + (1x^1) + (0x^0) = (1x^3) + (0x^2) + (2x^1) + (0x^0)$$

$$x^2 + x + 0 = 64 + 0 + 8 + 0$$

$$x^2 + x - 72 = 0$$

$$x^2 - 8x + 9x - 72 = 0$$

$$x(x-8) + 9(x-8) = 0$$

$$(x-8)(x+9) = 0$$

$$x = 8 \text{ or } -9$$

$$\therefore x = 8$$

Most candidates got two values of x as 8 and -9 and dropped. They failed to ignore the -9 since a number base is never negative and so lost marks. A handful however realised this fact and got marks as a result.

QUESTION 6

(a) If $a = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$, $b = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ and $r = a + \frac{1}{2}(a - b)$, find:

(i) r ;

(ii) $|r|$.

This question required candidates to use their knowledge of vector addition and subtract to find the value of r .

(i) thus: $a = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$, $b = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ and $r = a + \frac{1}{2}(a - b)$

$$r = \begin{pmatrix} 2 \\ 3 \end{pmatrix} + \frac{1}{2} \left[\begin{pmatrix} 2 \\ 3 \end{pmatrix} - \begin{pmatrix} 4 \\ 5 \end{pmatrix} \right]$$

$$= \begin{pmatrix} 2 \\ 3 \end{pmatrix} + \frac{1}{2} \begin{pmatrix} -2 \\ -2 \end{pmatrix}$$

$$= \begin{pmatrix} 2 \\ 3 \end{pmatrix} + \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$= \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$\begin{aligned}\therefore |r| &= \sqrt{1^2 + 2^2} \\ &= \sqrt{5} \text{ units}\end{aligned}$$

Most candidates had the answers correct concepts and know how. But they were writing vectors as fractions. ie most were writing as $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ as $\frac{2}{3}$ and $\frac{4}{5}$ $\frac{4}{5}$

When written as fractions the concept charges. Therefore most candidates lost marks in this respect

Many candidates got the value of r as $\left(\frac{1}{2}\right)$ which was wrong; so the $|r| = \sqrt{5}$ units was wrong. This was how they lost marks.

(b) Given that $a = bc$ and $n = \frac{mk}{ec}$

(i) express k in terms of a, b, e, m and n ;

(ii) find, correct to three significant figures, the value of k , when $a = 1, b = -4, e = 3, m = 7$ and $n = 5$.

Given $a = bc$ and $n = \frac{mk}{ec}$, candidates were required to express k in terms of a, b, m , and n .

They were required to find c in terms of a , and b and substitute in the expression $n = \frac{mk}{ec}$ and make k the subject of the formula.

(i) thus; from $a = bc$

$$c = \frac{a}{b}$$

substitute in $n = \frac{mk}{\frac{ae}{b}}$

$$aen = bmk$$

$$n = \frac{bmk}{ae}$$

$$\therefore k = \frac{aen}{bm}$$

substitute the values of a, b, e, m and n to find k

$$(ii) \quad k = \frac{\left(\frac{1}{2}\right)(3)(-5)}{(-4)(7)}$$

$$= \frac{-15}{2} \div 28 = \frac{-15}{2 \times 28} = 0.26785$$

$$= 0.268 \text{ (3 5 of sig. fig.)}$$

Most candidates could not express $c = \frac{a}{b}$ and substitute it into $n = \frac{mk}{ec}$ to make k the subject. The handful who did failed to substitute the given values correctly thereby losing marks.

In other words, making any letter the subject of the formula was a great difficulty for many candidates. Those who did that correctly only lost marks, because they could not simplify correctly, otherwise they got good marks.

QUESTION 7

(a) Copy and complete the table of values for $y = 5\sin x + 9\cos x$ for $0^\circ \leq x \leq 150^\circ$.

| x | 0° | 30° | 60° | 90° | 120° | 150° |
|-----|-----------|------------|------------|------------|-------------|-------------|
| 7 | | 10.3 | | | -0.2 | |

Candidates were required to copy and complete the table of values for the equation.

$$y = 5 \sin x + 9 \cos x$$

(b) Using a scale of 2cm to 30° on the x -axis and 2cm to 2 units on the y axis, draw the graph of $y = 5\sin x + 9\cos x$ for $0^\circ \leq x \leq 150^\circ$.

draw the graph and read from the graph.

(c) Use the graph to solve the equations:

(i) $5\sin x + 9\cos x = 0$;

(ii) $5\sin x + 9\cos x = 2$.

(i) x when $y = 0$

(ii) x when $y = 0$

(iii) y when $x = 45^\circ$

thus: $y = 5 \sin x + 9 \cos x$

| | | | | | | | |
|---|-----|------|-----|-----|------|------|--|
| x | 0° | 30° | 60° | 90° | 120° | 150° | |
| y | 9.0 | 10.3 | 8.8 | 5.0 | -0.2 | -5.3 | |

(d) Using the graph, find, the value of y when $x = 45^\circ$.

(i) When $y = 0$, $x = 118^\circ + 3^\circ$

(ii) When $y = 2$, $x = 108^\circ + 3^\circ$

(iii) When $x = 45^\circ$, $y = 9.8 + 0.2$

Some candidates who attempted this question did not copy and complete the table of values. They spent good time working out the values of y but did not place them in the table as instructed by the question. Many others completed the table but failed to draw the graph. The few who drew the graph could not read from it. Candidates who did not draw the graph proceeded to give values of x and y which were to be read from the graph; yet there was no graph. On the whole, candidates did not know how to draw the graph.

QUESTION 8

(a) Using ruler and a pair of compasses only, construct:

(i) the quadrilateral ABCD such the $|AB| = 6.5\text{cm}$, $|BC| = 9\text{cm}$, $|AD| = 4\text{cm}$,
 $\angle ABC = 60^\circ$ and $\angle BAD = 120^\circ$;

(ii) the perpendicular bisectors of \overline{BC} and \overline{CD} .

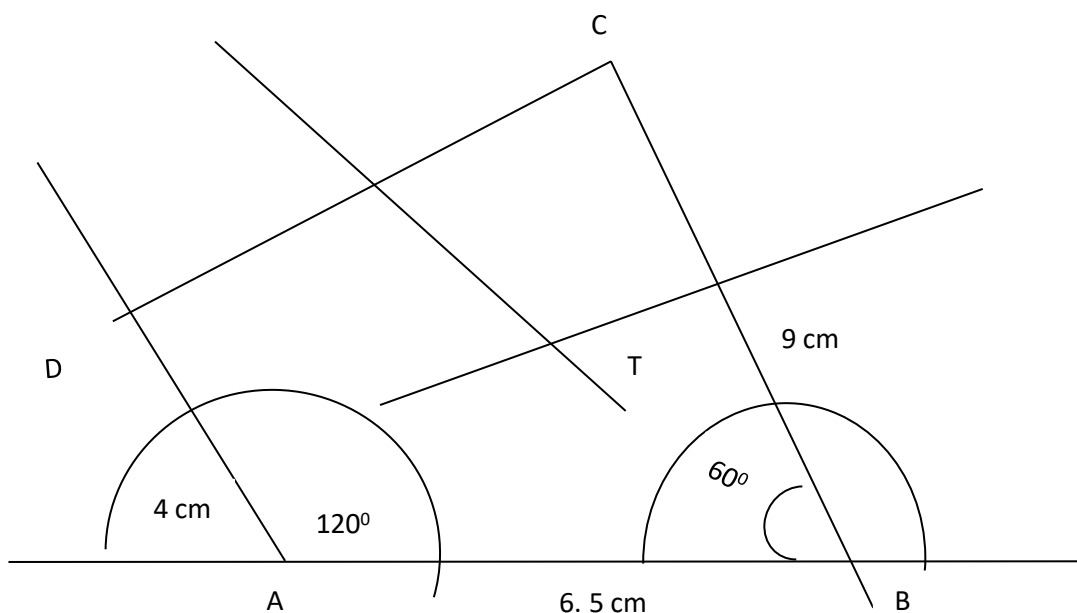
This question required candidates to construct the quadrilateral A,B,C,D with $AB = 6.5\text{cm}$, $\angle ABC = 60^\circ$, $\angle BAD = 120^\circ$, $AD = 4\text{cm}$ and $BC = 9\text{cm}$, Then construct the perpendicular bisectors of BC and CD to cut each other at T and used point T as centre to draw a circle to pass through at least two points of the quadrilateral ABCD. Measure BT and CD. In doing so, arcs must be clearly seen.

see construction.

(i) $BT = 4.8 + 0.1\text{ cm}$

(ii) $CD = 6.0 + 0.1\text{ cm}$

In this question, most candidates drew $\angle ABC = 120^\circ$ and $\angle BAD = 60^\circ$, Many were not able to draw the perpendicular bisectors, of BC and CD. Those who did could not draw the required circle. Measuring BT and CD was also not done correctly, and so marks were lost.



d. (i) $BT = 4.8 + 0.1 \text{ CM}$

ii $CD = 6.0 + 0.1 \text{ cm}$

QUESTION 9

(a) Using a scale of 2cm to 1 unit on both axes, draw on a sheet of graph paper two perpendicular axes $0x$ and $0y$ for $-5 \leq x \leq 5$ and $-5 \leq y \leq 5$.

Candidates were required to draw two perpendicular axes $0y$ and $0x$ using a scale of 2cm to 1 unit on both axes.

(b) Draw on the same graph sheet, indicating clearly all vertices and their coordinates:

(i) $\triangle ABC$ with vertices $A(2, 1)$, $B(1, 4)$ and $C(-1, 2)$;

(ii) the image $\triangle A_1B_1C_1$ of $\triangle ABC$ under a reflection in the line $y=0$, where $A \rightarrow A_1$, $B \rightarrow B_1$ and $C \rightarrow C_1$,

(iii) the image $\triangle A_2B_2C_2$ of $\triangle ABC$ under a translation by the vector $\begin{pmatrix} -2 \\ 1 \end{pmatrix}$ where $A \rightarrow A_2$, $B \rightarrow B_2$ and $C \rightarrow C_2$,

(iv) the image $\triangle A_3B_3C_3$ of $\triangle ABC$ under an anticlockwise rotation of 90° about the origin, where $A \rightarrow A_3$, $B \rightarrow B_3$ and $C \rightarrow C_3$;

(i) Also, candidates were required to draw on the same graph the $\triangle ABC$ with points $A(2,1)$,

$B(1, 4)$ and $C(-2,2)$ labelling the points correctly with their co-ordinates.

- (ii) Candidates were to draw on the same graph paper the image $\Delta A_1 B_1 C_1$ as a reflection of ΔABC on the line $y = 0$ such that $A \rightarrow A_1$, $B \rightarrow B_1$ and $C \rightarrow C_1$ with $A_1(2, -1)$, $B_1(1, -4)$ and $C_1(-1, -2)$ correctly labelling with their coordinates
- (iii) Candidates were to draw the image A_2, B_2, C_2 of $\Delta A, B, C$ on a 90° anti clockwise rotation where
 $A \rightarrow A_2$, $B \rightarrow B_2$ and $C \rightarrow C_2$ with $A_2(0, 2)$, $B_2(-1, 5)$ and $C_2(-3, 3)$ correctly label and on the same graph paper
- (iv) Candidates were to draw image $\Delta A_3 B_3 C_3$ with $A_3(-1, 2)$, $B_3(-4, 1)$ and $C_3(-2, -1)$.

(c) What single transformation maps $\Delta A_1 B_1 C_1$ onto $\Delta A_3 B_3 C_3$;

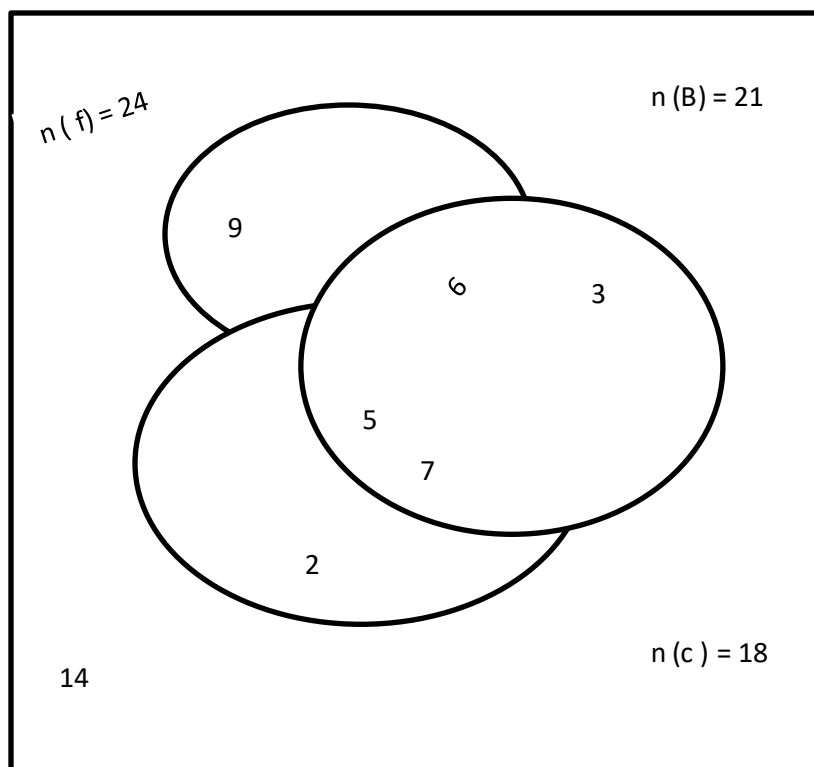
where $A_1 \rightarrow A_3$, $B_1 \rightarrow B_3$ and $C_1 \rightarrow C_3$.

The single transformation that maps $\Delta A_2, B_2, C_2$ $\Delta A_3 B_3 C_3$ is a reflection on the line $y = x$ or $y - x =$

The majority of candidates who attempted this question drew the required axes and triangle $A B C$ but failed to label them correctly with their co-ordinates and so lost considerable marks. Some others spent valuable time to calculate the co-ordinates but and failed to draw the triangles required and again lost marks.

QUESTION 10

- (a) In a class of 50 students, 24 like football, 21 basketball and 18 cricket. Six like football and basketball only, 3 like basketball only, 5 like all the three games and 14 did not like any of the three games.**
- (i) Illustrate this information on a Venn diagram.**
- (ii) Find the number of students who like:**
- (α) football and cricket only;**
- (β) exactly one of the games.**



Candidates were to draw the venn diagram showing the three intersecting sets enclosed in a rectangle or square, and label them correctly with the given information

$$\text{ii (b) } 13 + 6 - x + 5 + x + 3 + 7 + 6 - x + 14 = 50$$

$$x = 54 - 50$$

$$= 4$$

(c) number of students who like exactly one game

$$= 9 + 3 + 2$$

$$= 14$$

Many candidates who attempted the question could not draw the intersecting sets needed in the venn diagram and insert the given information correctly and so lost marks considerably. The calculations for x and b were in most cases correctly done, and so marks were gained.

(b) If $(3 - a)$, 6 , $(7 - 5a)$ are consecutive terms of a Geometric Progression (G) with common ratio $r > 0$, find the values of a .

This question required candidates to know that the common ratios of a geometric progression is found by a term divided by the preceding one are that is, for the G.P terms $3 - a$, 6 , $7 - 5a$, the common ratio is either $\frac{6}{3-a}$ or $\frac{7-5a}{6}$ and these are equal.

thus: for $3-a$, 6 , and $7-5a$ we have

$$\frac{6}{3-a} = \frac{7-5a}{6}$$

$$(7-5a)(3-a) = (6)(6)$$

Expanding $21 - 7a - 15a + 5a^2 = 36$

$$5a^2 - 22a + 21 - 36 = 0$$

$$5a^2 - 22a - 15 = 0$$

$$(a-5)(5a+3) = 0$$

$$\therefore a = 5, a = -\frac{3}{5}$$

For many candidates the deduction $\frac{6}{3-a} = \frac{7-5a}{6}$ was made and so marks were gained when the correct simplification and solution but some others, instead of $\frac{6}{3-a} = \frac{7-5a}{6}$ the rote $\frac{3-a}{6} = \frac{7-5a}{6}$, which was wrong and so precious marks were lost by such candidates.

QUESTION 11

(a) Two passenger trains, A and B, 450km apart, start to move towards each other at the same time and meet after 2 hours. If train B, travels $\frac{8}{7}$ as fast as train A. Find the speed of each train.

This question required candidates to use the concepts of distance, speed and time to solve the speeds of trains A and B moving towards each other 450 km apart which met after 2 hrs.

\therefore Thus: let the speed of train A = x

then the speed of train B = $\frac{8}{7}x$

time = 2 hrs

but distance = speed x time

\therefore Distance of A $\rightarrow 2(x) = 2x$

distance of B $\rightarrow \frac{8}{7}x(2) = \frac{16x}{7}$

\therefore Distance of A + Distance of B = 450

$$\therefore 2x + \frac{16}{7}x = 450$$

$$14x + 16x = 3,50$$

$$30x = \frac{3,50}{30}$$

$$\therefore x = 105$$

$$\therefore \text{speed of train A} = 105 \text{ km/h}$$

$$\text{and speed of train B} = 105 \times \frac{8}{7}$$

$$= 15 \times 8$$

$$= 120 \text{ km/h}$$

Many candidates got this question right. But many other candidates used x for the distance of train A and $450-x$ for the distance of train B, and used the time 2 hrs and $\frac{8}{7}x$ the speed of train A and arrival at the correct answer eventually. It cost them more time though. Many others who attempted the question did not know what to do and lost good marks.

- (b) *A solid cube of side 8cm was melted to form a solid circular cone. The base radius of the cone is 4cm. Calculate, correct to one decimal place, the height of the cone.*
[Take $\pi = \frac{22}{7}$].

This question required candidates to know how to calculate the volume of a cube and that of a cone.

They were required to find the volume of the cube and equate it to that of the cone and solve to find the height of the cone.

Thus: Cube of sides 8cm

$$\text{volume of cube} = 8 \times 8 \times 8 = 512 \text{ cm}^3$$

$$\text{volume of cone} = \frac{1}{3} \pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times 4^2 (h)$$

$$\therefore \frac{1}{3} \times \frac{22}{7} \times (4^2) h = 512$$

$$16.762 h = 512$$

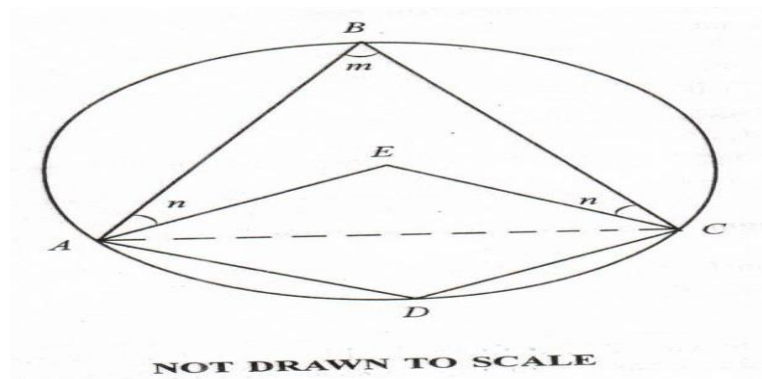
$$h = \frac{512}{16.762}$$

$$= 30.545$$

$$\therefore \text{height of cone} = 30.5 \text{ cm (1 dp)}$$

Most candidates who attempted this question lost marks only when they gave their answers as 30.6cm instead of 30.5cm. Only a small number of candidates missed the solution for the height of cone because they quoted the wrong formula for the cone. Others wrote 572 instead of 512 for the volume of the cone and so lost marks.

QUESTION 12



(a) The diagram shows a circle $ABCD$ with centre E . Quadrilateral $EADC$ is a rhombus, $\angle BAE = \angle ECB = n$ and $\angle ABC = m$.

Find:

- (i) m ;
(ii) n .

(b) Find the quadratic equation whose roots are $\frac{3}{4}$ and -4 .

This question required candidates to use their knowledge of the concept of angles at a centre equals twice angle at the circumference, angles of a triangle sum up to 180° and base angles of an isosceles triangle are equal. With this knowledge, candidates were required to calculate m and n .

$$\angle AEC = 2m$$

$$\angle ADC = 180^\circ - m$$

$$2m = 180^\circ - m$$

$$3m = 180^\circ$$

$$m = 60^\circ$$

(i) $\angle AEC = 2m = 2(60) = 120^\circ$

$\triangle EAC$ is isosceles with

Base angles equal, i.e.

$$\begin{aligned} \angle EAC = \angle ECA &= \frac{1}{2}(180 - 120) \\ &= 30^\circ \end{aligned}$$

From $\triangle ABC$

$$m + \angle BAC + \angle BCA = 180^\circ$$

$$m + (30^\circ + n) + (30^\circ + n) = 180^\circ$$

$$60^\circ + 30^\circ + n + 30^\circ + n = 180^\circ$$

$$2n + 120^\circ = 180^\circ$$

$$2n = 180^\circ - 120^\circ$$

$$n = \frac{60}{2}$$

$$30^\circ$$

Many candidates who attempted this question used the required concept correctly and so got good marks for it. To find the values of n , many used the concept of angles in a quadrilateral sum up to 360° instead of angles in a triangle $= 180^\circ$. They used $n + 60 + n + 240 = 360$

$$2n = 360^\circ - 240^\circ - 60^\circ$$

$$= 60^\circ$$

$$n = 30^\circ$$

On the other hand, many candidate did not use the right concept and so went astray.

12b) Candidates were required to find the quadratic equation whose roots were given

. To do this, candidates could use the concept that a quadratic equation is given by

$$x^2 - (\text{sum of root})x + \text{product of roots} = 0$$

$$\text{or } (x - a)(x - b) = 0 \text{ and expand}$$

thus: if root are $\frac{3}{4}$ and -4 , using sum and product we have

$$\text{sum} = \frac{3}{4} - 4 = \frac{-13}{4}$$

$$\text{product} = \frac{3}{4} \times -4 = -3$$

$$\text{equation is } x^2 - \left(\frac{-13}{4}\right)x + (-3) = 0$$

$$x^2 + \frac{13}{4}x - 3 = 0$$

Clearing fraction $4x^2 + 13x - 3 = 0$ is the required equation

$$\text{or } \left(x - \frac{3}{4}\right)(x + 4) = 0$$

$$x^2 + 4x - \frac{3}{4}x - 3 = 0$$

$$4x^2 + 13x - 3 = 0$$

Most candidates who attempted this question used the correct concept and got the answer right. However, a few candidates could not get the answer right because they could not simplify to get the sum and product of the roots correctly, and so marks were lost

QUESTION 13

(a) The fourth term of an Arithmetic Progression (A.P) is one less than twice the second term. If the sixth term is 7, find the first term.

This question required candidates to know how to find the general term of an arithmetic progression (A.P). If they were given that the fourth term equals twice the 1st term-1, they were required to know the formula for the 1st term, the 4th term and the 7th term and from them find the 1st term. They were to formulate two simultaneous equations and solve them to find a, the 1st term and d, the common difference.

Thus: $a+3 = 2(a + d) - 1$

- $a + d = 1$ (I)

$a + 5d = 7$ (ii)

Solving (I) $6d = 6$

$$d = 1$$

$$a = 7-5$$

$$= 2$$

Many candidate were not able to get equation (i) - $a + d = 1$. Even though they got the second equation $a + 5d = 7$, they could not get (a) and (d) correctly because they missed the 1st equation - $a + d = 1$.

However a handful were able to derive the correct equations and from them got the correct values of a and d.

(b) A clerk spends $\frac{1}{5}$, $\frac{1}{3}$ and $\frac{1}{8}$ of his annual salary on rent, transport, and entertainment

respectively. If after all these expenses he had GH¢ 4,100.00 left, find how much he earns per annum

This question required candidates to be able to add simple fractions to find what was spent and what was left of the man's annual salary. From There candidates were then required to find the man's salary.

$$\text{thus: Total fraction spent} = \frac{1}{5} + \frac{1}{3} + \frac{1}{8} = \frac{79}{120}$$

$$\text{Fraction left} = 1 - \frac{79}{120} = \frac{41}{120}$$

let the annual salary = x

$$\begin{aligned}\frac{41}{12}x &= 41,000 \\ &= \frac{41,000 \times 120}{41} \\ &= 100 \times 120 \\ &= 12,000\end{aligned}$$

Annual Salary = GH¢ 12,000.00

Candidates for this question, only lost marks for failing to insert the two 00 after the decimal point since this was money; i.e GH¢ 12,000.00 instead of GH¢ 12,000.00. Teachers should inform their candidates to insert two zeros after the decimal point where money was involved.

(c) Given that $f: x \dots 2x^2 - 8x + 5$,
 $g: x \dots x - 2$;

Find:

- (i) $f(-3)$;
 (ii) the values of x such that $f(x) = g(x)$.

Given $f(x)$ and $g(x)$, candidate were required to

- (i) substitute -3 into $f(x)$ and find its value when $f(x) = 2x - 8x - 5$ and $g(x) = x - 2$
 (ii) find $f(x) = g(x)$

Thus; if $f(x) = 2x^2 - 8x + 5$ and $x = -3$

$$\begin{aligned}\text{(i) then } f(x) &= 2(-3)^2 - 8(-3) + 5 \\ &= 2(9) + 24 + 5 \\ &= 18 + 24 + 5 \\ &= 47\end{aligned}$$

$$\begin{aligned}\text{(ii). } f(x) &= g(x) \\ 2x^2 - 8x + 5 &= x - 2 \\ 2x^2 - 8x - x + 5 + 2 &= 0 \\ 2x^2 - 9x + 7 &= 0 \\ (x - 1)(2x - 7) &= 0 \\ x - 1 = 0 \text{ or } 2x - 7 &= 0 \\ x = 1 \text{ or } x &= \frac{7}{2} \\ x = 1, \frac{7}{2}\end{aligned}$$

For this question, most candidate substituted correctly to find $f(-3)$ and gained marks. But however a good number of candidates got confused where negative sign were involved.

Finding $f(x) = g(x)$ gave a number of candidates difficulties. Majority had no difficulties equating $f(x)$ to $g(x)$. Again some candidates added $g(x)$ to $f(x)$ instead of equating. Instead of $f(x) + g(x)$, they added as $f(x)$ to $g(x)$ which was wrong.

SCIENCE SUBJECTS

RÈSUMÉ OF THE SCIENCE SUBJECTS

1. STANDARD OF THE PAPER

The Chief Examiners' Report for most of the papers stated that the papers were of the required standard, free of ambiguities and compared favourably with those of previous years. For Chemistry 3(pg.179), the marking scheme was exhaustive and provided alternative answers and for Science Core 2(pg.240) it was detailed and flexible. For Physics 2(pg.202) according to the Chief Examiners report, it was difficult to agree that all the questions were of the same standard and weight.

2. CANDIDATES PERFORMANCE

Physics 3(pg.217) stated better performance of candidates as compared to previous years. Physics 2(pg.202) also recorded better performance of candidates in parts I & II. Candidates performance in Physical Education 2 & 3 (pgs.224 & 226) were satisfactory as compared to previous year. For Health Science 3(pg.192) also stated an improved performance of candidates. Candidates performance in Science Core 2(pg.240) was below expectation. This was also the case for Chemistry 3(pg.179). For Chemistry 2(pg.163) performance of candidates can be rated as fair.

3. CANDIDATES STRENGTH

Candidates were able to adhere to the rubrics – Biology 2(pg.148) and Science Core 2(pg.240).

Issues of spelling mistakes and wrong formulae minimized in Biology 2(pg.148).

- Improvement in defining basic terms in Science Core 2(pg.240) and Biology 2(pg.148).
- An improved performance in the area of organic Chemistry and Science Core 2(pg.240)
- Candidates manifested knowledge in the following areas. Alovera leaf, Orange plant leaf, biological significance and adaptation of termites – Biology 3(pg.155).

e(ii)

- Candidates from schools in the regions performed better than those in the city – Agricultural Science 3(pg.142).
- Candidates were able to adequately answer questions on the following:-
 - o why a team could be disqualified in a 4 x 400m relay race;
 - o duties of a centre referee in a football game;
 - o importance of international sports competitions;
 - o name the types of bones in the human body;

For Physics 2(pg.202) candidates demonstrated strengths in the following:-

- knowledge of units for respective qualities;
- use of correct formulae for physical quantities;
- performance of mathematical operations;
- knowledge of appropriate formulae for different effects and reactions;
- some indication of fundamental principles of Physics in a particular topic.
- some candidates showed strength in spelling correctly, identification of diagrams, definition of terms, Health Science 3(pg.192)

For Chemistry 3(pg.179) candidates showed strength in the following:-

- recording titre values in two decimal places;
- making proper table for recording readings;
- correct calculations for volume;
- using concordant values;
- using correct symbols;
- identifying correct mole ratio;
- substituting correct values;
- pulling work in tabular forms;
- correctly copying tests as instructed on the question paper using correct reagents;
- labeling tests;
- writing correct symbols and formulae;

e(iii)

- writing final evaluations to three significant figures.

4. CANDIDATES WEAKNESSES

- Inadequate preparation for the examination – Chemistry 2(pg.163) and Science Core 2(pg.240).
- Inability to properly understand and interpret the questions
- Agricultural Science 3(pg.142), Science Core 2(pg.240) and Chemistry 3(pg.179)
- Poor drawing skills – Biology 2(pg.148).
- Poor communication skills – Agricultural Science 2(pg.133), Science Core 2(pg.240), Physical Education 2(pg.224), Physics 2(pg.202) and Chemistry 3(pg.179).
- Incomplete syllabus – Science Core 2(pg.240), Agricultural Science 2(pg.133) and Physics 2(pg.202).
- Inability to correctly label diagrams – Biology 2(pg.148).
- Poor handwriting – Physical Education 2(pg.224) and Science Core 2(pg.240).
- Non adherence to rubrics – Physics 2(pg.202) and Chemistry 3(pg.179).
- Mathematical manipulations – Physics 2(pg.202);
- Recording final quantities without units – Physics 2(pg.202);
- Inability to label illustrated diagrams – Health Science 3(pg.192)
- Failure to define terms or concepts correctly – Health Science 3(pg.192).

The following weaknesses were highlighted in Chemistry 3(pg.179).

- Using wrong reagents to test samples;
- Cancellation of burette titration reading;
- Deliberate alteration of titre values;
- Incorrect IUPAC names;
- Wrong icons, changes and symbols;
- Inconsistent burette readings to two decimal places;
- Arithmetic error to obtain titre values from initial and final burette readings;
- Using non-concordant values to calculate average volume of acid.
- Identifying correct mole ratio especially where redox reactions apply.

- Failure to give final evaluations of concentration to 3 significant figures and using correct units of the concentration.

5. SUGGESTED REMEDIES

- Candidates should have indepth knowledge of the subject and fully prepared before attempting the exam;
- Teachers should exhaust and cover all topics in the syllabus;
- Teachers should expose candidates to practical work;
- Candidates should improve on their writing skills, familiarize themselves with technical terms and concepts
- Candidates should improve on their spellings
- Ministry should impress it on schools presenting candidates for Science to have equipped laboratories;
- Teachers and candidates should make use of previous Chief Examiners reports to help overcome some of the mistakes that keeps repeating;
- Candidates should inculcate good reading habit to help improve on their spellings and writing skills;
- Schools should employed trained and qualified teachers;
- Qualified Science teachers be motivated especially in remote areas;
- Laboratories should be adequately equipped;
- Candidates should improve on their drawing skills paying attention to specific/required size of diagram, clarity of lines and ruled guidelines.

AGRICULTURAL SCIENCE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

REPORT FOR SCHOOLS OFFERING AGRICULTURE

Schools should have agricultural infrastructural facilities such as:-

- (a) School farm/site to conduct student practical
- (b) General stores for tools, equipment's/machinery, fertilizer seeds and chemicals
- (c) Poultry house, piggery pen, goats and sheep pens
- (d) Rabbits, ducks, guinea fowls, pigeons pens
- (e) Aquaculture/fish ponds (natural or artificial)
- (f) Other animal specimens e.g. snail, beehive etc.

This will facilitate the teaching of the subject , make the subject interesting and candidates can have the opportunity to familiarise themselves with them at practical exercises.

- Also induce candidates to identify an agricultural enterprise that they may be interested in and choose as a career.
- To enable them answer questions both practical and theory that may arise from the in school exams, tests and public exams.
- To enable them conduct standard methods of practical exercise that are followed by each topic taught in either theory or practical.
- Conduct visit, excursions to agricultural institutes demonstrational, experimental, plantation farms to familiarize themselves with their operations and management.

AGRICULTURAL SCIENCE TEACHERS

- Should be well trained and qualified with a minimum of B.Sc. in Agricultural Education.
- Should have five or more years teaching experience in the subject continuously at the WASSCE level.
- Exempted from teaching any subject related to Agriculture e.g. Biology, Health Science, Mathematics, General Science.
- Have thorough understanding of the syllabus/scheme prescribed for the examination so that candidates can go through the syllabus before they approach the examination.

2. CANDIDATES' STRENGTHS

- Observed in candidates who read and cover the syllabus for the examination.
- Observed in candidates who endeavour to answer full questions and score full marks.
- Candidates who have experience in practical exercise are able to answer questions that are related to them.
- Also observed in candidates who constantly read and answer past questions and exercises on the subject.
- Observed in candidates who have taken part in exercises, quiz, tests and other Agricultural Science related assignment.
- Observed in candidates who have endeavoured to read extra materials, books, journals that are related to the subject.

3. CANDIDATES' WEAKNESSES

- Inadequate covering and understanding of the syllabus prescribed for the examination by most candidates.
- Reliance on leakages which if not forthcoming will create embarrassment to the candidates.
- Inadequate use of examination time, writing of answers that are not related to the questions.
- Questions were not fully answered to gain full marks.
- Questions that are mathematically bias though may be easy were completely abandoned by majority of the candidates.

SUGGESTED REMEDIES

- Candidates are advised to carefully read and understand the syllabus prescribed for the examination.
- Put more effort in reading all the topics outlined for the examination.
- Candidate should not to confine themselves to class notes given by the teachers but to read enough materials pertaining to the examination.

- Also to read variety of textbooks, pamphlets or all other materials pertaining to the examination
- Continue to take class tests, quiz, assignments and well-marked by the teacher to ascertain their preparedness for the examination.
- Weak candidates should be given extra work for them to cope with the brighter ones.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) Differentiate between Communal and Individual land ownership.

- Some candidates mentioned these differences clearly and were awarded full marks.
- Others digressed mentioning the difference between commercial and subsistence farming which has no bearing to the question. As such answers such as output/yields are high, more expenditures incurred were given as the differences.
- Most candidates mentioned the differences but failed to match the points correspondently using a conjunction or table (mismatching)

(b) Branches of Agriculture

Candidates who understood well the question named these branches and the type of employment gained when you specialize in each of the branches e.g. Soil Science becomes soil scientist, others who could not understand named other subjects such as Biology, Chemistry and Mathematics which has no bearing to the branches e.g. Agriculture.

(c) Functions of farm implements.

The functions of these farm implements were well understood in farm operations and candidates gave their correct functions.

- (i) Sprayer – use for the application of water, chemicals etc. to crops farm animals and soil.
- (ii) Plough and
- (iii) Harrow

There was no clear distinction mentioned between the functions about these implements. So candidates gave the same function for both implements e.g. breaking of soils into clods, burying of weeds and covering of fertilizers and rice seeds in rice production.

QUESTION 2

(a) Differences between irrigation and drainage.

These differences were well stated by good candidates as the artificial application of water and removal of excess water from farm lands, using tables or conjunction. Even though some candidates stated these differences, they scored no marks because of not using tables or conjunction to show the differences.

(b) Methods of irrigating tomato farm.

This question was testing the methods of irrigating farm lands. Very good answers were given for this question such as drip, surface and sub-surface irrigation other candidates gave answers that have no bearing to the question e.g. Wind, land, well, chemical irrigation which shows their ignorance of the question.

(c) Advantages of irrigating farm lands.

Some candidates gave good answers in using irrigation systems in farming especially in crop production e.g. Make early planting possible, softens the soil for easy tillage and ensures all year-round production. Some candidates gave the opposite of irrigating farm lands, such as creation of erosion channels, destruction of farm lands and death of soil living organisms.

(d) Discussion on the cultivation of rice.

Most candidates have an idea on the cultivation of rice in both ecology i.e. swamps and uplands.

(i) Soil Requirement

Instead of soil requirements for rice production, most of the answers referred to climate requirements for rice production. Such as temperature of 20°C and rainfall ranging from 75 – 125cm without mentioning the soil requirements.

(ii) Land preparation

Majority of the candidates got the land preparation for rice production correct for both upland and swamp rice. They mentioned brushing, felling, burning, ploughing, puddling for swamp rice and ploughing done both manually or mechanically.

(iii) Propagation

Candidates also got the answers by planting of seeds and some went further to explain for swamp rice as nursing the seeds and later transplanted, few digressed by mentioning manually and mechanically planting of seed.

(iv) ***Weed control***

Candidates who do not understand the question gave the definition of weed and its effect on crop growth. Good candidates got the answers correct by mentioning application of herbicide as pre-emergence application.

(v) ***Fertilizer requirements***

Most candidates did not know the fertilizer to apply and therefore did not state it; others who knew that rice requires fertilizers mentioned the right type of fertilizer and the quantity required by hectare. They also mentioned the application of compost/organic manure and the method of application.

(vi) ***Harvesting***

Here, they explained the correct method of harvesting rice by hand or combined harvester, when the grains are ripe and hard.

On the whole, this part of the question was well answered by all candidates who attempted it.

QUESTION 3

(a) ***Effects of Environmental factors on agricultural production.***

(i) ***Wind***

Stated the effects of wind on rock weathering, use wind as source of farm power which has no bearing on the question. Few candidates who understood the question gave the right effects on agricultural production e.g. enhances pollination, helps in seed dispersal and destruction of both crops and farm structures.

(ii) ***Temperature***

Answers such as the hotness and coldness of a place, when high or low alternatively breaks the rock particles, all have no effects on agricultural production. However, good candidates gave good answers such as needed in germination of seeds, when high causes increase water intake in livestock.

(iii) ***Weeds***

Candidates clearly stated the effects of weed on agricultural production such as harboring of pests and pathogenic organisms which cause diseases of crops and livestock.

(iv) ***Soil pH***

Only the definition of soil pH was given by majority of the candidates but failed to mention the effects such as the presence of soil organisms determine the type of crop that can be grown in an area etc.

(b) Common tree species suitable for Agro-forestry practices.

Very few candidates mentioned these agro-forestry trees commonly found in West Africa e.g. pine, Teak, Yemen tree and sapele. Majority who attempted this question named fruit trees such as mango, palm tree, bamboo, lime, oranges which have nothing to do with the question. They failed to understand the distinction between forest trees and fruit trees.

(c) Economic importance of crop pests.

Most candidates referred to these pests as vertebrate pests animals and therefore gave complete different answers which included the following – used by farm animals as food, income, employment to the farmer etc. Those who understood the question gave very brilliant answers as: thus reduces the quantity/yields of crops, income of the farmers, affects the viability of stored product and increase the farmers cost of production.

QUESTION 4

(a) Completion of tables on feed nutrients of livestock.

This question was asking for the sources, functions and deficiency symptoms of carbohydrate and mineral in livestock production. Candidates were able to name the sources of these feed nutrients, but they found it difficult to state the deficiency symptoms when not available in the feeds. Very few candidates were able to get the table correct and therefore scored full marks for this section.

(b) Advantages of feeding farm animals with balance diet.

These advantages were given with very good answers such as resistant to diseases, proper growth and development, high productivity and attainment of good market value.

(c) Effects of farm practices in pasture Management.

(i) Burning

Most candidates gave the opposite of burning lands e.g. destruction of plants, desertification, and hunger to farm animals, destruction of soil living organisms, deforestation and pollution of farm lands. Candidates who understood the effects of farming gave very good answers e.g. stimulate the growth of grasses and legumes, destroy pests, parasites and pathogens and destroy weed seeds in pastures.

(ii) Ploughing

Here also, candidates gave the opposite of ploughing lands without referring to ploughing pasture e.g. destroying the growing pastures, reduce the productivity of pasture, less of nutrients in the soil. Candidates who had an idea of ploughing pasture lands gave brilliant answers e.g. aerates compacted soils, increases soil fertility, exposes soil fertility, exposes soil borne pests for destruction etc.

QUESTION 5

(a) Management practices in animal production.

Candidates who were familiar with management practices carried out in animal production gave good answers/explanation of the terms.

(i) Debeaking

Candidates could not clearly state the process of debeaking poultry birds and so refer to it as the total removal of the beak of poultry birds without referring to the effects of debeaking poultry birds such as reduce cannibalism, pecking of other birds.

(ii) Creep feeding

Some candidates refer to this term as the general feeding of farm animals for faster growth and development. Candidates who understood the term creep feeding gave reasons why such practices is done in animal production e.g. promote early weaning, promote rapid development of piglets.

(iii) Dipping

Common answers given for this process was dipping farm animals or washing the water which has no bearing to the question. Good candidates who were familiar with the practice gave the right answer as bathing of large animals with acaricides to control ecto-parasites, reduce skin infection in animals.

(b) Signs of heat in farm animals

This question was answered by majority of the candidates and they gave very good answers as restlessness, frequent urination, and loss of appetite and female animals mounting other animals. However, funny answers such as no sickness, no dying, very quick in action were answers given by candidates who do not understood the question.

(c) Effects of soil components on Agriculture

This question was asking for the function of soil component on agricultural production but candidates mentioned percentage components e.g. Soil air 25% and water 25% which has bearing to the question.

(i) Soil Air

Candidates mentioned the percentage composition leaving out the very important functions in crop production such as aids germination of seed, help in rock weathering, aids the survival of beneficial soil microbes.

(ii) *Organic matter*

Majority of the candidates never mentioned the effects of soil organisms on crop production as. very important component of soil and performs the following functions as checking soil erosion, regulates soil temperature, binds soil particles together and encourages the activities of soil microbes.

(d) *Why governments in West Africa should encourage agricultural extension*

Candidates highlighted the roles played by extension agents in agricultural production and management. Therefore, good answers expressing these roles were given by all who attempted this question e.g. to increase crops and livestock production, teach farmers improved farming methods, sources of farm credits. Those candidates who could not understand the roles of extension agents in agricultural production gave the general roles/importance of agriculture e.g. provision of employment, raw materials and foreign exchange which have no bearing to the question.

QUESTION 6

(a) *Explanation of terms used in farm management.*

(i) *Farm inventory*

This question/term was well explained by all who attempted it as complete listing of all assets on the farm and even stated the time when such activities will take place. However, some candidates who completely digressed referred to the term as investment into farming which was completely out of context.

(ii) *Farm records*

Very brilliant answers were given as a written document showing all major activities going on in the farm business operations, mentioning facts and figures of all activities undertaken in the farm operations/business.

(iii) *Profit and loss accounts*

This term was also explained as a measure of profit and or loss obtained by the farmer usually compiled in a year. Candidates went further to explain how these accounts are entered in books, files, sheet of paper and how it is used for future purposes.

(b) *Why records should be kept by farmer*

Candidates clearly stated the reasons with supporting answers as to know whether profit or loss, loans/credits for his farm operations.

(c) Factors affecting the distribution of pastures in West Africa.

Candidates who completely digressed gave very funny answers that were not factors affecting pasture distribution in West Africa e.g. Poor transportation, storage and poor road network, over grazing, over population of animals in pasture. However, good candidates mentioned some of these factors correctly as climatic factors, biotic factors and edaphic factors. Some even further explained them as rainfall, pathogens/diseases, temperature, pests, wind, fires etc.

(d) Role of Middlemen in marketing Agricultural produce.

The only role mentioned here is the provision of different marketing functions which facilitate produce distribution e.g. packing of goods, selling of goods, storing, branding of goods, etc. Candidates who understood these roles mentioned them correctly as thus:-

- Serve as a link between producer and owner;
- Provision of transport facilities;
- Buying goods in bulk from the producer;
- Credit/loan facilities to producers and retailers.

AGRICULTURAL SCIENCE 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper compared favourably with those of the previous years.

2019 SCHOOL WASSCE

The Agricultural Science Paper 3 was standard and appropriate compared to past examinations. The questions were quite appropriate for the WASSCE standard/level. It had a good blend of knowledge, application and recall. The rubrics were straight forward and within the scope of WAEC in house style.

The examiners did quite a good work despite the challenges of the quantum of papers. They met the deadline date set. A strict adherence to the marking scheme was exhibited by every examiner. This was seen in the vetting exercise and the time of reviewing the marking scheme during coordination meeting.

However, only in very few cases of variance in examiners recorded marks was appropriate. The hall was aerated, spacious, documents in the files were correct and the allocation of scripts went smoothly.

2. CANDIDATES' STRENGTHS

The general performance was not as good as expected. However, candidates made impressive scores on some questions. The question number 3 was answered well by majority of the candidates. The scores ranged between 10 and 15. This question was on crop germination, it tested seed germination.

The other question that candidates made impressive strength was question 4 (Animal Science aspect, preferably, Animal Health).

3. CANDIDATES' WEAKNESSES

The candidates continue to perform poorly in the Practical Examination. This year (2019) School WASSCE candidates for Agriculture 3 had difficulty in Soil Science. It seemed as if their teachers did very little or did not lay emphasis on teaching soil science. This poor performance continues year-in-year-out on this area. The questions on soil science practicals are poorly answered. The diagrams on School farms were hardly identified appropriately. The candidates that attempted these questions could not answer all the sub-questions.

SUGGESTED REMEDIES

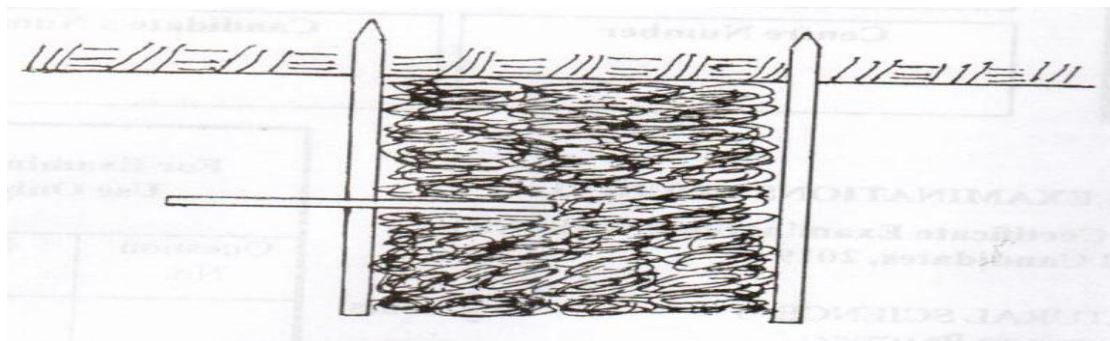
- The WAEC is to lay emphasis on practicals in all schools that offer Agricultural Science.

- To re-introduce the Practical workbook, where the candidates display some aspects by means of specimens.
- Candidates be encouraged to pay attention to the practical aspects of the subject.
- Encourage the candidates to buy relevant text books and the chief examiners reports from WAEC.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

The diagram below illustrates a method of compost making. Study it and answer the question that follow.



(a) Identify the illustrated method of compost making.

The candidates were required to identify the experimental set up on the type of compost. The expected correct answer was ‘heap method’. Majority of the candidates got it wrong. Just a handful of them gave the correct answer.

(b)(i) Name one material that can be used as starter in compost making.

(ii) State two roles of starter in compost making.

“Required candidates to name one material that could be used as a starter in making compost”. The answer to this point would be; Animal dung, old or matured compost or urea. They did not score mark for this point as no one got it correct.

(c) Mention two organic substitutes for compost in agriculture.

The candidates were to list two organic substitutes used in compost making. The answers were Green manure and Farm Yard Manure. The candidates that scored

marks gave Pig manure, Poultry Manure or Cow dung. These were correct because they are examples of Farm Yard Manure. For this sub-question, 90% of the candidates scored good marks.

(d) State six reasons why compost is added to soils.

They were asked to give reasons for adding compost Manure into the soil. Out of the 6 points on the question, majority of them scored at least a point correct. One single correct point was written in different ways. For such answers only one correct point is awarded a correct score.

(e) State three limitations on the use of compost in crop production.

The area of limitations to the use of compost in crop production was too strange.

Almost all the answers given were out of context and therefore no mark was awarded.

QUESTION 2

Study the diagrams below and answer the questions that follow.



This question was drawn on Farm tools, Farm structure, uses and other examples.

(a) Name each of the diagrams labelled I, II and III.

The candidates were asked to identify the diagrams set up and labeled I, II and III.

I – sickle, II – go-to-hell and III – farm structure, “a crib”. There was some amount of improvement in identifying these diagrams. Every candidate that made the attempt got one correct answer. It was interesting to know that some candidates displaced the positions of the named items. They wrote sickle in the place of Go-to-hell and so on. These candidates ended up getting zero. The other point of concern was the area of wrong spellings. Majority of the candidates got the exact place for their answers but with the wrong spellings. They could not get the scores to be awarded.

(b) *State two differences between the tools illustrated in diagrams I and II.*

| | <i>I</i> | <i>II</i> |
|------|----------|-----------|
| (i) | | |
| (ii) | | |

The candidates were to give two differences between a sickle and Go-to-hell. The candidates got points here. Their problem was the area of not contrasting the differences observed. When they wrote point 'a' under sickle, the point 'a' for Go-to-hell as point comparing them is written on another line. No score was awarded for such an answer.

(c) *State three advantages of using the structures illustrated in diagram III.*

This question expected candidates to give advantages of the crib for the entire papers marked, vetted and by a way of asking other Examiners, nobody got it correct.

(d) *Name the part labelled A in diagram III and states its main function.*

Expected candidates to name a part on diagram III labeled 'A' and state its function. This was another sub-question, nobody got a single mark on.

(e) *State two maintenance practices of the tools labelled I and II.*

The two maintenance practices for tools I and II were attempted. Some candidates made up the expected scores for that sub-question.

QUESTION 3

The table below shows the germination of thirty-five pigeon pea seeds planted in each of five seeds boxes A, B, C, D and E on a farm. Study and use it to answer the questions that follow.

| Seed box | Germination as at 7th day | Percentage of germinated seeds | Percentage of ungerminated seeds |
|----------|---------------------------|--------------------------------|----------------------------------|
| A | 18 | (i) | (vi) |
| B | 11 | (ii) | (vii) |
| C | 15 | (iii) | (viii) |
| D | 13 | (iv) | (ix) |
| E | 22 | (v) | (x) |

(a) *Complete the table on the percentage of germinated and ungerminated pigeon pea seeds.*

This question a table of seed germination.

The candidates were to complete the table on percentage germination and ungerminated seed. The candidates answered this part very well. They scored impressive marks, ranging 8 – 10.

(b)(i) *Which of the seed boxes had the highest percentage of germinated seeds?*

Was an intelligent test. They were to identify the box that had the highest germination percent. This seems to be within their scope. Over 90% of them gave the correct response.

(b)(ii) *Give a reason which could be responsible for the observed variation in germination as at the 7th day.*

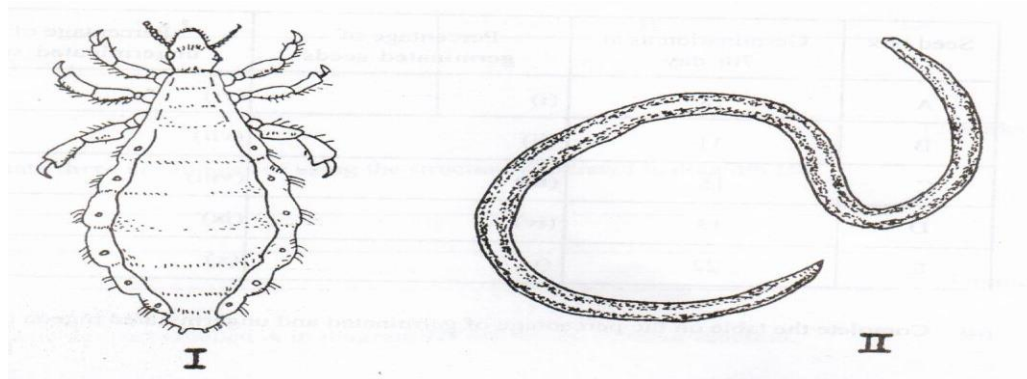
Required the candidates to state a reason that must have contributed to the variation in Seed Germination after the 7th day of sowing. This was not correctly answered by any of the candidates. It meant none of the candidates gave the expected correct answer to this question.

(b) *Mention three conditions necessary for germination of seeds.*

This question was correctly answered by majority of the candidates. The Q3 was the question that the candidates made their highest scores. Majority of the scored 14.

QUESTION 4

The diagrams below illustrate parasites of farm animals. Study them and answer the questions that follow.



Question 4 was on Farm Animals. Two diagrams were drawn 'louse and Rounded Worn' and labeled I and II respectively.

(a) *Identify the parasite labelled I and II*

Required the candidates to identify the two parasites of I and II. This was poorly done by a good number of the candidates. Some of them wrote wrong spellings for identification. They ended up getting zero score. The other candidates wrote the name for 'I' in places for 'II' and vice versa.

(b) *Name two farm animals each that could be affected by the parasite labelled I and II.*

Demanded the candidates to list two Farm Animals that could be affected by the parasites "I" – Louse and "II" – round worm. From the question set up, the candidates were to know which of the parasites was endoparasite and ectoparasite. With clear knowledge, you will be able to tell the names of the endoparasite and ectoparasite. The candidates could not get very high scores here. They could not write the correct spellings for the animals named.

(c) *State five effects of the parasite labelled I on its host.*

The candidates were to list five ways the Louse affects its host. None of the candidates was able to list the five points of how the Louse affects the host. The mark scored here was 3 as maximum.

(d) *Give two ways of controlling each of the parasite labelled I and II.*

Candidates were to state two control measures for I and II. Specimen I, the candidates were citing deworming as a control while others named dipping as a control measure for II. This implied they do not have the required idea on animal health. However, there were some candidates that made the correct attempts.

BIOLOGY 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

Question spanned a wide coverage of the syllabus including plant and animal physiology. Genetics, Ecology and concept of living. Questions were straight forward, and devoid of ambiguities.

Candidates would not perform better because of what seemed to be a general failure to appreciably cover the syllabus.

2. CANDIDATES' STRANGTHS

Most candidates were able to keep their responses within the spaces prescribed for each question.

Cases of candidates failing to write their names, centre and index numbers were very few.

There has been marked improvement in the spelling abilities of candidates as was exhibited in their responses to questions 1, 2 and 6.

Diagrams of Fishnet/basket drawn in response to question 3(c)(ii) were generally good with many scoring marks for details, quality, size etc.

3. CANDIDATES' WEAKNESSES

A general trend observed was candidates inability to answer the different parts of a question. This deficiency has contributed to the low scores and paltry performance.

Adequate coverage of the syllabus could serve as a potential remedy.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

All candidates were required to answer two questions out of four from this section.

QUESTION 1

(a)(i) Name the two main parts of the nervous system.

(ii) List two components each of the main parts of the nervous system named in 1(a)(i).

In (a)(i) and (ii) the two main parts of the nervous system were to be named; two components of each of the main parts of the nervous system were to be listed.

(b) Name the part of the brain that is involved in the actions listed in the table below.

| <i>S/No.</i> | <i>Actions</i> | <i>Part of the brain</i> |
|--------------|--|--------------------------|
| (i) | Receives impulse from the semi-circular canals of the ears | |
| (ii) | Control of speech | |
| (iii) | Regulation of involuntary actions | |
| (iv) | Sensation of hunger | |
| (v) | Perceiving smell | |
| (vi) | Retaining memory | |

In (b) candidates were asked to complete a table with a list of actions by writing the part of the brain responsible for each action listed.

(c) What is a conditioned reflex?

(d) Give

(i) two examples of conditioned reflex in dogs;

(ii) four examples of conditioned reflex in humans.

1(c) and (d) required candidates to define conditioned reflex; give two examples of a conditioned reflex; in dogs and few examples of conditioned reflex in humans.

This question attracted the majority of candidates with most scoring twelve out of twenty marks.

Very few candidates named the brain and spinal cord as the two main parts of the nervous system; the correct answers should have been the central and peripheral nervous systems.

Most candidates lost four valuable marks in (a)(ii) because of wrong spellings of the terms somatic nervous system and autonomic nervous system.

1(b) was poorly answered. Some candidates could not spell correctly the parts of the brain that initiate the actions intended. Common errors included the following:

Cerebelum instead of Cerebellum

Medulla instead of Medulla Oblongata

Hypothallamus instead of Hypothalamus

Responses to (c) and (d) were fairly good with most candidates scoring the maximum six marks.

QUESTION 2

(a)(i) What is translocation in plants?

(ii) Name the biological process that occurs before translocation takes place.

(iii) Name one tissue and one plant each where translocation occurs.

(iv) Name four substances that are translocated in plants.

In 2(a) candidates were to define Translocation in plants; name

- The biological process that proceeds translocation.
- One tissue and one plant part each where translocation occurs.
- Four substances that are translocated in plants.

(b)(i) What is malnutrition

(ii) State three effects of malnutrition in animals.

(iii) Name the classes of foods in a balanced diet.

Question 2 was the most popular choice of candidate attracting as much as 75%.

Marks scored ranged between 7 – 14 out of 20. Common errors identified included the following:-

1. Translocation is not the movement of materials but the movement of manufactured food.
2. Water is not translocated; it is the medium in which manufactured food is transported.
3. Protein is translocated as amino acids.
4. Malnutrition is a condition and not a disease.
5. Malnutrition is not the lack of food.
It is a condition in which nutrients are either not enough/too much/imbalanced such that the diet causes health problems.
6. The classes of foods in a balanced diet are six: carbohydrates, proteins, vitamins, fats and oil/lipids mineral salts and water.
NB: Roughage is not a food class.

QUESTION 3

A pond at the back of a school hostel containing living organisms was abandoned for some time

(a) Name two

(i) producers

(ii) consumers

that could be found in the pond.

(b) List three abiotic factors that would affect the organisms in the pond.

(c)(i) Name the instrument that could be used to collect large animals found in the pond.

(ii) Make a diagram, 6cm to 8cm long of the instrument named in (c)(i).

Candidates were also required to name the instrument that could be used to collect large animals found in the pond. A diagram of the instrument named was to be drawn.

(d) State three –

(i) benefits

(ii) disadvantages.

of the pond to the school and the environment.

The majority of candidates could only name one producer in the pond, algae/spirogyra, scoring one mark out of two. Phytoplankton named by few candidates was a wrong choice. Two correct consumers were named by many candidates.

Three abiotic factors were named correctly in (b) to earn most candidates three marks.

Majority of the candidates named correctly, the instrument that could be used to collect large animals found in the pond. Diagrams of the instruments named were fairly good with respect to quality, detail and size. Marks scored ranged between 5 & 7.

In (d)(i) incorrect answers such as these, were given as benefits of the pond to the schools and the environment:

- Serve as a source of water
- Provides income for the school as a source of food/fish.

Below are some of the correct responses expected:

- For collection of samples for experimental research.
-
- For ecological/population studies/research of organism that time in the pond.
- Habitat for some organism/bio diversity.

- Balance water cycling in nature.
- Breeding ground/niche for some organisms.
- For oxygen/carbon dioxide balance in nature.
- Balances food chain/food web.

Most candidates score 3 out of three marks for stating three disadvantages of the fish pond correctly.

QUESTION 4

(a) A man, heterozygous for dark skin colour, D is married to a homozygous light skinned woman, d and they have four children. With the aid of a genetic diagram each, determine the number of children that would be:-

- (i) light skinned;*
- (ii) dark skinned if a light skinned child was married to a spouse who has the same genes for skin colour as the father.*

Candidates were presented with a scenario in which a man heterozygous for dark skin color, D, is married to a woman who is homozygous for light skin color. Using genetic diagrams, they should determine how many of their four children would be –

- (i) Light skinned
- (ii) Dark skinned if a light skinned child was married to a spouse who has the same genes for skin color as the father.

(b) Explain briefly how vestigial structures are considered as an evidence of evolution.

Less than 30% of candidates attempted this question. A very small number about 2% scored 16 marks out of 20. The majority of candidates scored zero because their genetic diagrams lacked the basic requirements among which are: Failure to –

- (i) Write the X sign between the parental genotypes i.e. Dd X dd,
- (ii) Write the X sign between the gametes i.e. Dd X dd,
- (iii) Circle the gametes and spread them out.

Candidates were only able to name one example of a vestigial structure but could not explain how such structures are considered as evidence of evolution.

SECTION C

QUESTION 6

Was compulsory for candidate of Nigeria, Gambia, Liberia and Sierra Leone.

(a) State four ways by which the placenta is important to the development of a foetus in human.

(b) Explain briefly each the following diseases

- (i) hepatitis**
- (ii) kidney stones**

For a student's experiment on the germination of maize needs candidates were provided the following procedures carried out:

- some of the maize needs were boiled and put into dry soil in beaker:
- the beaker was placed in an air – tight dark cupboard for five days.

(c) A student was asked to perform an experiment on the germination of maize seeds. The student then boiled some maize seeds and put them into dry soil in a beaker. The beaker was placed in an air-tight dark cupboard for five days.

- (i) State the likely outcome of the student's experiment on the seeds**
- (ii) State three reasons for the outcome in (c)(i).**

- (d)(i) State three effect of the lack of sense receptors in the skin to humans**
- (ii) List three layers of the epidemic humans.**

(e) In the table below, state three differences between the alimentary tracts of earthworm and grasshopper.

| <i>Earthworm</i> | <i>Grasshopper</i> |
|------------------|--------------------|
| | |
| | |
| | |

Three differences between the alimentary tracks of earthworm and grasshoppers were to be tabulated in (e).

(f) Explain briefly the importance of –

- (i) Lightning;**
- (ii) Nitrosomonas in the nitrogen cycle.**

On the whole, majority of candidates failed to score 15 marks out of 30.

In (a) very few candidates scored four marks out of four stating correctly the importance of the placenta to the developing foetus. It should be noted that the placenta does not provide food /oxygen; it only serves as a passage through which these substances are transported. Most candidates failed to mention the direction of flow of materials (i.e. either from mother to foetus or from foetus to mother).

No candidate was able to score the maximum of four marks allocated each of (b)(i) and (ii). For the disease hepatitis, majority of candidates could only score two marks out of four. Mention was made only of its being a liver infection caused by a virus. No mention was made of the symptom and control of hepatitis.

Responses on “kidney stones” were dismally poor with many zero scores.

The outcome of the experiment in (a) was stated correctly by many candidates. The reason given for the seeds not germinating were fairly good with a fairly large number of candidates scoring the maximum of three marks.

In (d)(i) full marks were scored by the majority of candidates for stating correctly three effects of lack of sense receptors in the skin. Marks were lost in (d)(ii) by many candidates who could not spell correctly, the layers of the epidermis of the skin.

Granular layer was incorrectly spelt Granula, Malpighian layer as Malprigian.

In (e) candidates were to stat three differences between the alimentary tract of earthworm and grasshopper.

Most of the responses were tabulated as required. A common mistake was the swopping of correct responses i.e. responses that were correct for the earthworm were placed under the grasshopper and vice versa.

Explanation on the importance of lighting and Nitrosomonas in the nitrogen cycle, was poorly done, most candidates scoring an average of two marks out of five. It should be noted that when lighting occurs, nitrogen reacts with oxygen in the air to form nitros oxide, which is further oxidized to form nitrogen IV oxide/nitrogen dioxide which dissolves in rain water to form, nitric acid that falls to the ground, combines with mineral salts to form nitrates that are absorbed by plants.

Nitrosomonas is a nitrifying bacteria that converts ammonia (Not Ammonium compound) to nitrites in the soil.

The outlined points above are what were expected as responses to (f)(i) and (ii) respectively.

BIOLOGY 3

1. GENERAL COMMENTS ON THE PAPER

This report provides a review of the performance of candidates in the examinations and the detailed analysis of the standards of answering. This report should be read in conjunction with the examination paper(s) and the published marking scheme(s).

This year paper retained its high standard and adequacy in terms of quality as compared with previous years. The standard of the paper was good for a practical exam. The paper tested on the application of biological principles needed for everyday life.

The questions and instructions were clear and to the point for candidates to obtain the answers. Although most candidates could not get correct and accurate responses for question no.4 as a result of inadequate instruction meant for candidate for Sierra Leone, Liberia and The Gambia.

The marking scheme was detailed and flexible, however, candidates' performance fell below expectation.

REASONS FOR POOR PERFORMANCE CAN BE ATTRIBUTED TO THE FOLLOWING

- ❖ Inability to properly interpret the questions
- ❖ Poor spelling of technical terms
- ❖ Shallow knowledge of the subject matter
- ❖ Lack of knowledge of the rules in practical exams.
- ❖ Poor responses to questions that demanded definitions, explanations and comparisons.
- ❖ Inability to cover the examination syllabus.

2. CANDIDATES' STRENGTHS

The general performance was not much encouraging although some candidates did very well. Some scored good marks in questions one and two. In questions 1b a good number of candidates were able to classify organisms as producer, primary consumer, secondary consumer and tertiary consumer.

Most candidates were able to provide the food chain including the mouse. Most candidates were also able to state the formation of image on the retina, accommodation, eye defects and ways to care for the eye.

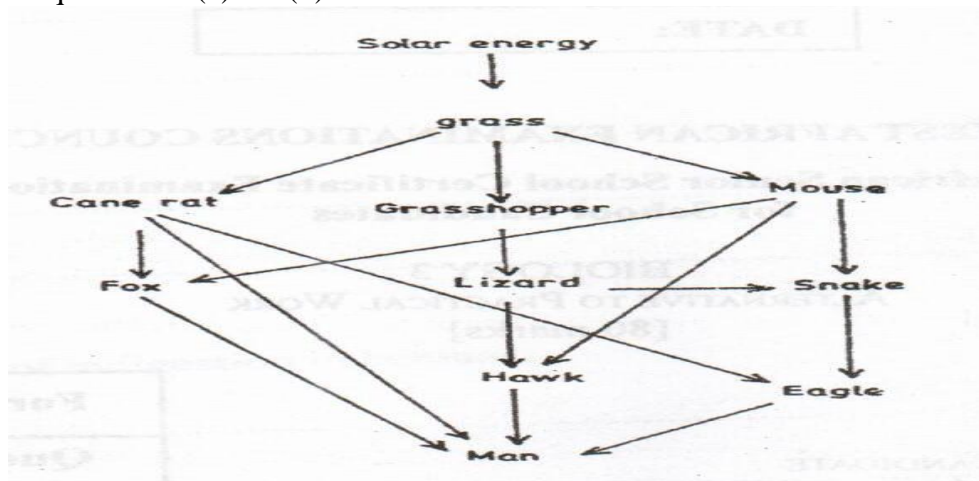
3. CANDIDATES' WEAKNESSES

- ❖ Most candidates had the problem of writing spellings of technical terms, one word answers and taxonomical terms.
- ❖ For some candidates, comparison and differences were poorly done as the physical features do not correspond to each other.
- ❖ The rule of writing scientific names of living things correctly has still not been mastered by most candidates which starts with a capital letter followed by small letter.
- ❖ Candidates still could not follow the rubrics of the questions and are still in the habit of giving answers far more than required.

3. DETAILED COMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

The diagram below is an illustration of a feeding relationship in a habitat. Study it carefully and answer questions 1(a) to 1(d).



(a) Name the feeding relationship

(b) Arrange the organisms in the diagram in the table below under the following headings

| <i>Producer</i> | <i>Primary Consumer</i> | <i>Secondary Consumer</i> | <i>Tertiary Consumer</i> |
|-----------------|-------------------------|---------------------------|--------------------------|
| | | | |

- (c) *Suggest three possible conditions that could occur if*
- (i) *more grasshoppers are introduced;*
 - (ii) *most grasshoppers are killed*
- (d) *Construct three possible food chains involving the mouse with two other organisms each from the diagram*

Answers for question 1.

- 1(a) (i) Food web
b.

| Producer | Primary consumer | Secondary consumer | Tertiary consumer |
|----------|------------------|--------------------|-------------------|
| Grass | Cane rat | Fox | Hawk |
| | Grasshopper | Lizard | Man |
| | Mouse | Snake | Eagle |
| | | Hawk | Snake |

Note: spelling must be correct to score

(c) (i) Possible conditions if more grasshoppers are introduced

- Population of grasses will reduce (drastically) / the grass would be insufficient for the grasshoppers to eat / the rate of consumption of grasses will increase;
- Competition among grasshoppers
- population of lizard/hawk/man/snake/eagle will increase/ there will be more food for the lizard/hawk/man/snake/eagle/ high growth rate of lizard/hawk/man/snake/eagle
- population of cane rat/fox/mouse will reduce.

(ii) Possible conditions if most grasshoppers are killed

- Population of grasses will increase
- Population of lizard/hawk/man/snake/eagle/will reduce/there will be little food for lizard/hawk/man/snake/eagle less growth rate of lizard/hawk/man/snake/eagle
- Population of cane rat/fox/mouse/snake/eagle will increase
- Competition among the lizards/hawk/ for food

(d) (i) Food chain involving mouse

| | | |
|-------|-------|-------|
| Grass | Mouse | Hawk |
| Grass | Mouse | Snake |
| Grass | Mouse | Fox |

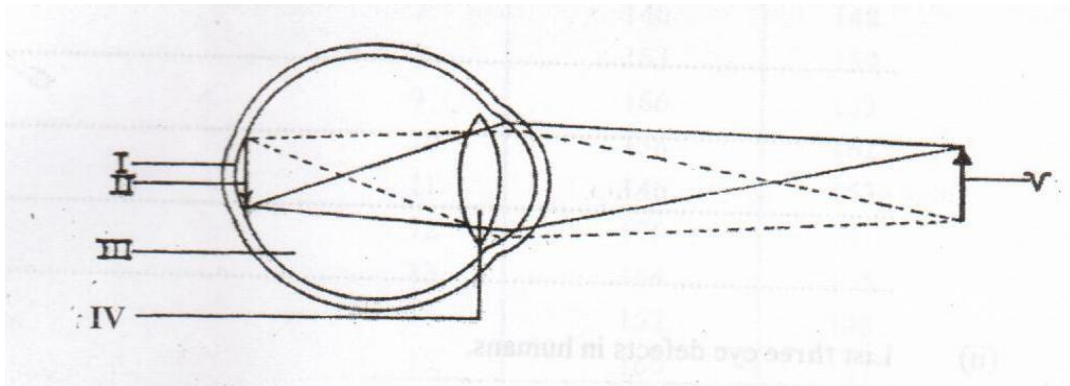
COMMENTS

Feeding relationship was correct by most candidates but they could not give the correct spelling of food web. A good number of candidates were able to score marks in question 1b since it was a tabulation of producer, primary consumer, secondary consumer and tertiary consumer although majority could not distinguish between secondary and tertiary consumer. This question was poorly attempted by the candidates. In question 1 (ci) and 1(cii) many candidates could not state the possible condition if more grasshopper are introduced and possible conditions if most grasshoppers are killed though few did so.

In question 1(d) (i) majority of the candidates could not construct a food chain involving the mouse and the few who did could not spell the names of the organisms correctly and therefore did not score the mark.

QUESTION 2

The diagram below is an illustration of how an object is focussed in the eye. Study it and answer questions 2(a) to 2(c)



- (a) (i) Give a suitable title to the diagram illustrated above
(ii) identify the parts labelled II, III, IV and V.

Answers for Question 2

- (a) (i) Title of diagram
Formation of image on the retina (of an eye)
(ii) identification of labelled parts
II image (on the retina)
III Vitreous Humour
IV/VI Lens
V Object

- (b) (i) Describe how an object is focussed on the part labelled I.

(ii) ***Explain briefly how the eye reacts to changes in light intensity.***

(i) Focussing an object on the part labelled I

- light rays from the object enter the eye through the cornea
- refracted (bent) / transmitted by the cornea into the aqueous humour
- which further refracts/transmits it
- to the lens through the pupil
- light ray from the lens passes through the vitreous humour which refracts it finally
- the bent light rays then focus the image on the retina/yellow spot/fovea centralis
- image formed is inverted
- smaller than real object

(ii) How the eye reacts to light

- In bright light the iris relaxes
- The pupil constricts
- In dim light the iris constricts
- The pupil dilates to allow more light to come in

(c) (i) ***Define accommodation in relation to the diagram above.***

(ii) ***List three eye defects in humans.***

(i) ***State five ways of caring for the human eye.***

(i) Accommodation

Accommodation is the ability of human eye to focus/alter shape of the lens; both far and near objects/varying distances on the retina.

(ii) Eye defects in mammals

- | | |
|--|----------------------------|
| - Short/near sightedness / Myopia | Glaucoma |
| - Long/far sightedness/hypermétropia/hyperopia | Pterygium |
| - Presbyopia | Cataract |
| - Astigmatism | Night blindness/Nyctalopia |
| - Colour blindness | |

(iii) ways to care for the eye

- Eat food rich in vitamin A (for good eye sight)
- Reading in a well-lit place
- Avoid rubbing eyes and putting dirty things on them
- Placing a book between 25cm – 45cm while reading/avoiding placing too close/too far from the eyes

- Going for regular check – up/ complying with medical doctor’s recommendation
- Avoid reading very tiny prints/avoid straining the eye
- Washing the face/eye with clean water/clean face towel/napkin/handkerchief
- Wearing protective goggles (where necessary)
- Keeping eyes away from smoke

COMMENTS

This question was attempted by majority of the candidates but the performance was not good. In 2(a) most candidates did not understand that the question was asking for the formation of image on the retina. However question 2(aii) most of the candidates that responded to this question were unable to answer it correctly.

Question 2(b)(i) and b(ii) were poorly answered by most candidates because they had little knowledge on the mammalian eye. Most candidates could not explain how the eye reacts to light.

In question (2)c (i) the term Accommodation was misunderstood to mean some other thing else. It was completely misinterpreted. The eye defects in mammals in 2c(ii) was not well answered by few candidates who could not get their spellings right.

In question 2c(iii) ways to care for the eyes, this part was well answered as candidates scored high marks.

QUESTION 4

(a) The table below shows parts of the alimentary canals possessed by different animals. Tick(✓) the part possessed by the corresponding animal in the table.

| Animal | Parts of the alimentary canal | | | | | |
|-----------|-------------------------------|--------|------|---------|--------|--------|
| | Pharynx | Gullet | Crop | Stomach | Caecum | Rectum |
| Plamaria | | ✓ | | | | |
| Earthworm | | ✓ | | | | |
| Cockroach | ✓ | | | | | |
| Tilapia | | | ✓ | | | ✓ |
| Frog | | | | ✓ | | |
| Lizard | | | | ✓ | | |
| Bird | | | | ✓ | | |
| Rabbit | | | | ✓ | | |
| Cow | | | | ✓ | | |
| Human | | | | ✓ | | |

- (b) (i) State five functions of the stomach in humans.
- (ii) Explain briefly the stages of holozoic nutrition in humans

(c) State three effects of indigestion in humans

Answers to question 4

(a) Parts of alimentary canal

| Animal | Parts of the alimentary canal | | | | | |
|-----------|-------------------------------|--------|------|---------|--------|--------|
| | Pharynx | Gullet | Crop | Stomach | Caecum | Rectum |
| Plamaria | √ | | | | | |
| Earthworm | √ | √ | √ | | √ | √ |
| Cockroach | √ | | √ | | √ | |
| Tilapia | √ | √ | | √ | | √ |
| Frog | √ | √ | | | | √ |
| Lizard | √ | √ | | √ | √ | √ |
| Bird | | | | | | |
| Rabbit | √ | √ | | √ | √ | √ |
| Cow | √ | √ | | √ | √ | √ |
| Human | √ | √ | | √ | √ | √ |

b(i) Functions of the stomach in humans

- The stomach temporary stores food
- Stomach secretes gastric juice containing hydrochloric acid; pepsin and rennin
- Hydrochloric acid provides acidic medium for protein digestion
- Hydrochloric acid destroys harmful bacteria in the stomach
- Rennin solidifies / curdles milk
- Pepsin digests protein into peptides in the stomach
- Large particles of food are turned and broken down to smaller particles by the contraction of stomach muscle/churning

b(ii) Stages of holozoic nutrition

Ingestion - taking in pieces of solid food into the mouth

Digestion - breaking down of large food particles by mechanical/chewing; enzymatic activities/ chemical means into smaller particles/soluble that the body can absorb

Absorption- taking up the soluble products of digestion into the blood

Assimilation- using/utilization of the absorbed food materials by the body cells/tissues

Egestion- elimination of the undigested food materials through the anus.

(c) Effects of indigestion in humans

- Causes constipation/inability to defecate
- Bloating stomach
- Stomach ache
- Heartburn/burning sensation
- General weakness
- Flatulence/release of gas

COMMENTS

This question was not a popular question as many candidates shy away from it. Few intelligent candidates attempted this question. The major reason for this was due to the instruction given on section c on the paper which did not mention Sierra Leone. However the intelligent candidates went ahead to answer the questions.

The (a) part which was in a tabular form to indicate a tick (✓) for the parts of the alimentary canal present in animals was well answered as candidates scored high marks. However, few candidates did not adhere to the instructions and did something else.

In question 4b(i) most candidates have little knowledge on digestion and this question was poorly attempted. In 4b(iii) was poorly attempted by all most all the candidates. Many candidates could not state and explain briefly the stages of holozoic nutrition.

In question 4c, this sub-question was well answered and the candidates scored fairly good marks.

CHEMISTRY 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was standard, valid and fair with a reasonable amount of difficulty which could be effectively handled by well prepared candidates. There was no variation in the quality of the paper set as compared to previous years. The performance of candidates for this exams depended largely on adequate preparation done by both teachers and candidates equally with regards to an adequate mastery and coverage of the syllabus prescribed.

2. CANDIDATES' STRENGTHS

The good performance of candidates was evident in the answering of some questions namely Questions 1a, d, e, f, and g Questions 2c, Questions 3a, Questions 4a, and Questions 5a respectively.

Question 1a tested candidates on Energy and Energy Changes that occurs in each of the reactions listed on the question paper. From observations during the marking exercise, candidates were able to answer the questions easily.

The same observations were apparent for Question 1e and f which tested aspects of electrolysis, 1g dealt with the difference between a dehydrating agent and a drying agent.

Question 2c dealt also with an aspect again on electrolysis.

Question 3a dealt again with energy and energy changes.

Question 4a dealt with the concept of allotropy in sulphur

Question 5a dealt with Hardness in water.

In all of the questions listed above candidates responses were quite encouraging which is an indication that they were relevant topics which sustained candidates interest in the subject. Even weak candidates responded to these questions though some of the answers were incorrect. A thorough mastery of the learning of topics, concepts, principles and chemical mathematics is required by candidates. Teachers have to put more emphasis during lesson delivery, when the syllabus is being covered.

3. CANDIDATES' WEAKNESSES

The other questions not mentioned on strengths in the report were not satisfactorily answered and weaknesses in the teaching learning process were evident. Inadequate coverage of the syllabus in these areas were obvious.

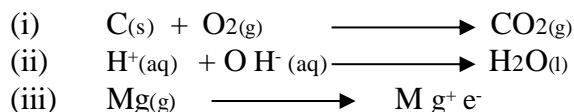
Teachers must ensure that coverage of the syllabus should be done fairly and not to depend on external materials during the conduct of the exams. They must endeavour to practice answering of questions after every topic so as to ensure mastery.

Similarly candidates should also learn to master their work by making it a point of duty to thoroughly study the topics in the syllabus and be prepared to answer to all kinds of questions on the different topics unaided.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTION

QUESTION 1

(a) *State the type of energy change that occurs in each of the following reactions.*



The expected answers were:

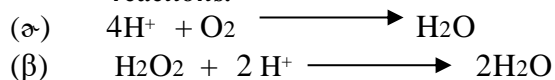
- (i) Combustion/formation (energy)
- (ii) Neutralisation (energy)
- (iii) Ionisation (energy)

Candidates performed well in this question though some candidates wrote ambiguous answers.

(b) *Differentiate between election affinity and electronegativity.*

Election affinity is the energy released when 1 mole of gaseous negative ion or anion is formed from its gaseous atoms. While electronegativity is the ability of an atom in a molecule to attract bonding or a shared pair of electrons.

(c) (i) *Define Faraday's constant*
 (ii) *State the number of moles of elections involved in each of the following redox reactions.*



Faraday's Constant is defined as the total charge on one mole of a monovalent ion a election

or

Faraday's Constant is the quantity of electricity/electric charge needed to discharge a mole of electrons during electrolysis.

- (α) 4 Moles of electrons
- (β) 2 Moles of electrons

Good candidates were able to answer to these questions well. Most candidates wrote incorrect answers.

- (d) ***Name a halogen which at room temperature, is a***
- (i) Solid
 - (ii) Liquid
 - (iii) Gas

The expected answers were

- (i) Iodine/Astatine
- (ii) Bromine
- (iii) Chlorine/Fluorine

This was a popular question for most candidates and the well prepared candidate had no difficulty in answering to the question.

- (e) ***State two factors that determine the discharge of ions at the electrode during electrolysis.***

The expected answer was

Any two factors which determine the discharge of ions at the electrode during electrolysis.

or

the position of the ion in the electro chemical series.

It was a popular question for most candidates who wrote a variety of answers for this question.

- (f) ***In silver plating, a steel spoon, what would be used as the***
- (i) Anode?
 - (ii) Cathode?
 - (iii) Electrolyte?

The expected answers were

- (i) Silver
- (ii) Steel spoon

- (iii) Aqueous/molten silver salt or a named silver salt such as silver trioxonitrate (v), silver cyanide silver tetraoxosulphate (vi) solution or solution of Ag.

It was a popular question for most candidates with a variety of answers from candidates Questions from questions/e and f were drawn from the topic electrolysis.

- (g) ***State the difference between a dehydrating agent and a drying agent.***

A dehydrating agent removes elements of water (hydrogen and oxygen atoms) from a compound, while a drying agent removes water molecules from a moist substance.

An alternative answer for that question was

A dehydrating agent removes water from a compound with a change in chemical composition of the substance, which a drying agent removes water, without change in chemical composition of the substance.

Most candidates attempted this question with a variety of answers. Good candidates were able to answer the question correctly and basically it sought to distinguish the generations of seeming two distinct concepts which was confusing for most candidates.

- (h) ***State two ways in which the reaction of sodium with ethanol resembles the reaction of sodium with water.***

The expected answer was, any two ways in which the reaction of sodium with ethanol resembles the reaction of sodium with water are

- Hydrogen is evolved in both
- Both reactions occur in the cold
- The aqueous product is alkaline
- Both reactions are exothermic
- Both reactions are irreversible
- Both products are ionic.

Most candidates attempted this question with a variety of answers. Candidates had to compare the reaction of sodium with ethanol with that of the reaction of sodium with water.

- (i) ***State one use of copper (ii) chloride***

The expected answer for any one use of copper (ii) chloride was

- It is a catalyst for organic and inorganic reactions
- It is used for dyeing and printing of textiles
- It is used as a pigment for glasses and ceramics

- It can be used as a disinfectant or antiseptic or germicide

- It is being used as an insecticide or herbicide or fungicide.
- It is being used in the production of chlorine from hydrogen chloride.

It was a popular straightforward question which the good candidates had no difficulty in answering. It involved the mastery of knowledge of copper and its compounds.

(j) *Name the physical properties used in selecting separation techniques for the following mixtures.*

- (i) Crude oil
- (ii) Calcium trioxocarbonate (iv) and potassium chloride

The physical properties used in selecting separation techniques for the following mixtures were

- (i) The differences in boiling points
- (ii) The differences in solubility

QUESTION 2

(a) *The vapour density of a gaseous chloride of an element x is 675. The percentage of x in salt is 47.41.*

Determine the

- (i) *Empirical formula*
- (ii) *Molecular formula of the salt.*
{x = 64.0, cl = 35.5}

(a)(i) The percentage of cl = $100 - 47.41 = 52.59$

$$\frac{x}{47.41} \qquad \frac{cl}{52.59}$$

$$\frac{64}{64} \qquad \frac{35.5}{35.5}$$

$$\frac{0.741}{0.741} \qquad \frac{1.48}{0.741}$$

1

2

Empirical formula = xcl_2

(ii) The molecular formula of the salt is determined as follows:

$$\begin{aligned} (xcl_2)_n &= 675 \times 2 \\ &= 135 \end{aligned}$$

$$\begin{aligned} 135n &= 135 \\ n &= 1 \end{aligned}$$

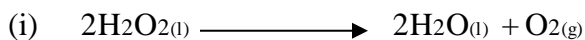
$$\begin{aligned} &= \overline{135} \\ n &= 1 \end{aligned}$$

∴ molecular formula = xCl_2

Most candidates attempted this question, but they missed out steps in their calculations thereby losing marks. Candidates should learn to derive answers for their chemical calculations from first principles wherein they clearly show the required steps for their answers. The scripts did show that candidates have ideas for doing the calculations but they lacked the act of mastery which can only be achieved through constant practice during the preparation period.

(b) When hydrogen peroxide is exposed to air, it decomposes.

- (i) Write a balanced equation for the reaction**
- (ii) Name the catalyst used**
- (ii) Outline an experiment to illustrate the effect of the catalyst on the rate of reaction.**



(ii) Manganese (iv) oxide/gold/platinum

(iii) Two test tubes A and B are filled half way with H_2O_2

- MnO_2 or Gold or Platinum is added to A
- Each test tube A or B are warmed in turns and a glowing splint is applied to the surface of each test tube.
- A stop watch is used to note the time taken for the rekindling of a glowing splint. Test tube A produces Oxygen faster indicating that the rate was increased by the catalyst.

(c) (i) Distinguish between a primary cell and secondary cell.

(ii) State one example each of

(α) Primary cell

(β) Secondary cell

(iii) State the electrolyte that could be used in each of the examples given in (c)(ii).

(c) (i) The differences between Primary Cell and Secondary Cell are as follows:

i. Primary Cell

1. It is not rechargeable
2. The reaction is not reversible
3. It does not last for long

Secondary Cell

- It is rechargeable
- The reaction is reversible
- It last for a long time.

(i) Any one example of a Primary Cell is

Daniel Cell, Leclanche Cell, Aluminium air cell, batteries which are used in clocks, radios, calculators hearing aids or alkaline batteries.

Any one example of a secondary cell is lead acid accumulator, Ni/cd cell, Li ion cell, Fuel cell.

The electrolytes which can be used in each kind of cell are:

Primary Cell

Daniel Cell
Leclanche
Al/Air
Battery
Alkaline battery

Electrolyte

$ZnSO_4$ and $CuSO_4$
 NH_4Cl
Water
 NH_4Cl
KOH

Secondary Cell

Lead acid
Ni/Cd Cell
Li ion Cell
Fuel Cell

Electrolyte

$H_2SO_{4(aq)}$
 $KOH_{(aq)}$
Lithium Salt in Organic Solⁿ
 $KOH_{(aq)}$

Good candidates answered these questions correctly which were simple straight forward questions in electrolysis.

Poor candidates wrote a variety of wrong answers which occurred as a result of non-mastery of the topic.

(d) *Explain in terms of Kinetic Theory what happens or the particles of a solid when heated.*

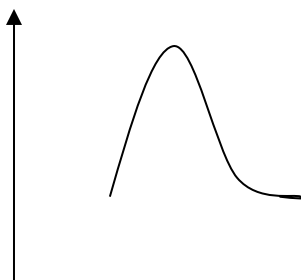
When a solid is heated the particles acquire more Kinetic energy and they vibrate more frequently. As more heat is applied the cohesive forces are broken. The particles move apart and the solid melts.

Most candidates did not perform well in this question. They may have had difficulties understanding the concept of Kinetic Theory when it was being taught. Teachers needs to use illustrations as they explain the concept of Kinetic energy so that candidates will have a clearer understanding of it to be able to explain the concept well in examinations.

QUESTION 3

(a)

Energy



H

H

- (ii) The general name for the ions it forms in alkaline or acidic solution are
amino _____ NH_2
alkanoic acid group _____ COOH
carboxyl
carboxylic group
- (iii) Zwitterion
- (iv) α Condensation
 β Dipeptide and water

It was not a popular question and candidates who attempted it, did not perform well on it.

It was quite clear that candidates had difficulties writing the organic structures for 2 - amino ethanoic acid. Teachers have to emphasize on nomenclature and organic structures in their teaching in order for candidates to fully grasp this concept. Some candidates were able to identify the listed organic compounds examined. They were able to recall Zwitterion as well as the reaction type and product.

(c)(i) *State the type of chemical bond in the compound formed between each of the following pairs of elements.*

- (α) Ca and O
20 8
- (β) C and Cl
6 17

(ii) *State one property of the compound formed in each case.*

(iii) *Name two metals which are usually extracted by electrolysis.*

Answers

- (α) The type of bond formed between Ca₂₀ and O₈ is ionic or electro valent.
- (β) The type of bond formed between Ca₆ and Cl₁₇ is ionic or electro valent.
- (ii) Properties of ionic compounds are:
- high melting and boiling points
 - soluble in water
 - conduct electricity in solution or molten state
 - consist of ions.
- Properties of covalent compounds are
- soluble in organic solvents
 - low melting and boiling points.

- do not conduct electricity.
- consist of molecules.

One mark each was awarded for stating a property each for ionic and covalent compounds.

(iii) Metals which are extracted by electrolysis are

- Sodium
- Potassium
- Magnesium
- Calcium
- Aluminium

Questions in Q3c were generally answered well by candidates.

(d)(i) State two factors that could affect the value of standard electrode potential.

(ii) State two uses of standard electrode potential.

Answers

(d)(i) Factors that could affect the value of standard electrode potential are

- concentration
- temperature
- pressure.

Uses of standard electrode potential are:

- To predict the direction a feasibility of a chemical reaction.
- To calculate the e.m.f.
- To predict the standard electrode potential of unknown elements.
- To predict the relative oxidizing a reducing powers of an element.

These questions were challenging for candidates who provided a lot of incorrect answers which occurred as a result of an improper mastery of the topic electrode potential by the candidates.

(e) Define saturated solution.

Answer.

Saturated solution is defined as follows:

- Saturated solution is a solution which contains the maximum amount of solute it can dissolve at a given temperature.
- Saturated solution is a solution that cannot dissolve any more solute at a given temperature.
- A saturated solution is one in which the undissolved solute is in dynamic equilibrium with the solution at a given temperature.

This question was generally answered well.

QUESTION 4

- (a)(i) *Name two crystalline allotropes of sulphur.*
(ii) *State three differences between two allotropes named in 4(a)(i).*

Answers

Crystalline allotropes of sulphur are:

- Rhombic
- alpha sulphur
- Monoclinic
- Prismatic sulphur
- beta sulphur

Marks were awarded for correctly stating any two crystalline allotropes of sulphur listed above.

- (iii) *Differences between the two allotropes.*

| Rhombic | Monoclinic |
|---|---|
| - Translucent crystal | - Transparent crystal |
| - Stable at temperatures below 96°C | - Unstable temperatures below 96°C |
| - Higher density (2.08 dm cm ³) | - Lower density (1.98) dm cm ³ |
| - Lower melting or boiling point | - Higher melting or boiling point |
| - Octahedral shaped | - Needle shaped |
| - Yellow | - Amber. |

Comment

This question was generally answered well by candidates.

- (b)(i) *State one factor that influences the choice of method by which a metal may be extracted from its ore.*
(ii) *Name one ore from which iron can be extracted.*
(iii) *Give one impurity found in the ore mentioned in 4(b)(ii).*
(iv) *Outline the steps involved in the extraction of iron in the blast furnace.*

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Answers

- (b)(i) Factors which influence the choice of method by which a metal can be extracted from its ore are:
- (i) - reactivity of the metal
- nature of the ore
- position of metal in the electrochemical series.
- (ii) Ores from which Iron can be extracted are
- Limonite
 - Haematite
 - Siderite

- Goethite
- Magnetite
- Iron purities

(iii) Impurities found in the ore(s) mentioned in 4(b) (ii) are:

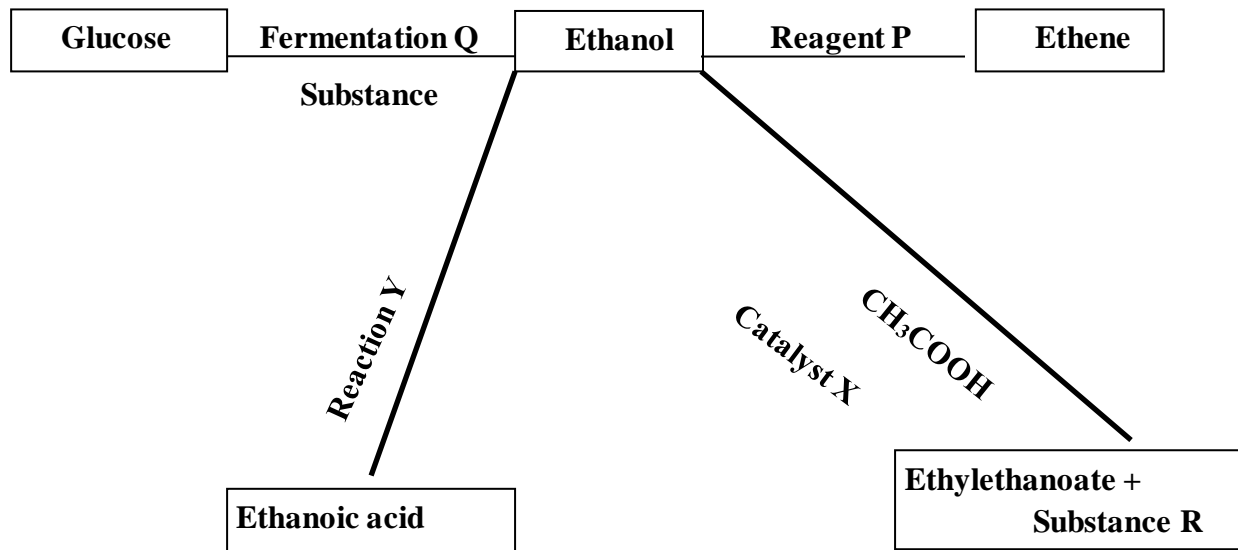
- SiO₂
- Silica
- Silicon (iv) oxide
- Sand
- Al₂O₃
- Alumina
- Aluminium Oxide.

(iv) An outline of the steps involved in the extraction of Iron in the blast furnace.

- A mixture of limestone (CaCO₃), Iron Ore (Fe₂O₃) and carbon (coke) is fed into the furnace.
- At the same time hot air (600°C) is driven into the furnace.
- Coke burns in the hot compressed air at the lower part of the furnace $C_{(s)} + O_{2(s)} \rightarrow CO_{2(s)}$
- The CO₂ reacts with more coke as it rises up the furnace to form CO(g), $CO_{2(g)} + C_{(s)} \rightarrow 2CO_{(g)}$
- The CO reduces the iron ore to form iron and molten iron is collected at the bottom.
- $Fe_2O_{3(s)} + 3CO_{(g)} \rightarrow 2Fe_{(s)} + 3CO_{2(g)}$ Alternatively.
- $Fe_3O_4 + 4CO \rightarrow Fe + 4CO_2$
- Limestone undergoes thermal decomposition $CaCO_{3(s)} \rightarrow CaO_{(s)} + CO_{2(g)}$
- The CaO reacts with SiO₂ to form calcium silicate.
- $CaO + SiO_2 \rightarrow CaSiO_3$ thus eliminating the impurities.

This question was generally not well answered.

c(i) Consider the following reaction scheme



Name the

- (i) Substance Q
- (ii) Substance R
- (iii) Reagent P
- (iv) Reaction Y
- (v) Catalyst X

Answers

- | | | | |
|--------|---|---|---------------------------------|
| (c)(i) | Q | - | Yeast/Zymase |
| | R | - | Water |
| | P | - | Conc tetraoxosulphate (vi) acid |
| | Y | - | Oxidation |

Comments

This question was generally not well answered by candidates who wrote a lot of wrong answers. They were unable to figure out the reaction schemes as such did not fully demonstrate their knowledge of the chemistry involved by naming the substances and reactions involved.

- d(i) Explain briefly the term destructive distillation of coal.*
(ii) Name one product obtained directly from the destructive distillation of coal.
(iii) What is the major component of synthetic gas?
(iv) Give one reason why synthetic gas is not a major source of air pollution.

Answers

- (i) The process of heating coal in the absence of air is called destructive distillation of coal.
 (ii) Any one product obtained directly from the destructive distillation of coal is
 - Coke
 - Coal gas
 - Coal Tar
 - Ammoniacal liquor
 (iii) The major component of synthetic gas is methane/CH₄
 (iv) Synthetic gas is not a major source of air pollution because it does not contain sulphur or sulphur compounds.

QUESTION 5

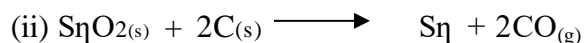
- (a)(i) Define hard water*
(ii) Name two substances responsible for hardness in water
(iii) State two methods for the removal of hardness in water.

Answers

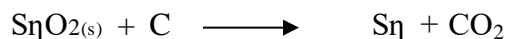
- (a)(i) Hard water is water that does not readily lather foam with soap.
 (ii) Any two substances responsible for hardness in water are:
 - Calcium hydrogen trioxocarbonate (iv)
 - Calcium tetraoxosulphate (vi)
 - Magnesium tetraoxosulphate (vi)
 - Magnesium hydrogen trioxocarbonate (iv)
 (iii) Any two methods for the removal of hardness in water are:
 - by addition of washing soda or Na₂CO₃
 - addition of caustic soda or NaOH
 - by using ion - exchange resin or permutit method
 - heating the water to boiling or distillation.
 - Addition of calculated amount of shared time.
 (b)(i) *Describe briefly the extraction of tin from its ore.*
 (ii) *Write a balanced chemical equation for the reaction.*
 (iii) *State two uses of tin.*

Answers

(b)(i) Its ore is concentrated or crushed and washed with water. It is then roasted in air to remove impurities. The product is mixed with charcoal and heated to reduce the oxide. It is then refined to obtain pure tin.



or



- (iii) Two uses of tin are:
- for coating of steel or metals
 - in alloys
 - for making cans for drinks or food
 - as a reducing agent
 - as tin foil.

Comments

These questions were generally not well answered.

Marks were awarded for describing the extraction of tin from its ore, writing of balanced chemical equation for the reaction as well as stating two uses of tin.

- (c)(i) *Give three reasons for preferring alloys to their pure metals*
 (ii) *State the constituent elements in bronze.*

Answers

Three reasons for preferring alloys to their pure metals are:

- alloys have higher tensile strength
- are resistant to corrosion or attack from chemicals
- alloys are lighter
- they are harder or stronger
- have improved durability
- have improved malleability
- have improved workability
- have improved attractiveness
- are less reactive
- have improved ductility

(ii) The constituent elements in bronze are copper and tin.

Comments

Question 5c was a popular question for candidates who were able to describe the reasons for performing alloys to their pure metals and also the listing of the constituent elements in bronze.

- (d) An element @ has three naturally occurring 100 topics.
One of the isotopes has a mass of 20 a.m.u. and an abundance of 90.48%. The second has a mass of 21 a.m.u and an abundance of 0.27% and the third has a mass of 22 a.m.u. Calculate the
- Percentage abundance of the third isotope
 - Relative atomic mass of Q

Answers

The percentage abundance of the third isotope is determined as follows:

X_3 represents the % abundance of the third isotope

$$90.48 + 0.27 + \% X_3 = 100$$

$$X_3 = 100 - 90.75$$

$$= 9.25\%$$

- (ii) Relative atomic mass of Q is as follows

$$Q_{rel} = \frac{(90.48 \times 20) + (0.27 \times 21) + (9.25 \times 22)}{100}$$

$$= \frac{1809.60 + 5.67 + 203.50}{100}$$

$$= 20.187$$

Comments

This question was not well answered by candidates who had difficulties determining the % abundance of the third isotope as well as the relative atomic mass of Q.

e. State one use of calcium.

Answers

Any one use of calcium is

- it is used as deoxidant in steel castings and copper alloys
- in the manufacture of calcium fluoride and calcium hydride
- to remove impurities from petroleum
- used as alloying agent
- used in medicine
- used as a reducing agent.

Comments

Question 5e was generally well answered by candidates.

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

Question one and two are difficult questions for the candidates. The candidates found these questions difficult because they are test of Practicals. Some candidates failed to answer all three questions. Question b(ii) tend to be the most difficult part of the question one. Question two is rather technical.

These questions are difficult as compared to questions of previous years. The performance of these shows that practicals are hardly done in schools by the teachers. I suggest an in-training course for the teachers in order to teach the pupils well. Heads of Department must monitor teachers to ensure that the correct subject matter is taught to candidates.

2. CANDIDATE'S STRENGTHS

Candidates' strength is very weak as shown by their performance in answering the questions.

3. CANDIDATES WEAKNESSES

The candidates omitted units, wrote wrong units and failed to give evaluated answers to three significant figures.

The candidates failed to answer all three questions because they were difficult. Question 2 was not done by most candidates.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

*E is a solution of 100 cm³ of KIO_{3(aq)} and excess KI_(aq) acidified with dilute H₂SO₄.
F was obtained by diluting the resulting solution to 1 dm³.
G is 0.100 mol dm⁻³ Na₂S₂O₃ solution.*

25.0cm³ portions of solution F. were titrated with G in the burette, using starch as indicator.

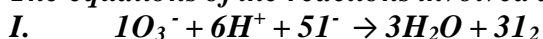
The result of the titration is shown below.

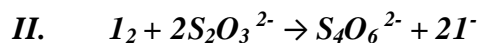
| <i>Burette Readings/cm³</i> | <i>1</i> | <i>2</i> | <i>3</i> |
|--|--------------|--------------|--------------|
| <i>Final reading</i> | <i>43.60</i> | <i>24.20</i> | |
| <i>Initial reading</i> | <i>22.00</i> | | <i>1.00</i> |
| <i>Volume of G used/cm³</i> | | <i>22.10</i> | <i>21.80</i> |

(a)(i) Copy and complete the table.

(ii) Calculate the average volume of G used.

The equations of the reactions involved are:





a(i) The table most candidates had it wrong because they lacked practical experience.

a(ii) In averaging the volume of G used, most candidates added litre values which exceeded the normal volume.

(b) From the information provided, calculate the:-

(i) concentration of I_2 in solution F in mold m^{-3} ;

From equation 2 the mole ratio was wrongly written hence the value of G_2 was wrongly evaluated. Most of the evaluated answers were not given to 3 significant figures.

(iv) concentration of KIO_3 in solution E in mold m^{-3} ;

The mole ratio was wrongly stated. Hence the calculation was wrongly done.

(v) concentration of KIO_3 in solution E in g dm^{-3} .

[K = 39.0; I = 127.0; Na = 23.0; S = 32.0; O = 16.0; H = 1.0]

The molar mass of KIO_3 was wrongly evaluated and when correcting evaluated it was written with wrong unit.

(c)(i) At what stage should the starch be used in order to obtain accurate end-point?

(ii) Ammonia solution was added to the precipitate from (i) if any.

The colour for the addition of starch to the mixture was not correct. The colour at the end point was also wrongly written.

QUESTION 2

X, Y and Z are aqueous solutions of Na_2CO_3 , Na_2SO_4 and $NaCl$ but not necessarily in that order. The following tests were carried out on each of them.

(a)(i) $AgNO_3$ solution was added to each solution followed by addition of dilute HCl.

(ii) Ammonia solution was added to the precipitate from (i) if any.

(b) $BaCl_2$ solution was added to each solution followed by addition of dilute HCl.

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From the above tests, identify X, Y and Z. Present your answers in a tabular form under the headings: Test, Observation and Inference.

Some candidates mentioned wrong tests. Wrong observation and inferences were written.

QUESTION 3

(a)(i) Name the most appropriate apparatus that could be used to perform each of the following exercises in the laboratory:

(α) Preparing a standard solution:

(β) Supply of H₂S;

(γ) Separating a mixture of kerosene and water.

(ii) Give a reason for each of the apparatus named in (a)(i).

A list of wrong apparatus were given. Some of the apparatus were spelt wrongly.

(b) State the effect of NaNO_{3(aq)} on litmus paper.

The effect of NaNO₃ on litmus paper was wrongly stated.

HEALTH SCIENCE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper was appropriate for the level being tested; the questions were straight-forward and devoid of ambiguity; instructions were clearly spelt out.

Generally, a slight improvement in the performance of candidates was observed by examiners; this is in comparison with that of previous years. However, incorrect spellings of scientific terms and the lack of basic knowledge of the structure and functions of organs of the human body by about 25% of candidates affected performance.

COMMENTS ON ANY SPECIAL DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

Special difficulties that might have affected candidates' performance were observed by examiners which included

- ✓ Inadequate ability to explain terms used in environmental health
- ✓ Inadequate knowledge in equipment used in detecting auditory defects

2. CANDIDATES' STRENGTHS

Candidates' strengths that resulted in good performance, as observed by examiners included:

- ❖ Ability to relate structure of body organs, tissues and cells to their functions
- ❖ Strict adherence to instructions.
- ❖ Deep understanding of the steps involved in First Aid.
- ❖ Adequate knowledge in metabolic processes of the human body.
- ❖ Ability to identify tropical diseases; their causes, modes of transmission, symptoms and ways to prevent them.
- ❖ Appropriate knowledge in ; consumer health, emotional and mental health

Ways of Improving Candidates' Strengths

- ❖ Heads of Department to conduct Departmental Meetings on monthly basis on, 'How to answer WASSCE Level Questions'
- ❖ School authorities to allocate more contact hours to the teaching of Health Science, related Health Sciences.

- ❖ Briefing sessions/meetings be conducted between WAEC Officials and Invigilators on general conduct of WASSCE.

3. CANDIDATES' WEAKNESSES

Candidates' weaknesses observed by examiners:

- Inadequate knowledge in family life & sex education, and chemicals that alter behavior.
- Inadequate ability to grasp the requirements of a question.
- Inadequate knowledge in roles of hospitals, Community Health Centres, the Red Cross Society, Water Treatment Centres and Waste Management Centres.

REMEDIES FOR OVERCOMING WEAKNESSES

- Field trips/visits to Hospitals, Family Planning Providers/Marie Stopes Clinics. Community Health Care Centres, Red Cross Society Offices, Abbatoirs, Water Treatment points and Waste Management Centres.
- School Authorities to encourage visits/public lectures to schools by resource persons (Doctors, Health Educators, Sanitary Health Inspectors) in Public Health and Mental Health.
- Establishment of School Health Programmes in schools.
- Teaching of Safety Education in schools.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) *List four material needed in the First Aid of wounds.*

A large number of candidates responded well to it. Most of them presented correct responses. However, a few incorrect ones were observed by examiners.

Incorrect ones included:

- ✚ Ointment
- ✚ Splint

Correct responses observed:

- ✚ Methylated spirit/hydrogen peroxide/antiseptics
- ✚ Gentian violet/G.V
- ✚ Plaster/bandaid
- ✚ Scissors/razor blades
- ✚ Cotton wool

- ✚ Forceps
- ✚ Bandage/handkerchiefs/cloths
- ✚ Gauze
- ✚ Handgloves

(b) Outline all the steps involved in the First Aid of nose bleeding.

Majority of candidates attempted this; a large percentage did not respond well to it.

Incorrect responses included:

- ✚ With care, raise up the head of the victim to prevent the continuous flow of blood. With the head up, block the nose with tissue or sponge.

Correct responses observed included:

- ✚ Let the victim sit on a chair/convenient place where he/she can get air.
- ✚ Tilt the head forward to prevent flow of blood into the brain.
- ✚ Pinch the nose to stop bleeding.
- ✚ Loosen the collar/tight clothes around the neck/provide further ventilation.
- ✚ Remove blood with cotton wool from nostrils.
- ✚ If bleeding continues, send the victim to the doctor/hospital.

QUESTION 2

(a) State four natural disasters.

A large percentage responded well to it. However, a few gave incorrect responses.

Incorrect responses observed included:

- ✚ War
- ✚ Cigarette smoking
- ✚ Deforestation
- ✚ Shipwreck
- ✚ Plane crash

Correct responses observed included:

- ✚ Famine
- ✚ Earthquake
- ✚ Volcanic eruption
- ✚ Tsunami

- ✚ Sandstorm

- ✚ Fire outbreak
- ✚ Flood
- ✚ Landslide/mudslide/erosion
- ✚ Hurricane/tornado/typhoon/cyclone

(b) State five man-made disasters.

Most candidates responded well to this; a few responses were incorrect.

Incorrect responses observed included:

- ✚ Volcanic eruption
- ✚ Earthquake
- ✚ Flood
- ✚ Hurricane
- ✚ Drought/famine

Correct responses observed included:

- ✚ Plane crash/shipwreck
- ✚ Fire outbreak/deforestation
- ✚ Accidents/falls
- ✚ Bomb explosions
- ✚ Gas explosions
- ✚ War/communal clashes/terrorism
- ✚ Oil spillage

QUESTION 3

State three functions of the stomach in humans.

Most candidates did not respond well to it. However, a few correct ones were observed by examiners.

- ✚ To secrete bile and unwanted materials in the body
- ✚ It facilitates the process of assimilation
- ✚ Consists of enzymes
- ✚ Secretes sulphuric acid

Correct responses observed included:

- ✚ Stores food

- ✚ Aids digestion

- + Secretes mucus
- + Churning movement of food
- + Mixing the food thoroughly with digestive juice
- + Secretes the enzyme rennin/pepsin
- + Secretes/produces gastric juice/dilute hydrochloric acid

QUESTION 4

(a) *State two deficiencies of sodium in humans.*

It received several responses; most were incorrect, though.

Incorrect responses observed included:

- + Lack of blood fluid
- + Muscle pain
- + Become pale
- + Low blood sodium
- + It leads to goiter
- + It leads to poor growth
- + Rickets
- + Osteomalacia
- + Scurvy

Correct responses observed included:

- + Dehydration
- + Oedema
- + Muscle cramps
- + Kidney failure
- + Hyponatremia
- + Hypotension/low blood pressure

(b). *Mention the food substances each of the following digestive enzymes act on in humans.*

- (i) ptyalin
- (ii) pepsin

It received responses from several candidates; a larger percentage being correct ones. However, a few incorrect ones were also observed.

Incorrect ones included:

- (i) Ptyalin: beans

- (ii) Pepsin: cassava

Correct ones observed included:

- (i) Ptyalin: cooked starch
(ii) Pepsin: proteins

QUESTION 5

List three equipment used in detecting auditory defects.

Most candidates did not respond well to this question. However, a few correct ones were observed.

Incorrect ones observed included:

- + Scissors
- + Needles
- + Cotton wool
- + Audiologist
- + Ear, Nose, Throat Doctor
- + Hearing instrument specialist

Correct responses observed included:

- + Otoscope
- + Audiometer
- + Drum
- + Tuning fork
- + Wrist watch
- + Geiger counter/Ionization chamber/Micro R meter
- + Multi-channel analyzer/neutron REM meter/radon detectors

QUESTION 6

Mention two involuntary actions in humans.

Candidates, generally, did not respond well to it; examiners observed that most responses were incorrect. However, a few correct ones were observed.

Incorrect ones observed included:

- + High jump

- + Talking
- + Running

Correct responses observed included:

- + Sneezing
- + Sleeping
- + Coughing
- + Fright
- + Yawning
- + Belching
- + Heartbeat
- + Kneejerk
- + Blinking of the eye
- + Peristaltic movements of the digestive system
- + Withdrawal of hand from hot/sharp/cold object

(a) (i) What is artificial respiration?

It received several responses but, most of them were incorrect. However, a few were correct.

Incorrect ones observed included:

- + Breathe through carbon dioxide
- + It is also known as oxygen that help sick people to breathe in and out
- + This is a respiration that is not from God
- + Artificial respiration is a respiration which does not have the physical relationship between man and his environment
- + It is a process wherein aerobic and anaerobic respiratory process is absent

Correct responses observed included:

- + It is a method employed by a first aider in assisting an individual; who cannot breathe/stopped breathing to resume breathing

(ii) State three symptoms of epileptic fits.

Several candidates attempted it but most gave incorrect responses

Incorrect responses observed included:

- + Confusion

- + Swollen feet
- + Fever
- + Loss of appetite

- ✚ Less flow of blood to the brain
- ✚ Loss of weight
- ✚ Severe headache
- ✚ Eyes become extra white

Correct responses observed included:

- ✚ Convulsion
- ✚ Unconsciousness
- ✚ Body becomes stiff
- ✚ Violent shaking/jerking of the body/head/limbs/neck
- ✚ Foaming from mouth/biting of the tongue

(b) Explain the following terms as used in environmental health.

It was well responded to and most responses were correct. However, a few incorrect ones were also observed.

Incorrect responses included:

(i) Waste disposal

- ✚ This is also called waste bin.
- ✚ These are unwanted materials.
- ✚ It is a disaster caused by man when waste materials are deposited in the environment.

(ii) Pollution

- ✚ This is the control of any substance in the air, water, food.
- ✚ This is defined as the cutting down of trees.
- ✚ Is the transfer of pollen grains from the anther to the stigma.

(iii) Sanitation

- ✚ It is civic activities; these are major areas of bush or planting areas in one country; it can be defined as a method of preventing health and serves as an educational practice

Correct responses observed included:

(i) Waste disposal

- ✚ It is a means/process of getting rid of the waste materials; away from living environment/homes/schools/offices; to prevent health hazards.

(ii) ***Pollution***

- ✚ It is the contamination of the environment/air/water/land; through discharge of gases, sewage and refuse; into the environment causing damage to health.

(iii) ***Sanitation***

- ✚ This is the act of maintaining clean environment; in order to prevent the occurrence of disease

(c) ***State five factors that promote healthy living.***

Candidates responded well to it; most responses were correct leading to good performance. However, examiners also observed a few incorrect ones.

Incorrect responses included:

- ✚ Less stress
- ✚ Able to work fast
- ✚ Able to eat well
- ✚ Your condition so nice
- ✚ You're able to do better things
- ✚ You can get energy easily

Correct responses observed included:

- ✚ Sound sleep
- ✚ Regular exercise
- ✚ Personal hygiene
- ✚ Balanced diet
- ✚ Recreation
- ✚ Adequate rest and relaxation
- ✚ Availability of social amenities
- ✚ Avoid drug abuse/misuse
- ✚ Regular medical checkup

- ✚ Maintenance of a healthy body weight
- ✚ Environmental sanitation
- ✚ Availability of purified water

- ✚ Availability of health facility hospital/pharmacy

(d) Describe briefly emergency conditions as used in First Aid.

The candidates responded well to this question. Most gave incorrect responses. However, examiners also observed a few correct ones.

Incorrect responses observed included:

- ✚ First lay down the person and apply ointment
- ✚ Stop bleeding and bandage
- ✚ First take individual to hospital and clean sore

Correct responses include:

- ✚ Emergency conditions: These are various injuries sustained by victim of accident; in homes/schools/industries/roads/at sea; that require quick/urgent attention.

HEALTH SCIENCE 3**1. GENERAL COMMENTS ON THE PAPER AS A WHOLE**

Like the previous years, this paper was drawn to show or test the candidates powers of observation interpretation and drawing conclusion from what they observed in the pictorial representation of the diagrams presented to them. The section A of this paper was more of practical out-look that test the candidates powers of observations of pictorial presentations in diagrams. If the candidates had wonderful observational skills they would have scored maximum marks on the question in section A . Unfortunately for some candidates they were not able to interpret the diagrams as they saw them. This indicated that their observational skills were poor. Hence, most of them could not score encouraging marks on this section of the question paper. However some candidates made better scores on this section than the section B .

Generally the questions were straightforward with hardly any ambiguity in any of the questions. The word ‘quackery’ created a lot of problems for a good number of candidates because they do not really understand the meaning of the word. Hence most candidates did not perform well in this question. Probably, the teachers did not teach that part of the syllabus.

It is advisable that most aspect of the syllabus be taught to the candidates.

On the whole, most candidates still do not write correct spellings of the words. The expressions are weak and the grammar is very poor.

I am asking that in the process of teaching, the teachers encourage the candidates to be speaking and writing good English, to discourage the use of local languages or creole in the classes . Some spell the words as they pronounce them. That is where a good number of the candidates missed the right answers to the questions.

Moreover, a good number of candidates, I believe, could not read and comprehend the rubrics of the questions. E.g they do not know what are nutritional diseases for which most of them could not score marks. Very few candidates were able to score 25% of the maximum marks for the paper.

The marking scheme has been very straight forward with no difficulty . It has been exhaustive and clear for all the questions.

There is no special difficulty that might have affected candidates performance in this examinations.

2. CANDIDTES' STRENGTHS

A lot of candidates manifested a good knowledge on the question. Their written English was very good and they showed good knowledge on the subject verb agreement. Their spellings were good and presented their ideas coherently in answering the questions.

They really demonstrated a good knowledge on the subject.

In the section A, a good number of candidates manifested good observation powers in the diagrams presented, Apparently, some of the candidates had been using the water closet in their homes and so they know the advantages and disadvantages of the system of toilet.

Similarly, the bucket latrine type was recognized by a good number of candidates. Because of their observational powers or skills, they were able to score good marks in this question.

Although some candidates were not able to identify a microscope presented, others were able to label the parts correctly. Some demonstrated a good knowledge of the function or use of the instruments. Most candidates performed better on the practical question than the theoretical questions.

3. CANDIDATES' WEAKNESSES

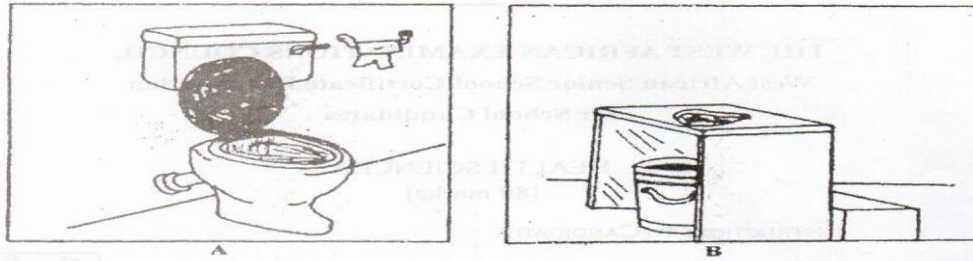
The most notable weaknesses were the candidates hand writing, expressions, the spellings and the subject- verb agreement. A good number of the candidates did not score any marks because most of them could not read and comprehend the questions. Some did not write any word for some of the questions. Some of them handed in their booklets empty for which they did not score any mark. The number of candidates who did not score any mark on this paper is far more than the previous years.

A good number of candidates demonstrated no knowledge of the words “quack” “fatigue” and nutritional deficiency diseases in humans. This indicated that the candidates performed very poorly on questions where these words or phrases have been used. Some did not even attempt these questions.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

The diagram below illustrate types of toilet. Study them and answer questions (a), (b) (c) and

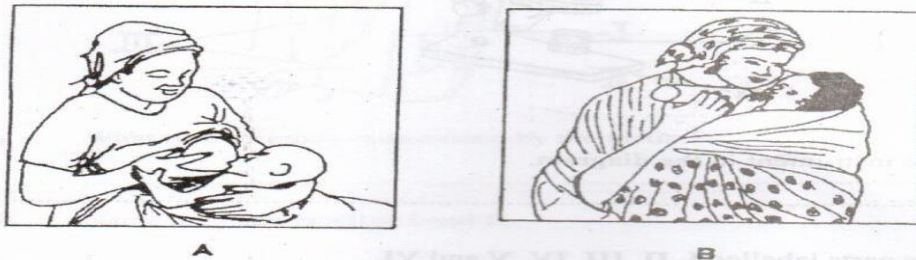


- (a) Name each of the toilets illustrated in diagrams A and B.**
- (b) (i) State one advantage each of the toilets named in (a).**
(ii) State one disadvantage each of the toilets named in (a)
- (c) Name two contagious diseases that could be contracted through the toilet represented in the diagram B by humans**
- (d) State two ways of maintaining the hygiene of the toilet represented in diagram B.**

This question was popular among the candidates. A good number of candidates scored good marks on this question. Apparently some of the candidates that scored good marks on the [a] part have been using the water closet toilets in their homes. Some have been using the bucket latrine in their homes. Such candidates were able to state the advantages and disadvantages of the two types of latrines. The [c] part of this question was also satisfactorily answered by a good number of candidates. They were able to state diseases like dysentery, typhoid, and cholera. Those who scored the maximum marks mentioned diseases like food poisoning and gastroenteritis. The [d] part was also answered satisfactorily by a good number of candidate as they mentioned the following ways of maintaining hygiene of the toilet illustrated in diagram B: regular washing, regular use of antiseptics, cover the opening with lid all the time and regular disposal of faeces. Some candidates even stated the names of some disinfectants.

QUESTION 2

The diagrams below illustrate the types of feeding in infants. Study them and answer questions (a), (b) and (c).



- (a) Name the types of feeding illustrated in diagrams A and B.**
- (b) Which of the illustrated feeding types can improve the natural immunity of infants?**
- (c) State two advantages of the feeding types illustrated in each of diagrams A and B.**

(d) State three disadvantages of the feeding types illustrated in diagram B.

This question was also attempted by a good number of candidates. The [a] part was well answered by the candidates as they were able to identify the two types of feeding i.e the breast and bottle feeding respectively. The [b] part was equally well answered by the candidates as they mentioned the breast feeding that improves the natural immunity of the child. The [c] part was where a good number of candidates could not score good marks. Most of them mentioned the advantages of breast feeding as follows:

- It is not expensive
- Does not need preparation, it is natural
- Improves emotional and psychological attachment bond between mother and child
- Provides ideal nutrition for baby
- Available at any time
- It is free from germs
- It improves baby's I.Q.

For which they scored maximum marks. When they tried to state the advantages of the B type of feeding they could not score the maximum marks for the question because they were not able to mention advantages like:

- Avoidance of breast feeding
- Enhances breast firmness
- Baby can be fed any where
- Mothers are not restricted to any diet
- An alternative method of feeding when mother is infected or dead.

The [d] part of the question was for candidates to state three disadvantages of diagram B i.e bottle feeding. It was not satisfactorily answered by most candidates since they were not able to mention disadvantages like;

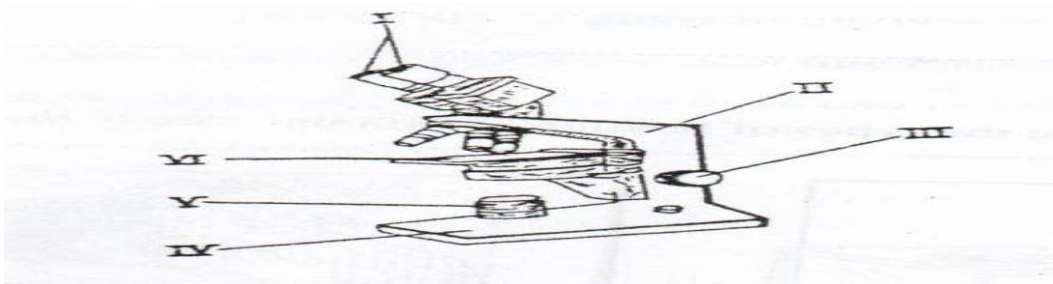
- Does not create emotional or psychological bond between mother and child
- Does not contain antibodies
- Not readily available at all time
- It is expensive
- Can be contaminated
- The right proportion may not be consumed
- Satisfaction of the child may not be guaranteed
- It is time consuming

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The commonest disadvantage mentioned by most candidates is "it is expensive" for which they only earned one mark.

QUESTION 3

The diagram below illustrates an instrument. Study it and answer questions (a), (b), (c) (d) and (e).



- (a) Name the instrument in the diagram.**
- (b) Name the part labelled I, II, III, IV, V and VI.**
- (c) State the function of the instrument.**
- (d) Name three places where the instrument could be found.**
- (e) Mention two people that can use the instrument.**

This was not very common among the candidates. Most of the candidates that attempted this question apparently had never seen this instrument. They probably had never entered a laboratory to see the instrument. They identified it with a lot of different items that do not represent the right diagram. Some candidates identified the diagram as microscope which indicates that they have not only seen it but have used it as they were able to state its correct function.

Since most of the candidates were not able to correctly identify the instrument, they were not able to label the parts of the instrument. The correct labeling expected were:

1. Eye piece or ocular lenses
2. Handle/frame/arm
3. Adjustment/focus knob
4. Base/foot
5. Illuminator/mirror
6. Support slide/stage.

Unfortunately, some candidates could not spell their parts correctly which made them lose marks.

The [d] part of the question was also difficult for most candidates. They could not state where the instrument could be found.

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Some only stated the hospital for which they earned one mark. Those who stated the following:

- School geological or pharmaceutical or engineering laboratories
- Hospital
- Health education laboratory
- Research institutions

Got the maximum marks for this question.

The [e] part of this question was also satisfactorily answered by a good number of candidates.

The people that use the instrument include:

- Medical personnel
- Laboratory technicians
- Science students
- Researchers
- Science Teachers /Health educators

QUESTION 4

The diagram below illustrates a victim of an injury. Study it and answer questions (A), (b) and (c).



- (a)(i) What type of injury is sustained by the victim?
(ii) Name the parts labelled I and II.
(iii) State the major function of the part labelled III.*

A good number of candidates did very well on this question. Some even scored the maximum marks for the question.

The (a) part was correctly answered by some candidates as they stated the type of injury as a fracture. Others could not identify the injury as a fracture rather a dislocation for which they did not score the mark. The [a iii] part was poorly answered by a good number of respondents.

Respondents were expected to label the parts as follows:

- I- Splint or stick
- II- Bandage

Those who could not spell these correctly did not get the marks.

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The [a iii] asked for the major function of the part labeled.

- III- This was not answered satisfactorily.

The major function is to support the broken arm.

(b)(i) Mention the bone that is affected by the injury.

(ii) Name two muscles which can be found in the part injured.

The [b] part of the question was also not correctly answered by most candidates as they could not state the bone that was affected in the injury.

Those who scored the mark were able to state that the humerus bone was affected.

The [bii] demanded candidates to state the muscles found at the injured part, these are the biceps and triceps.

(d) Mention three other emergency conditions that required First Aid.

The (d) part which demanded candidates to state emergency conditions that require first aid were also satisfactorily answered by a good number of candidates as they were able to state the following emergency conditions.

- Burns/scald
- Shocks/electrocution
- Poisoning
- Dislocation/sprain
- Snake bite
- Drowning
- Fainting/syncope
- Punctured wounds/cuts/bleeding

QUESTION 5

(a)(i) Who is a quack?

Was not very popular among the candidates. The (a) part was not answered satisfactorily because most of the candidates did not understand the word quack. What was expected is: A quack is a person who claims to know a special skill or profession which he does not know.

(ii) Mention four types of quackery.

The (ii) part was equally not understood by most of the candidates. The only type of quackery that was common among the candidates was medical quackery for which they only scored one mark. Other types of quackery expected include:

- Mechanical
- Electrical
- Drugs/cosmetics
- Nutritional

(iii) State four reasons why quackery persists in developing countries.

The (iii) part demanded candidates to state reasons why quackery persists in developing countries. This was equally not satisfactorily answered by most of the candidates. Hence most candidates did not attempt this whole question.

QUESTION 6

(a) What is fatigue?

Question 6 was also not very popular among the candidates. Those who attempted it could not get the maximum marks for the (a) part of the question. The required explanation for fatigue was:

- A condition of general feeling of tiredness or weakness when muscles lack tone or energy as a result of prolonged mental or physical work.

(b) Mention five causes of fatigue.

The (b) part was also not satisfactorily answered by most candidates as the only answer was engaging in prolonged activity or exercise. What was expected from the candidates that could have earned them more marks includes:

- Inadequate rest or sleep
- Lack of oxygen in the body
- Excess waste products in the system
- Engaging in prolonged activities or exercise
- Noises or pain, fear or anxiety
- Lack of ventilation
- Lack of nutrients in the body or insufficient or unsuitable food

All these are causes of fatigue which could have given the candidates the maximum marks for this question.

(c) State the two types of fatigue.

The [c] part was where a good number of candidates that attempted this question obtained their marks as they stated:

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- Mental or intellectual or mind
- Physical or body fatigue

QUESTION 7

(a) State five effects of prostitution.

Was also popular among the candidates but very poorly answered by a good number of the candidates. The (a) part instead of stating the effects of prostitution, most of them stated the

causes which did not give them any mark. The effects of prostitution expected from the candidates include the following:

- Abortion
- Loss of prestige or respect low self-esteem.
- Drug abuse.
- Stealing.
- Moral decadence.
- Can be victims of ritual killings.
- May lead to untimely death or loss of life.
- May lead to contracting sexually transmitted diseases.

- May lead to divorce or single parenting.
- Aggressive behavior.

Probably, the candidates could not differentiate between causes and effects that was why they stated the causes instead of the effects.

(b) Mention five importance of mineral salts to the body.

The (b) part was also equally poorly answered by most candidates. The importance of mineral salt to the body was not known by most candidates. It may not have been stressed or covered by the tutors. The only importance mentioned was the strengthening of bones and teeth or their formation. The main importance of mineral salt to the body includes the following that would have earned them the maximum marks.

- Enhance blood clotting.
- Necessary for the utilization of iron in the body.
- Important in blood formation.
- Useful in production of thyroxin.
- Useful in the formation of bones and teeth.
- Required for building amino acids
- Regulate fluid balance in the body (osmoregulation)
- Regulate, enhance and facilitate chemical reactions in the body.

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QUESTION 8

(a) Name four nutritional deficiency diseases.

Was attempted by a good number of candidates. Although the question was straight forward with no ambiguity candidates performed poorly. Apparently they did not understand what nutritional deficiency diseases in humans are. Very few candidates mentioned some of these diseases for which they earned marks. The nutritional deficiency diseases in humans include the following.

- Goiter
- Pellagra
- Scurvy.
- Beriberi.
- Marasmus.
- Rickets.
- Night blindness.
- Kwashiorkor.

(b) Explain the following terms in relation to drug use:

- (i) abuse;**
- (ii) rehabilitation.**

The (b) part was equally not well answered by most candidates. This question wanted an explanation of terms in relation to drug use. They were expected to explain what drug abuse is. This was answered fairly well as they mentioned:

- It is the indiscriminate or excessive use of drugs.
- For non-medical purposes or specific ailment.
- That could adversely affect the physical, mental, social and emotional health of an individual.

The other word that was to be explained was rehabilitation. The context the candidates used this word was far from rehabilitating a drug victim. The explanation required was as follows:

- The process of maintaining or improving or restoring a drug victim.
- To live a normal life by helping or assisting the individual to stop taking drugs.
- Through constant monitoring and total integration into the family or society.

PHYSICS 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The questions were clear and straight forward. They were drawn according to the syllabus and they were within the reach of the candidates. However, the candidates performed very poorly not because the questions were difficult or out of scope, but because they were strange or unexpected, which appeared that many candidates were not prepared to tackle the paper. The highest score was about 45, which is equivalent to 75% and the lowest was zero. Very few candidates about 1% of the papers marked, scored the highest marks and majority scored the lowest marks.

Some of the difficulties that might have led the candidates to perform poorly could be listed as follows:

1. Insufficient trained and qualified Physics teachers.
2. Incomplete treatment of the Physics syllabus.

This may further lead to the following inadequacies in the candidates:

- a) Lack of basic mathematical concepts useful in understanding and solving certain concepts in Physics.
- b) Lack of basic concepts in topics taught.
- c) Poor interpretation of the Physics questions.

The performances of the candidates were affected by the above mentioned factors and some others which are not mentioned here. As a result, one could see the following patterns of answering the whole question paper:

- i. Some questions were completely avoided by the whole group of a particular school, or by a good number of schools. Some questions which were avoided by a greater number of candidates were questions **2, 5, 6, the (b) part of 8**.
- ii. Some questions were attempted partially. Many candidates failed to answer a question fully.

The questions in Part I of the paper appeared simple but strange. Many candidates performed very poorly in that part. One of the reasons for the poor performance was that Part I was drawn from the harmonized syllabus which appears at the end of the Physics syllabus. Many teachers do not treat that part of the syllabus with the seriousness it observes, and so the questions appear strange or difficult for many candidates. Part II appeared more complex but it was better attempted, because it was drawn from the common or familiar parts of the syllabus.

2. CANDIDATES' STRENGTHS

Some candidates indicated some strengths in the following areas:

- Handling of simple mathematical operations;
- Knowledge of formulae and units for various quantities;
- Substitutions of subjects in various formulae.

In question 9, some candidates were able to correctly write the equations and relations to express the exchange of heat between the materials involved, although some could not calculate to the correct answer.

In many other questions, the concept could be grasped to some extent.

3. CANDIDATES' WEAKNESSES

The following weaknesses were observed:

- Inadequate or poor coverage of the syllabus. This was manifested by the fact that many candidates could not answer a question completely. Many candidates could not attempt the required number of questions, because some or many questions could not be understood.
- Incorrect interpretation of Physics questions that led to wrong answers.
- Some candidates could not correctly handle the difference between definition and explanation of concepts and terms.

Here are some recommendations to overcome the observed weaknesses:

- a) Continuous practice in answering questions correctly, using the scientific process. This will minimize the wrong interpretation concepts in Physics. Teachers of Physics must inculcate in their respective candidates the correct concepts of both defining terms and stating laws.
- b) Class discussions on relevant concepts must be included in the teaching and learning process.
- c) Teachers, in preparation for examinations, must administer well-planned test, mark the scripts and make the necessary corrections in class.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) What is a black body?

The answer to this question was distorted. Most candidates from school to school wrote: "An idealized physical body that absorbs all incident radiation regardless of frequency or angle of incidence." This may be taken from internet, by using phones. Many candidates gave an incomplete answer and this was widespread in various schools. It is suspicious for a wrong answer to be widespread, and this happened with many other questions on the same paper.

The correct answer was that “A blackbody is a material that absorbs all the radiation that falls on it.” Many candidates defined as follows: “Blackbody is a material that falls on it, without reflecting any.” This was widespread and it is accepted.

For some other candidates, blackbody does not sound scientific, so they could not even attempt to answer.

- (b) *Write an equation for the total energy, E , radiated at all wavelengths per unit area per unit time at temperature T .*

For many candidates, this description was too long for the answer or equation, except for those who already knew. The correct equation is: $E = \sigma T^4$, where σ is the Stefan-Boltzmann’s constant. Many candidates could not spell this word correctly and some could not give the correct index or power of T in the formula.

QUESTION 2

- (a) *What is meant by dimension of a physical quantity?*

There was a poor demonstration of dimensional analysis in the whole paper, and so this question was not solved or handled properly. Superficial understanding of the base units will affect the understanding and solution to this question. Dimensions of a physical quantity are the powers to which the fundamental quantities of mass (M), length (L) and time (T) are raised.

- b) *The speed, c , of longitudinal waves in a stretched wire is given by the equation*

$C = \sqrt{\frac{E}{P}}$, *where E is the Young’s modulus for the material of the wire and P is its density. Show that this equation is dimensionally correct.*

A very few candidates could attempt this question, because the concept of dimensional analysis in Physics was not mastered by many candidates.

$$[C] = [LT^{-1}]$$

$$\left[\frac{E}{P}\right] = \left[\frac{ML^{-1}T^{-2}}{ML^{-3}}\right]^{\frac{1}{2}} = [L^2T^{-2}]^{\frac{1}{2}} = [LT^{-1}]$$

The equation is dimensionally correct because the dimensions on both sides of the equation are correct i.e. $[LT^{-1}]$. To master this topic, the candidates need to know the base units involved in the derived quantities and constants, and how to mathematically simplify them.

QUESTION 3

- (a) *When is a satellite said to be in a parking orbit?*

This question appears simple because satellites are common, but the concept of the parking orbit was misconstrued by many candidates. Many candidates explained that a satellite in parking orbit appears to be steady or constantly in one place over the earth. This is true, but the earth is rotating, this means the satellite also must be moving, otherwise it will not appear to be in one place over the earth surface. Another aspect is that though the satellite and the earth are moving, the speeds are not the same; the satellite covers greater distance over the same period. Therefore, the correct answer is that, a satellite is said to be in a parking orbit when its period of revolution is equal to the period of rotation of the earth. No candidate could write this down correctly.

b) State two uses of satellites.

There are several uses of satellites, some of which are:

- communication;
- weather forecasting;
- scientific research;
- military purposes/warfare;
- global positioning system (GPS).

QUESTION 4

The permitted strain on a steel wire of diameter 1.0 mm is 1.0×10^{-3} . Calculate the maximum load that could be placed on the wire.

[Young's modulus for steel = $2.0 \times 10^{11} \text{ Nm}^{-2}$, $\pi = 3.142$]

This was an application problem where formulae were required to solve the problem. The first problem was how to understand the question.

This was Hook's law, where the constant of proportionality, called the Young's Modulus was given or provided as $2.0 \times 10^{11} \text{ Nm}^{-2}$. The other information given was the strain = 1.0×10^{-3} and the diameter of the wire = 1.0 mm.

Three quantities were required to be arranged in the solution of this problem, i.e. stress, strain and Young's Modulus. The maximum load (F) required was to be found in the stress.

$$\frac{\text{Stress}}{\text{strain}} = \text{Young's Modulus, where stress} = \frac{F (\text{load})}{A (\text{area of cross section})}$$

$$\text{stress} = \frac{F (\text{load})}{A (\text{area of cross section})} = \text{Strain} \times \text{Young's Modulus}$$

$$F = \text{Area of cross section} \times \text{strain} \times \text{Young's Modulus}$$

$$F (\text{load}) = \frac{\pi d^2}{4} \times \text{strain} \times Y$$

$$F (\text{load}) = \frac{3.142 \times (1.0 \times 10^{-3})}{4} \times 1.0 \times 10^{-3} \times 2 \times 10^{11}$$

$$= 1.57 \times 10^2 N$$

The correct components required to be demonstrated in this problem were: the knowledge of the correct formula, the rearrangement of the formula to make **F** the subject and correct substitution in the formula.

QUESTION 5

State three advantages of fibre optics.

Many candidates rushed to solve this question because it was just a simple recall, but because fibre optics is a relatively new technology in Sierra Leone, which many teachers do not bother to teach, and therefore the candidates missed it. Some candidates wrote something similar to the properties rather than the advantages. The correct advantages include:

- high information - carrying capacity;
- free noise associated with electrical interference;
- work over longer distances without degeneration;
- lighter in weight than copper wires;
- crosstalk between adjacent channels is negligible;
 - wide band application;
 - low maintenance cost, etc.

QUESTION 6

What is meant by a laser being :

- a) ... monochromatic?***
- b) ... coherent?***
- c) ... collimated?***

Answer

This was another simple question which was requiring for the properties of a laser. One could answer this question if even you did not know about laser because the words were technical terms which have their own meanings, no matter where they occur.

A laser being:

- a) ... monochromatic means it has consistent wavelength;
- b) ... coherent means all parts are in phase;
- c) ... collimated means all parts travel in the same direction.

QUESTION 7

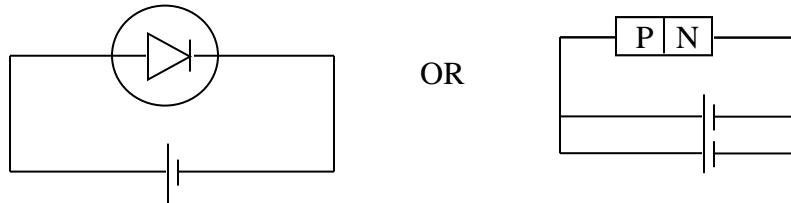
(a) Explain the term 'doping'.

The answer to this question involves not just the meaning of doping, but also the process or meaning and the effect or result. Therefore doping is the addition of (minute) amount of

impurity to an intrinsic/pure semi-conductor in order to increase its electrical conductivity/reduce its resistivity.

(b) Draw a $p - n$ junction diode connected in the forward bias mode.

The answer to this question required just a diagram which should be self-explanatory. A $p - n$ junction diode in the forward bias arrangement has the positive terminal of the battery connected to the p - type and the negative terminal connected to the n - type semiconductor.



Many candidates attempted to draw the diagram but could not get the mark because they either couldn't draw the symbols of the diode or cell correctly or the arrangement was wrong.

PART II

Rubric: Answer any **three questions** from this part.

A good practice here is to read through the questions and choose the best or the questions you think you can score the maximum points on. Some candidates answered more than three, deliberately, in order to increase their chances, since they do not know much.

QUESTION 8

(a) (i) What is meant by the term terminal velocity?

This question requires only recall or definition. Terminal velocity is the constant maximum speed attained by a body falling through a fluid.

(ii) State three factors that affect the terminal velocity of a body in a liquid.

Here we should know that this is not free fall, where different objects have the same acceleration, g , and the same constant maximum velocity. A body falling in a fluid will have different constant maximum velocities due to the following factors:

- size of the body;
- shape of the body;
- weight or mass of the body;

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- density or viscosity of the fluid;
- temperature of the fluid.

(iii) Given that for a uniformly accelerated motion, $S = \frac{v+u}{2}t$ and $v = \left[u + \right] at$, where

the symbols have their usual meanings, derive two other Newton's equations of motion.

This question requires some mathematical application.

$$\text{Let } S = \left(\frac{v+u}{2}\right)t \quad \dots\dots (1)$$

$$v = u + at \quad \dots\dots (2)$$

To get the first equation, let's substitute for v in (1).

$$S = \left(\frac{u + at + u}{2}\right)t = \frac{2ut + at^2}{2}$$

$$\therefore S = ut + \frac{1}{2}at^2$$

To get the second equation, we make t the subject in the second equation (2), and substitute for t in the equation (1).

From $v = u + at$, we have $t = \frac{v-u}{a}$ substituting for t in $S = \left(\frac{v+u}{2}\right)t$, we have

$$S = \left(\frac{v+u}{2}\right)\left(\frac{v-u}{a}\right)$$

$$= \frac{v^2 - u^2}{2a}$$

$$2as = v^2 - u^2$$

$$\therefore v^2 = u^2 + 2as$$

The two equations derived are: $s = ut + \frac{1}{2}at^2$
 $v^2 = u^2 + 2as$

(b) A bus travelling at 30ms^{-1} along a straight road passes a stationary taxi cab. The cab begins to move 5 s later with a uniform acceleration of 2ms^{-2} in the same direction as the bus. Calculate the:

(a) time taken by the cab to catch up with the bus;

Very few candidates could solve this problem to the end.

To catch up with the bus means the same distance has to be covered at two

different times:

Let time travelled by the cab = t .

The time travelled by the bus = $(t + 5)$

Distance travelled by the bus (at constant velocity) = $30(t + 5)$

Distance travelled by the taxi (at constant acceleration) = $0 + \frac{1}{2} \times 2 \times t^2$

Since the distance covered by the two vehicles in two different intervals of time is the same, we have:

$$30(t + 5) = 0 + \frac{1}{2} \times 2 \times t^2$$

$$30t + 150 = t^2$$

$$t^2 - 30t - 150 = 0$$

Using the quadratic formula, it is found that $t = 34.36\text{sec}$.

(β) distance the cab had travelled to catch up with the bus.

To calculate the distance travelled by taxi, we use the equation $30(t + 5)$

$$= 30(34.36 + 5)$$

$$= 1180.8\text{m}$$

OR

Distance travelled by the cab to reach the bus:

$$S = ut + \frac{1}{2}at^2$$

$$S = 0 + \frac{1}{2} \times 2 \times (34.36)^2$$

$$S = 1180.6\text{m}$$

QUESTION 9

(a) (i) Explain the statement, the specific heat capacity of water is $4200\text{Jkg}^{-1}\text{k}^{-1}$.

This question required an explanation of the definition in terms of the $4200\text{Jkg}^{-1}\text{k}^{-1}$. The statement means that 4200 joules of heat is needed to raise the temperature of one kilogram of water by one kelvin.

Some candidates explained almost the same thing, but without mentioning the quantity of water. This will be wrong, because it will be talking about heat capacity rather than specific heat capacity.

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(ii) State three ways in which the high specific heat capacity of water is important.

Most candidates could not understand this question, and therefore could not give the required answer. Some of the ways in which the high specific heat capacity of water is important are as follows:

- it enables the temperature of the sea water to rise and fall slowly than that of the land, leading to land and sea breezes.
- it enables water to be used as coolant in nuclear reactors.
- it enables water to be used to cool engines and radiators of cars etc.

(b) *An aluminium can of mass 100 g contains 200 g of water at 15° c . The can with its contents is placed in a freezer at – 5° c . Calculate the quantity of heat that has to be removed from the water and the can for their temperature to fall to – 5° c .*

[Specific heat capacity of water = 4.2Jg⁻¹°C⁻¹, specific latent heat of ice = 340Jg⁻¹, specific heat capacity of aluminium = 0.9Jg⁻¹C⁻¹, specific heat capacity of ice = 2.0Jg⁻¹C⁻¹]

The specification of this question is that, (α) all the quantities and constants are given not in S.I units, but in grams or per gram. Some candidates decided to spend time to convert to S.I units – the kilogram or per kilogram, but ran into errors. (β) The fall or drop in temperature was observed but no rise or gain in temperature could be observed, so as to form an equation. The only way was to calculate the heat removed from the water and can for the temperature to fall to – 5° c .

For the can, the temperature changes from 15° c to – 5° c without change of state. For water, there was change of state.

Thus:

$$\begin{aligned}
 & \text{- Heat lost by can in cooling from } 15^{\circ} \text{ c to } -5^{\circ} \text{ c} \\
 & \quad = 100\text{g} \times 0.90 \times [15 - (-5)] \\
 & \quad = 1800 \text{ J}
 \end{aligned}$$

$$\begin{aligned}
 & \text{- Heat lost by water in cooling from } 15^{\circ} \text{ c to } 0^{\circ} \text{ c} \\
 & \quad = 200\text{g} \times 4.2 \times [15 - 0] \\
 & \quad = 12,600 \text{ J}
 \end{aligned}$$

$$\begin{aligned}
 & \text{- Heat lost by water in freezing at } 0^{\circ} \text{ c} = ml \\
 & \quad = 200 \times 340; \\
 & \quad = 68,000 \text{ J}
 \end{aligned}$$

$$\begin{aligned}
 & \text{- Heat lost by ice in cooling from } 0^{\circ} \text{ c to } -5^{\circ} \text{ c} \\
 & \quad = 200 \times 2.0 \times [(0 - 5)] \\
 & \quad = 2,000 \text{ J}
 \end{aligned}$$

$$\begin{aligned}
 & \text{Total heat removed} \\
 & \quad = 1,800 + 12,600 + 68,000 + 2,000
 \end{aligned}$$

$$= 84,400 \text{ J or } 8.44 \times 10^4 \text{ J}$$

(c) (i) What is a machine?

A machine is a device in which a force (effort) applied at one point is used to overcome another force (load) at some other point.

(ii) State the relationship between the mechanical advantage, velocity ratio and efficiency of a machine.

$$\text{Efficiency} = \frac{\text{Mechanical Advantage}}{\text{Velocity Ratio}} \times 100\%$$

Some candidates could not place the 100%, which was not correct, because efficiency is rate in percentages.

(iii) Draw and label a block and tackle system of velocity ratio 5.

For the correct diagram of the block and tackle system of velocity ratio of 5,

- There should be two blocks with the upper block having three pulleys and the lower block having two pulleys, giving a total of five pulleys.
- The ropes begin from the lower block.
- The arrow in the rope points towards the effort.

Marks were lost because of the following:

- incorrect number of pulleys. There should be five pulleys.
- incorrect direction of rope and effort.
- incorrect labeling etc..

QUESTION 10

(a) (i) Explain the term parallax as used in optics.

The explanation of the term parallax is “the apparent relative movement of two objects owing to the movement of an observer’s eye.”

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The following answer was given by several candidates from different schools, with same sentence structure: parallax is the apparent relative movement of two objects. Owing to the movement on the part of the observer.

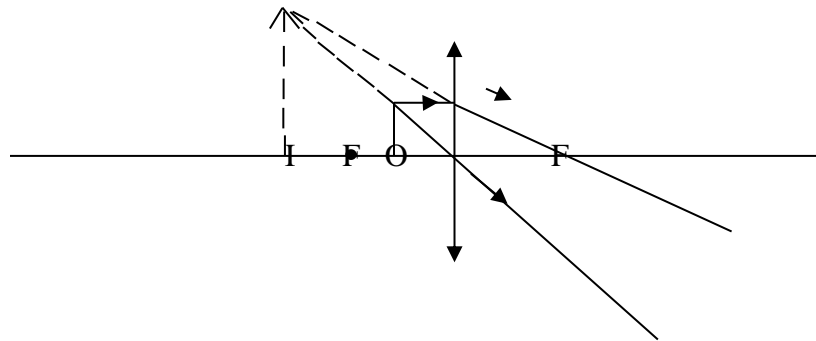
Many candidates wrote exactly this same sentence, with the full stop wrongly placed between the words “object” and “owing”.

(ii) *Define the principal focus of a converging lens.*

The principal focus is a point on the principal axis, where rays which are close and parallel to the principal axis converge after passing through the lens.

(iii) *Using a ray diagram, illustrate the production of a virtual image using a converging lens.*

In a converging lens, we get a virtual image when the object is between the principal focus and the lens. The image is erect, magnified and on the same side as the object.



(b) (i) *Define a wave.*

A wave is a disturbance that travels and transfers energy or momentum from one point to another without particles in the medium travelling between the two points.

(ii) *Arrange the following waves in increasing order of wavelength: visible light, radio waves, infra red waves, x-rays, microwaves and ultraviolet waves.*

To correctly answer this question, one must have knowledge of the wavelengths or frequencies of the waves in the electromagnetic spectrum.

The arrangement of the given waves in increasing order of wavelengths is:

x-rays → ultraviolet → visible light → infrared → microwaves → radio waves

(c) *Two open organ pipes of lengths 50 cm and 50.9 cm give beats of frequency 6.0 Hz, when sounding their fundamental notes together. Neglecting the end corrections, calculate the velocity of sound in air.*

In open pipes, at the fundamental mode of vibration:

$$L = \frac{\lambda}{2} \quad \text{or} \quad \lambda = 2L, \text{ where } L \text{ is the length of the pipe.}$$

The fundamental frequency

$$f_0 = \frac{v}{\lambda} = \frac{v}{2L}$$

$$\text{Beat frequency } \Delta f = f_1 - f_2 = \frac{v}{2L_1} - \frac{v}{2L_2}$$

$$\Delta f = \frac{v}{2} \left(\frac{1}{L_1} - \frac{1}{L_2} \right)$$

$$6 = \frac{v}{2} \left(\frac{1}{0.5} - \frac{1}{0.509} \right) = 339.3 \text{ms}^{-1}$$

QUESTION 11

(a) (i) Define static electricity.

Static electricity is electric charges at rest.

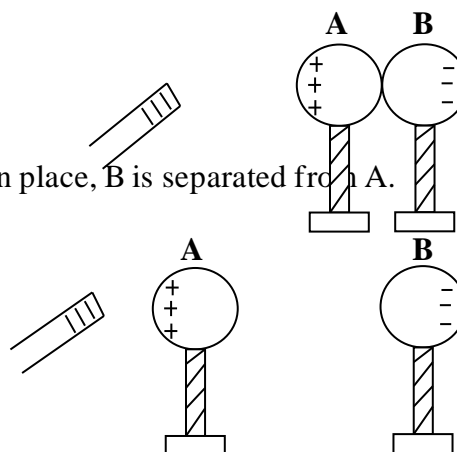
(ii) State two practical uses of static electricity.

Practical uses of static electricity are seen in the following:

- electrostatic paint spraying;
- dust collection in chimneys;
- garden sprays for plants;
- photocopying;
- protection of buildings from lightning.

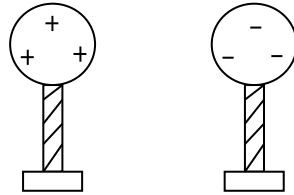
(iii) Given two identical uncharged metal spheres, A and B, mounted on insulating supports, an ebonite rod and a piece of fur, describe with the aid of diagrams, how sphere A could be charged positively and sphere B negatively.

- The ebonite rod is charged negative by rubbing it with fur.
- The spheres A and B are placed so that they can touch.
- The negatively charged ebonite rod is brought near A.



- Holding the charged rod in place, B is separated from A.

- Charged rod now removed and charges redistributed evenly on A and B.



- Positive and negative charges brought near A and B respectively showing repulsion confirms the charges on them.

(b) (i) Define mutual induction.

Mutual induction is the production of an e.m.f in one circuit as a result of the changing current in another circuit.

(ii) A transformer supplies 12v when connected to a 240 v mains. If the transformer takes 1.1 A from the mains to light ten 12 v, 24 w lamps arranged in parallel, calculate:

(a) the efficiency of the transformer;

The efficiency of transformer

$$eff = \frac{\text{output power}}{\text{input power}} \times 100\%$$

Output power = ten lamps x power for each

Input power = current x voltage

$$\therefore eff = \frac{10 \times 24}{1.1 \times 240} \times 100\% = 90.9\%$$

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(β) the cost of supplying power for 10 hours at GH¢5.00 per kWh.

Cost of supplying power

Cost of power supply = Energy x Cost

$$= 0.25 \times 5 \times 10$$

$$= \text{GH¢ } 12.00$$

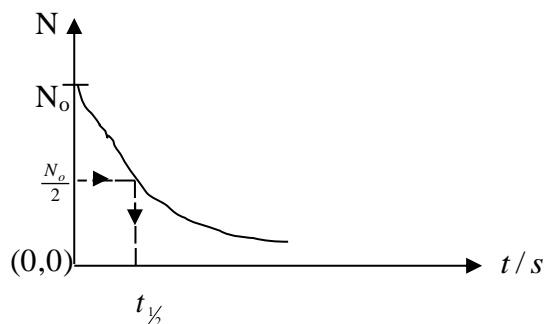
QUESTION 12

(a) (i) Define half-life of a radioactive element.

This question was answered in different versions by different candidates.

Some said half-life is time taken for initial number of atoms to reduce/decay to half. Correct definition is, the time taken for one half of the radioactive element to decay.

(ii) *Sketch a graph of the relation $N = N_0 e^{-\lambda t}$, and indicate the half-life. The usual meanings of the symbols are implied.*



The graph must be labelled and shaped correctly. Half of the initial amount of atoms N_0 , must be indicated with the corresponding half-life, $t_{1/2}$.

(iii) *The initial number of atoms in a radioactive element is 6.0×10^{20} and its half-life is 10 hrs. Calculate:*

(α) *the number of atoms which have decayed in 30 hrs.*

The number of atoms which decayed in 30 hours:

$$\begin{aligned} \frac{N}{N_0} &= \frac{1}{2^{t/t_{1/2}}} \\ &= \frac{N}{6.0 \times 10^{20}} = \frac{1}{2^{30/10}} = \frac{1}{2^3} \end{aligned}$$

Amount left not decayed = N

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$$N = \frac{6.0 \times 10^{20}}{8} = 7.5 \times 10^{19} \text{ atoms}$$

$$\begin{aligned} \text{Amount decayed} &= 6.0 \times 10^{20} - 7.5 \times 10^{19} \\ &= 5.25 \times 10^{20} \text{ atoms} \end{aligned}$$

(β) *the amount of energy liberated if the energy liberated per atom decay is $4.0 \times 10^{13} \text{ J}$*

The amount of energy liberated
= Amount of energy x Amount of energy liberated per atoms

$$\begin{aligned}
 &= 5.25 \times 10^{20} \times 4.0 \times 10^{-13} \text{ J} \\
 &= 2.1 \times 10^8 \text{ J}
 \end{aligned}$$

(b) (i) What are nucleons?

Nucleons are the protons and the neutrons in the nucleus. Some candidates wrote that it is the particles inside the nucleus, but that is not correct.

(ii) Define the binding energy of an atom.

Binding energy is the minimum work or energy required to separate the nucleons in the nucleus of an atom.

(iii) Given that the mass of a proton is 1.0073 u, the mass of a neutron is 1.0087 u and the mass of a helium nucleus is 4.0015 u, calculate:

(a) the binding energy of the helium nucleus;

Binding energy of helium

$$\begin{aligned}
 \text{Mass defect} &= \text{mass of 2 protons} + \text{mass of 2 neutrons} - \text{mass of helium nucleus} \\
 &= 2(1.0073) + 2(1.0087) - 4.0015 \\
 &= 0.0305 \text{ u}
 \end{aligned}$$

$$\begin{aligned}
 \text{Binding energy} &= 0.0305 \times 931 \\
 &= 28.4 \text{ MeV}
 \end{aligned}$$

(β) the binding energy per nucleon of helium.

Binding energy per nucleon of helium

$$= \frac{28.4}{4} = 7.1 \text{ MeV}$$

$$\text{[1u = 931 MeV]}$$

PHYSICS 3**1. GENERAL COMMENTS ON THE PAPER AS A WHOLE**

The general performance of candidates was unsatisfactory. The causes were wide ranging from inaccurate measurement, plotting the wrong co-ordinates, stating unscientific precautions, wrong definitions to incomplete ideas in demonstrating their understanding of some of the principles involved in a small scale laboratory experiment.

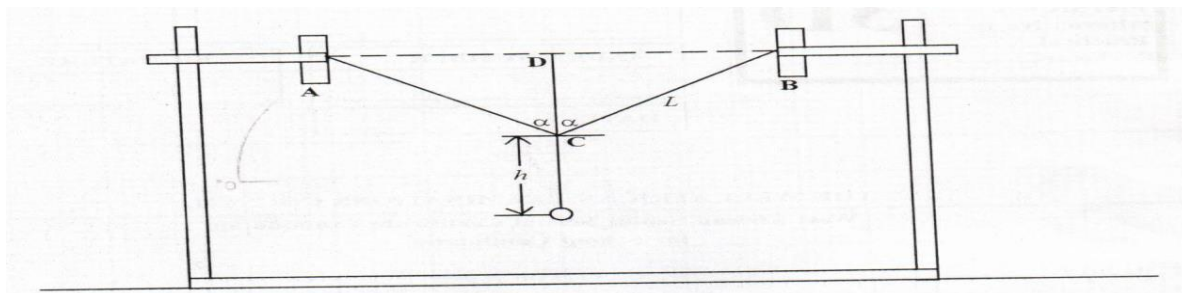
2. CANDIDATES' STRENGTHS

Majority of the candidates were able to answer the two questions required. They presented their values/data in a composite table and matching of points on the graphs was minimal.

3. CANDIDATES' WEAKNESSES

The identifiable weaknesses of candidates were:

- i) Measured and record values accurately
- ii) Record measurement, using consistent decimal places or significant figures especially where reciprocal values are involved.
- iii) Formulating composite table.
- iv) Choosing scales enabling intercepts on the axes where applicable.
- v) Plot coordinates points accurately.
- vi) Drawing lines of best fit.
- vii) Draw a large right angled triangle, some triangles were too small for any reliable scientific deduction or calculation to be made.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

The diagram above illustrates the ends of a light inextensible string ACB fixed at points A and B.

A simple pendulum of length h is suspended at the midpoint C of the thread such that $AC = CB = L + 50\text{cm}$. Angle $DCB = \alpha$ is measured.

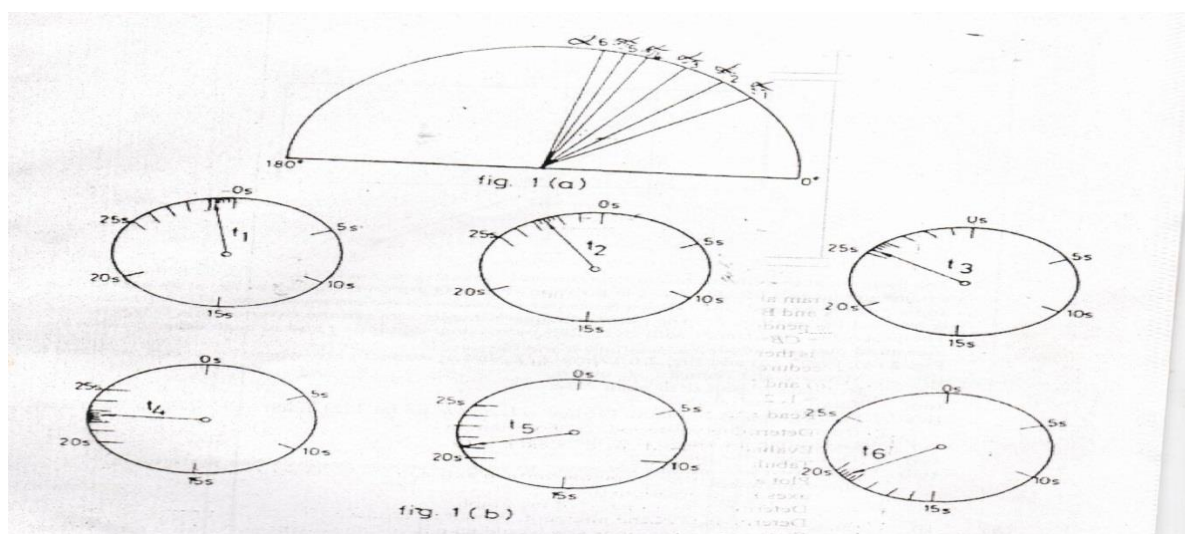
The bob is then set into oscillation and the time t for 20 oscillations is taken and recorded. The procedure is repeated for five other values of α .

Fig.1(a) and Fig. 1(b) represent α_i and the corresponding t_i respectively, where $i = 1, 2, 3, 4, 5$ and 6.

- (i) Read and record α_i and t_i .
 - (ii) Determine the period, T_i of oscillation.
 - (iii) Evaluate T^2 and $\cos \alpha$ in each case.
 - (iv) Tabulate the results.
 - (v) Plot a graph of T^2 on the vertical axis and $\cos \alpha$ on the horizontal axis, starting both axes from the origin (0, 0).
 - (vi) Determine the slope, s , of the graph.
 - (vii) Determine also, the intercept, c , on the vertical axis.
 - (viii) State two precautions you would take if you were to perform this experiment in the laboratory.
- (b)(i) Use the graph to determine the value of k if

$$T^2 = \frac{4\pi^2}{k} (L \cos \alpha + h).$$

(ii) Define simple harmonic motion.



QUESTION 1

OBSERVATIONS

On the whole it was satisfactory. About 55% measured and recorded the six values of α and t . Many candidates evaluated $T = t/20$, T^2 and $\cos \alpha$ and show composite table.

GRAPH

The majority plotted the values of T^2 and $\cos \alpha$ correctly. Disappointingly, about 30% interchanged the axes, the T^2 and $\cos \alpha$ values were interchanged.

However, most converted their values to standard form, though a few got the index of the multiple factor of 10 wrong.

SLOPE

Most candidates determined the slope correctly. But a few determined the reciprocal of the slope (i.e. $\Delta \cos \alpha / \Delta T^2$ instead of $\frac{\Delta T^2}{\Delta \cos \theta}$)

INTERCEPT (C)

Majority of the candidates currently show the intercept(c) on the vertical axis but not correctly/wrongly recorded.

PRECAUTIONS

Almost every candidate was able to state two important precautions. Most showed the realization of error due to parallax in reading metre rule/stop clock/stopwatch.

Part (b) – SHORT ANSWER QUESTIONS

- i. Most candidates (about 80%) applied the wrong procedure and got the wrong answer. Others had no knowledge of it and did not attempt it.

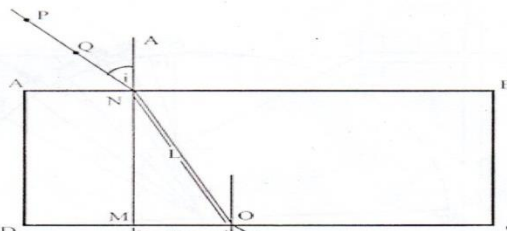
$$T^2 = \frac{4\pi^2 L \cos \alpha}{K} + \frac{4\pi^2 L}{K}$$

$$\text{Slope}(S) = \frac{4\pi^2 L}{K}$$

$$K = \frac{4\pi^2 L}{\text{slope}}$$

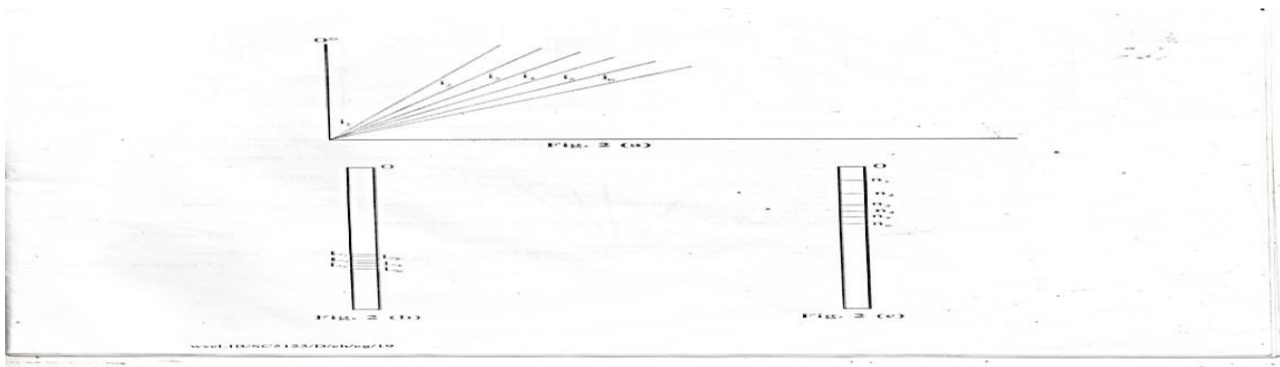
- ii. The majority failed to give the correct definition of simple harmonic motion. The body is said to undergo simple harmonic motion when the acceleration of the body is directed towards a fixed point and the acceleration is directly proportional to displacement from the fixed point.

2. (a)



(b) (i) State Snell's law

(ii) State two quantities associated with light that would be affected when it travels from one medium to another of different optical density.



QUESTION 2**OBSERVATIONS**

The performance of candidates was unsatisfactory but the few that attempted it, measured and recorded the six value of i/I , L and n to at least one decimal place.

Most candidates evaluated and reached L^2 and n^2 to at least three significant figures.

GRAPH

Both areas were correctly distinguished and choice of reasonable scales. The points plotted were accurate. Few candidates could not draw good graphs.

SLOPE(S)

The slope was currently determined by most candidates, though there were few “hiccups” in the determination of the difference in the ordinates (ΔL^2) and abscissa (Δn^2)

Majority failed to determine the intercept (C) on the vertical axis, either because of the choice of scales was disproportionate or the ordinate not quite pertinent.

PRECAUTIONS

Most candidates gave wrong precautions. Some even went to the extent of stating that adequate light was a prerequisite. The following are good examples

- I ensured reasonable spacing of pins (about 4cm apart)
- I ensured optical pins were erect/ vertical/upright
- I avoided parallax error on protractor/rule

Part (b) – SHORT ANSWERS QUESTIONS

- i. Less than 10% gave the correct definition of Snell’s law. Those who gave incorrect or incomplete definition failing in stating “for a given pair of media”.

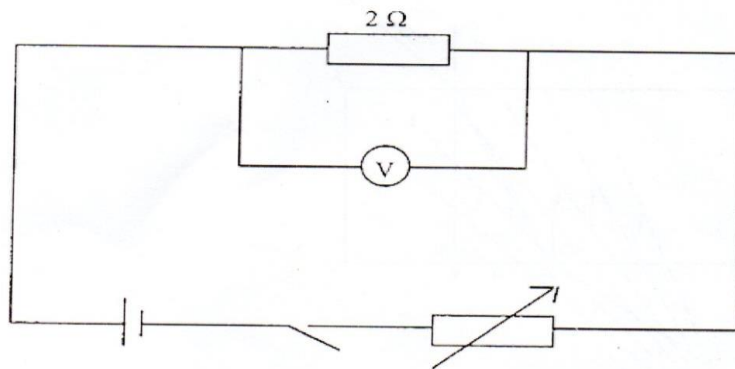
Snell’s law states that, for a given pair of media, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is constant.

- ii. Most candidates were unable to state the two quantities associated with light that would be affected when it travels from one medium to another of different optical density.

The expected considerations are as follows:

- Wave length
- Velocity

3. (a)



The diagram above illustrates a set-up to determine the internal resistance of a cell. The cell is connected in series with a key, a resistance box and a $2\ \Omega$ standard resistor. A voltmeter is connected across the $2\ \Omega$ resistor.

With the resistance box set at R and the key closed, the potential difference V across the standard resistor is read and recorded.

The procedure is repeated for **five** other increasing values of R .

Fig. 3 (a) and fig 3 (b) show R_i and V_i respectively, where $i = 1, 2, 3, 4, 5$ and 6 .

- (i) Read and record R_i and the corresponding V_i .
- (ii) Evaluate V^{-1} in **each** case.
- (iii) Tabulate the results.
- (iv) Plot a graph of R on the vertical axis and V^{-1} on the horizontal axis, starting **both** axes from the origin $(0, 0)$
- (v) Determine the slope, s , of the graph.
- (vi) State **two** precautions you would have taken if you were to perform this experiment in the laboratory.

[21 marks]

- (b)
 - (i) Define the *internal resistance* of a cell.
 - (ii) Three cells, **each** of e.m.f. $1.5\ \text{V}$ and internal resistance $1\ \Omega$, joined in series, are connected across a $2\ \Omega$ resistor. Calculate the current in the circuit.

[4 marks]

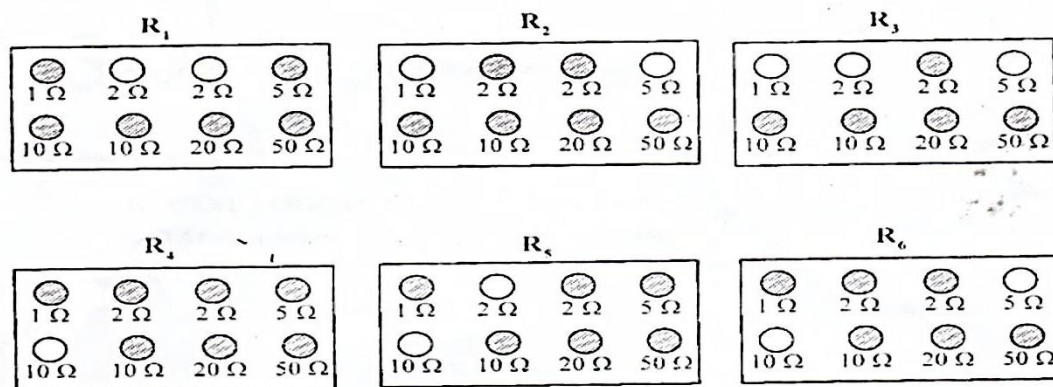


Fig. 3 (a)

NOTE: The shaded circles indicate that plugs are inserted and the unshaded circles indicate that plugs are removed.

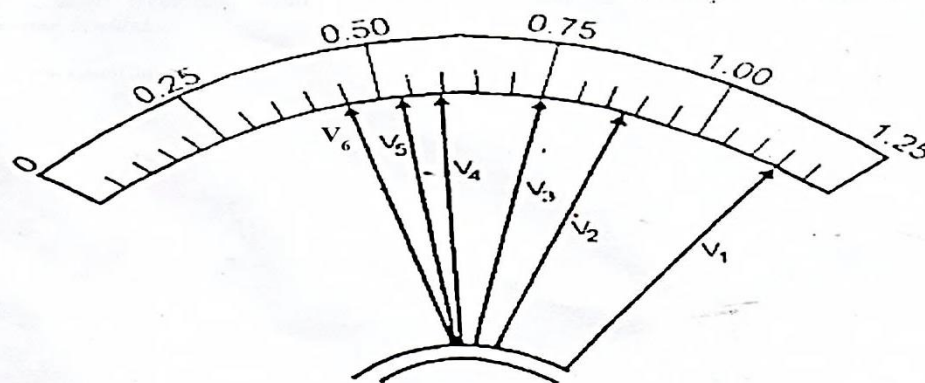


Fig. 3 (b)

QUESTION 3

OBSERVATIONS

Most candidates performed well in this question. The value of R and V were currently read and recorded. The six values of V^{-1} correctly evaluated to at least three decimal places. A composite table showing at least R , V and V^{-1} was presented.

GRAPH

An appreciable number of candidates currently distinguished both axes and reasonable scales starting from the origin $(0, 0)$. The points were correctly plotted and line of best fit drawn was accurate in many cases.

PHYSICAL EDUCATION 2

1. GENERAL COMMENT ON THE PAPER AS A WHOLE

The standard of the paper compared favourable with the previous years. The questions were within the content and scope of the syllabus.

The marking scheme was quite exhaustive and flexible enough to accommodate varied and relevant responses.

However, physical education teachers should endeavor to teach the students according to the syllabus.

This will improve candidate's performance in subsequent exams. The performance was however not too good as compared to the other years.

2. CANDIDATES' STRENGTHS

Over 70% of the candidates demonstrated an appreciable level of knowledge in the various sections of the paper.

Candidates were able to answer the questions as precisely as possible.

The effort of the Candidates in section A' was better than sections B'' C' and D '. Over 60% of the candidates performed very well in this section but did fairly well in section B.

This affected their overall performance.

They also demonstrated good knowledge of questions based on First –Aid Sport injuries.

3. CANDIDATES' WEAKNESSES

As earlier stated, the candidates were unable to read and understand the questions properly before attempting them.

This contributed to their poor performance. Some students mixed up the questions while others did not understand the questions at all.

This was a clear indication that the students hardly took time to read and understand the questions.

In addition to the above weakness, poor expressions, spelling mistakes and lack of adherence to rubrics dominated candidates' works.

RECOMMENDATIONS

The following recommendations will help candidates overcome their weaknesses.

- i. That candidates should improve on their spellings e.g. scientific terms etc.
- ii. That candidates be exposed to disciplines which can improve their ability to present materials in an orderly manner.
- iii. That candidates be informed about the importance of clear and detailed diagrams.
- iv. Teachers of the subject (i.e Specialists) should have access to past question papers as this will give an insight to the type of question set.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

QUESTION 1

Candidates were required to answer two questions only out of three in the section.

Above 60% of the candidates were able to give correct answer about the types of relays in athletics.

QUESTION 4

In 4(a), the different injuries in football match were correctly answered.

In question 4(b) the Acronyms in sports was poorly done by candidates who attempted the question.

QUESTION 6

- (a) Over 50% of the candidates got the answers to the examples of the ball and socket joint and the hinge joint.
- (b) The question on the league tournament was misunderstood. All the candidates who attempted this question did poorly.
- (c) Question 8 (a) execution of thief vault in gymnastic. Almost all the candidates did poorly in this question.

QUESTION 7

In most cases, candidates had good knowledge on what is ectomorph and mesomorph over 45% of the most candidates performed average on this question.

PHYSICAL EDUCATION 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the whole paper was as expected, comparing favorably with those of previous years. The rubrics were quite clear and straightforward. The questions were simple, direct and straightforward without ambiguity, and were within the scope of the syllabus. The paper was well balanced, since the questions were well spread across the syllabus. There was a wide choice for candidates as they were asked/ instructed to answer five questions out of nine. VIZ: two questions out of three from section A, and One question out of two of sections B, C and D.

2. CANDIDATES' PERFORMANCE

There was a drop in performance compared to the previous year, Only 205 candidates scored 50% and above out of 1,246; the rest of the 1,041 candidates scored between 30 - 45%. In the previous years' half (½) of the candidates scored 50% and above in P.E paper 3.

This drop was worrying considering the fact that this paper was easier than the previous years. The reasons for this drop in performance have to do with some of the points raised under the section of this report-dealing with candidate's weaknesses.

DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

Examiners could not identify any special difficulties that might have adversely affected candidates' performance. The general opinion rather was the paper was easy, direct and straightforward, without ambiguity.

3. CANDIDATES' STRENGTHS

With the general performance being so poor, very little can be reported as being candidates' strengths. Only 205 candidates scored 50% and above out of 1,246; the rest of 1,041 candidates scored between 30-45%. However, few candidates expressed themselves in quite good English, and by the way they answered the questions showed that they adequately covered the syllabus. Some candidates followed the rubrics. Some candidates displayed good recalled memory ability, and so did well in answering questions 1—2 well. Some candidates even scored full marks in questions 1 & 2 (1 and 2).

A way of improving these qualities has been suggested in previous reports, that when chief examiners' reports are sent to schools, Heads of Departments for various subjects should have organized workshops or Departmental meetings where matters raised in the report can be fully discussed so that teachers can be fully informed.

4. CANDIDATES' WEAKNESSES

The same weaknesses have been reported year in year out, but the problem of poor performance continues. This suggests that schools have not been taking action on the remedies suggested in the chief examiners' reports for overcoming the weaknesses.

The weaknesses are highlighted here again.

(i) **ENGLISH LANGUAGE:**

The most serious weakness continues to be the poor use of the English language. This affects the candidates in various ways:

For one, some candidates do not interpret questions asked correctly and so do not quite answer the questions asked.

Second, they do not express themselves correctly. Again, they make series of spelling mistakes. In a few cases words written by candidates cannot even be identified as English words. Candidates are not penalized for the grammatical errors as such, but sometimes, the English is so bad that examiners cannot make any sense out of the candidates work. It is suggested that the speaking of English be made compulsory in schools. The reading habit should be encouraged in pupils. Teachers should impress it upon pupils that when they are reading the teachers' notes or their text books, they should pay attention to sentences, choice of word and their uses, spelling and other matters.

(ii) **DISREGARD OF RUBRICS:**

This can take different forms. Some candidates answer more than two questions from Section A, and all two from Sections B. C. and D. Some candidates answered more, while others answered less than the five questions required. Some gave more points, others less than specifically stated in the questions instructions.

It has been suggested by examiners before that where funds are available schools should prepare answer booklets similar to the W.A.E.C. ones which pupils can use in their mock exam. In this way, they would be familiar with the rubrics. Again, at the beginning of the paper, invigilators should remind candidates about the rubrics.

(iii) **POOR HANDWRITING:**

In some cases, examiners find it very difficult to read the candidates' work/ scripts. It is suggested that a gentle reminder about hand -writing should be included in the instructions to candidates during mock exams.

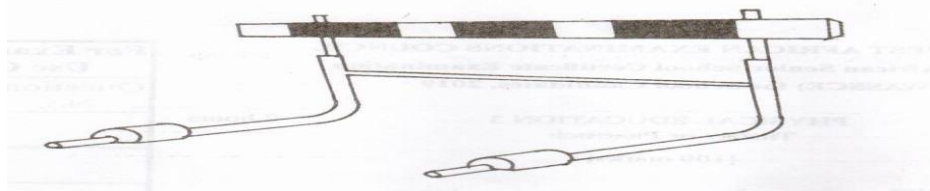
(iv). **INADEQUATE COVERAGE OF EXAMINATION SYLLABUS**

This could be seen from the fact that some candidates answered less than the required number of questions. Some Candidates again did not answer questions fully. They answered part, leaving other parts of the question unanswered. It is hereby suggested that teachers be encouraged to show more commitment and try to cover as much of the syllabus as possible. Absenteeism and lateness to School are very rampant now among both teachers and pupils; so very little is covered. The authorities should check these. Again, Heads of departments should encourage team teaching if the syllabus is to be fully covered.

5. **DETAILED COMMENTS ON INDIVIDUAL QUESTIONS**

QUESTION 1

The diagram below illustrates an equipment in athletics. Study it and answer questions (a)(i),(ii),(iii),(iv) and (vi).



- (a) (i) *Name the equipment in the illustrated diagram.*
(ii) *State three races that are associated with the illustrated equipment.*
(iii) *Mention the division of athletic event in which the illustrated equipment is used.*
(iv) *Give five other examples of event that belong to the division mentioned in (a)(iii).*
(v) *List the three methods of sprint start that an athlete could use in any of the races pertaining to the illustrated equipment.*
(vi) *State four phases of running which an athlete using the illustrated equipment must use.*
(vii) *Mention four officials that are associated with the illustrated equipment during athletic meets.*

Here candidates were asked to study the diagram and answer questions 1 (a), (i), (ii), (iii), (iv), (v), (vi) and (vii) in the illustrated diagram. In 1 (a) (i) Candidates were asked to name the equipment in the illustrated diagram. In 1 (a) (ii) candidates were asked to state three races that are associated with the illustrated equipment. In 1 (a) (iii)

Candidates were asked to mention the division of athletic event in which the illustrated equipment is used. In 1, (a) (iv) to give five other examples of event that belong to the

division mentioned in 1 (a), (iii). In 1 (a) (v) Candidates were asked to list the three methods of Sprint start that an athlete could use in any of the races. In 1 (a) (vi) pertaining to the illustrated equipment. Candidates were asked to state four phases of running which an athlete does using the illustrated equipment. In 1 (a) (vii) to state four officials that are associated with the illustrated equipment during athletic meets. In 1 (b), candidates were asked to list four colours of the Olympic rings.

In 1 (a) (i), almost all the candidates attempted this question, but very few were able to name the equipment in the illustrated diagram as the HURDLE. In 1 (a) (ii), almost all the candidates attempted this question and were able to state all three races that are associated with the illustrated equipment like-100m hurdle, 110m hurdle and the 400m hurdle etc.

In 1 (a) (iii) most candidates were also able to mention the division of athletic event in which the illustrated equipment is used as TRACK EVENT. In 1 (a) (iv) almost all the Candidates that attempted this question were also able to give more than three other examples of event that belong to the division mentioned in 1 (a) (iii) like 100 m, 200m, 400m, 4x400m, steeplechase etc. In 1 (a) (v), few Candidates attempted it, and were unable to list all the three methods of sprint start that an athlete could use in any of the races pertaining to the illustrated equipment such as the BUNCH / BULLET START, MEDIUM START, and the ELONGATED START.

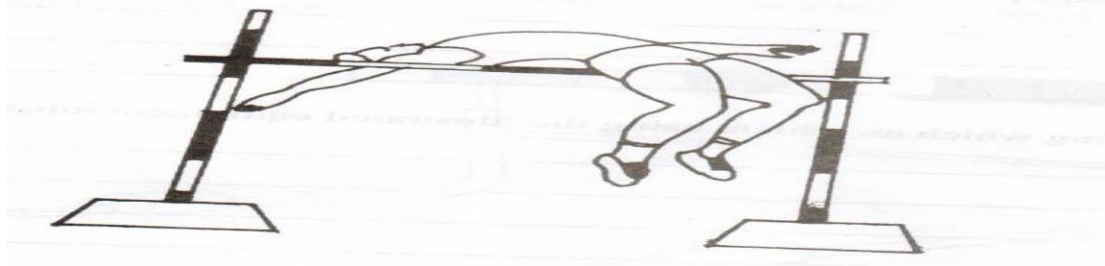
However, few were able to list one method of sprint start. For 1 (a) (vi) candidates should have stated the four phases of running which an athlete using the illustrated equipment must use like-the start, -the approach run, -the take off, the clearance / flight, and the landing. However, few candidates were able to state up to two phases of running which an athlete using the illustrated equipment must use. In 1 (a) (vii) a good number of Candidates were able to mention more than two officials that are also associated with the illustrated equipment during athletic meets like-the referee, -the starter, the starters assistant, the umpire, the time keepers, the track judges and recall starters.

(b) List four colours of Olympic rings.

For 1 (b) many candidates did reasonably well, relating the four colours of Olympic rings like-blue, red, yellow, black, green etc. Some were able to list two colours others one. However, a good number of candidates did relatively well in this question.

QUESTION 2

The diagram below illustrates an athlete participating in an event. Study it and answer questions (a), (b) and (c)



- (a)(i) Name the style used by the athlete in the diagram.**
(ii) List four skills involved in performing the event illustrated in the diagram.
(iii) State three other styles of jumping associated with the event illustrated in the diagram.

In 2 (a) (i) candidates were asked to name the style used by the athlete. In the illustrated diagram. In 2 (a) (ii) candidates were asked to list four skills involved in performing the event illustrated in the diagram. In 2 (a) (iii) candidates were asked to state three other styles of jumping associated with the event illustrated in the diagram.

- (b) List three equipment associated with the event illustrated in the diagram.**

In 2 (b) candidates were asked to list three equipment associated with the event illustrated in the diagram.

- (c) Name four other field events apart from the illustrated diagram.**

In 2 (c) to name four other field events apart from the illustrated diagram. In 2 (d) (i) candidates were asked to name two vertical jumps in athletics.

- (d) Name two:**

- (i) vertical jumps in athletics;**
(ii) horizontal jumps in athletics.

For 2 (d) (ii) to name two horizontal jumps in athletics.

- (e) Explain the following terms as used in athletics:**

- (i) assembly line;**
(ii) crouch start.

In 2 (e) (i) Candidates were asked to explain the term ASSEMBLY LINE as used in athletics. In 2 (e) (ii) candidates were asked to explain the term CROUCH START as used in athletics. In 2 (a) (i) few Candidates attempted this question and were unable to name the style as the FORSBURY FLOP. In 2 (a) (ii) Candidates should have given point

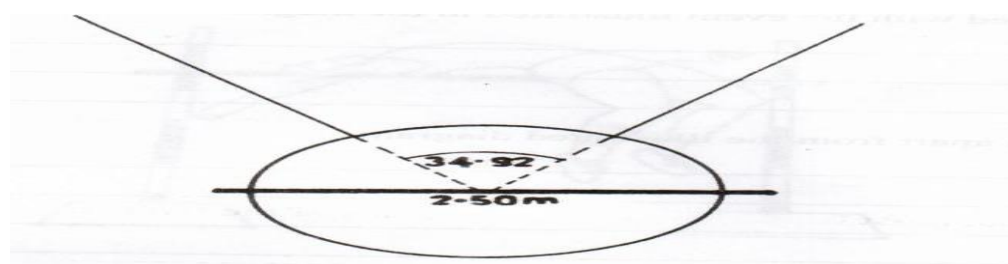
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like: the Start, -the approach, -run,- the take off, the flight or clearance and the landing. For 2 (a) (iii) few candidates were able to state few other styles of jumping associated with the event illustrated in the diagram like-the straddle, western roll, scissors including the eastern cut-off. In 2 (b), a good number of candidates were able to list up to two

equipment associated with the event illustrated in the diagram like-the uprights, the cross bar, the landing foam, the pegs etc. In 2 (c) many candidates did reasonably well relating the four other field events apart from the illustrated diagram like- the Shot put-Long jump,- Triple jump,- Hammer throw,- throw, -Javelin and the pole vault. In 2 (d) (i) many Candidates were able to state two vertical jump in athletics like-high jump and pole vault, whilst in 2 (d) (ii) stated two horizontal jump like- long jump and triple jump. All the Candidates that attempted this question were able to correctly name the two vertical jumps, but some name the horizontal jump for the vertical jump. For 2 (e) (i) few candidates attempted it, since they were unable to express themselves, they did not score any marks.

QUESTION 3

The diagram below illustrates a facility in athletics. Study it and answer questions (a), (b), (c), (d) and (e).



(a) In what event is the facility used?

In 3, Candidates were asked to study the diagram and answer question 3 (a) (b) (c) (d) and (e). In 3 (a) Candidates were asked: In what event is the facility used?

(b) List four skills involved in performing the event associated with the illustrated diagram.

In (3) (b) Candidates were asked to list four skills involved in performing the event associated with the illustrated diagram.

(c) List three equipment used in the event associated with the diagram.

In 3 (c) to list three equipment used in the event associated with the diagram.

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(d) Mention six rules guiding the performance of the event associated with the illustrated diagram.

In 3 (d) Candidates were asked to mention six rules guiding the performance of the event associated with the illustrated diagram.

(f) Explain the following terms as used in athletics:-

- (i) quarter;*
- (ii) implement.*

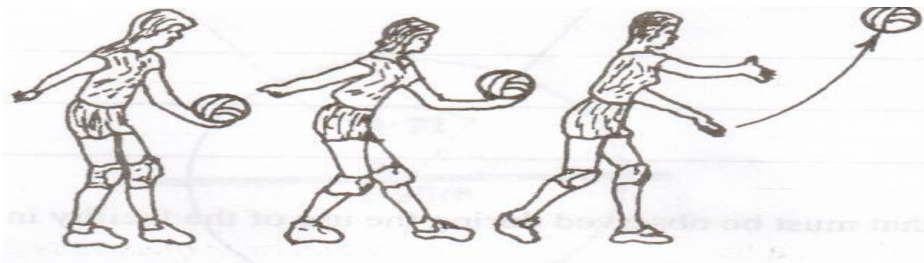
In 3(f) (i) to explain the term quartet as used in athletics. In 3 (f) (ii) to explain the term implemented as used in athletics.

Question 3 (a), (b), (c), (d), (e) and (f) were attempted by few Candidates, even the few that did were unable to correctly give the answers. For example, in 3) (a) Candidates should have said, the discus throw is used in the facility. In 3 (b) Candidates should have given points like- the hold or grip, the turn and throw, (rotation) the stance, the swing, the stand throw, the delivery, the release and recovery. In 3 (d), Candidates should have given points or mentioned six rules guiding the performance of the event associated with the illustrated diagram like-all throws must be in one direction-the throwing area must be properly marked, the missile shall be carried in correct manner, -the throwing area shall be accident free, -after throwing, the missile, must be returned by hand not to be thrown- all throws shall be made within the throwing sector, -all competitors shall be credited with the best throws- no competitor shall over step the throwing sector line the zero end of the tape measure shall be at the point of missile contact during measurement, all competitors shall leave the throwing Circle through the second half of the Circle.

Whilst in 3 (e) Candidates should have stated safety precautions that must be observed during the use of the facility in the illustrated diagram like-the missile should be handled with care- Observing the rules and regulations during the event,-after throwing, the missile must be returned by hand not to be thrown,- all throws must be in one direction-the throwing area must be properly marked, -the missile should be carried in correct manner; and the throwing area shall be accident free. In 3 (f) (i) Candidates should have given something along the lines like-the term quartet means- The four, runners, that form a team in a relay, whilst the term implemented of 3 (f) (ii) means-an implement or equipment used in throwing event in athletic competition. Since the most serious weaknesses of Candidates is the poor use of the English Language, this affected them in answering question 3 (b), (c), (d), (e) and (f).

QUESTION 4

The diagram below illustrates a skill in a ball game. Study it and answer questions (a), (b) and (c).



- (a)(i) Name the skill being demonstrated in the illustrated diagram.**
(ii) Mention three other skills associated with the game.

In 4, Candidates were asked to study the illustrated diagram and answer 4 (a), (b) and (c). In 4 (a) (i) to name the skill being demonstrated in the illustrated diagram. In 4 (a) (ii) to mention three other skills associated with the game.

- (b)(i) Outline five steps involved in executing the skill.**
(ii) State five faults that could be committed during the execution of the skill.

In 4(b)(i) to outline five steps involved in executing the skill. In 4 (b) (ii) to state five faults that could be committed during the execution of the skill:

- (c) List six terminologies associated with the game.**

In 4 (c) to list six terminologies associated with the game. Almost all the Candidates attempted question (4) (a) (i), but few were able to name the skill being demonstrated in the illustrated diagram as serve (Service) in volley ball. In 4 (a) (ii) many Candidates did reasonably well, relating the three other skills associated with the game like: -Volleying-Spiking-blocking-digging, setting-volleying-dig, step etc. Most Candidates were able to mention up to three skills.

In 4 (b) (i) Candidates should have given or outlined five steps involve in executing the skill illustrated in the diagram like – legs behind the end line or baseline or service line,- ball on the palm away from the body – face the net, leg in astride position-trunk and knees slightly flexed-ball is stated, free hand, is moved backward,-hand swang, forward forcefully to hit the ball and rear leg follow through. Since most of the Candidates that attempted this question were unable to express themselves well-no one score up to two marks.

In 4 (b) (ii) Candidates should have given or stated faults that could be committed during the execution of the skill like:

- Failure to tose the ball before hitting it,

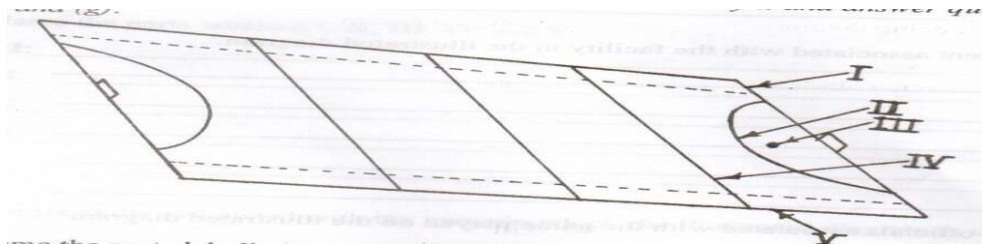
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- Ball fail to cross the net to the opponents side
- Serving inside the court-not swinging the arm forward,
- Served ball moving behind (touching the antaennae),
- Served ball trenches a player before crossing to the opponents.

- Placing the leg on the end line or service line-not applying force while lifting the ball,
- not being able to position the body behind the service line etc. In 4 (c), many candidates did reasonably well, relating the terminal order-ball out-side out-double contact-rally-ball in-deunce-out of bounce-two no –let-point-etc. Here a good number of Candidates score up to four marks, as they were able to name up to four terminologies associated with the game.

QUESTION 5

The diagram below illustrates a facility in a ball game. Study it and answer questions (a), (b), (c), (d), (e), (f) and (g).



(a) Name the part labelled I, II, III, IV and V.

In 5, Candidates were asked to study the diagram and answer questions 5 (a) (b), (c) (d) and (f). In 5 (a) Candidates were asked to name the parts labeled I-II-III-IV AND V.

(b) Name the facility in the illustrated diagram.

For 5 (b) to name the facility in the illustrated diagram. In 5(c) Candidates were asked- what is the duration of the game associated with the illustrated diagram?

In 5(d) Candidates were asked to state five skills associated with the game in which the illustrated diagram is used. In 5 (e) to list five equipment associated with the facility in the illustrated diagram.

In 5 (f) to mention three officials associated with the game played in the illustrated diagram.

In 5(a) few candidates were able to name up to two parts correctly like 5(a) (I)- the backline or goal line. (II)- The striking line,- (III) the penalty sport-, (Iv) the 23m line and (v) the side lime .In 5(b), no candidates was able to name the facility in the diagram as the hucky field or pitch.

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(c) What is the duration of the game associated with the illustrated diagram?

In 5(c) candidates should have stated that the duration of the game associated with the illustrated diagram is 70 minutes and 35 minutes interval for each half. Here all the

candidates that attempted this question referred to the game as soccer game, and so gave the duration of the game to be 45 minutes and 15 minutes interval.

(d) State five skills associated with the game in which the illustrated diagram is used.

In 5(d) a good number of candidates stated up to three correct skills associated with the game of hockey like:

- The trapping-- dribbling- tacking- passing- goalkeeping- including - the grip the drive, - hitting, the push pass – the scoping and the flicking.

(e) List five equipment associated with the facility in the illustrated diagram.

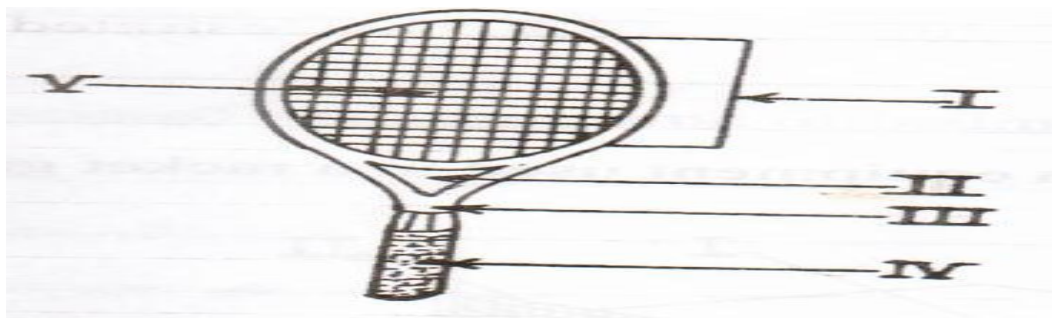
- In 5(e) candidates should have listed equipment associated with the facility in the illustrated diagram like—goal post—hockey stick—red card—side board—flags, steel helmet, yellow card etc. Here also few candidates scored up to three points. For

(f) Mention three officials associated with the game played on the illustrated diagram.

- 5(f) few candidates were able to mention one official. Here candidates should have mentioned officials like:- the umpires 1—umpire 2,- reserved umpire including the video umpire.

QUESTION 6

The diagram below illustrates an equipment in a racket game. Study it and answer questions (a), (b), (c) and (d).



In 6, candidates were asked to study the diagram and answer question 6(a), (b), (c) and (d).

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In 6(a) candidates were asked to name the parts labelled I, II, III, IV and V.

In 6(b) to state six skills associated with the game in which the illustrated diagram is used.

In 6(c) candidate were asked to mention four officials' associated with the game in which illustrated diagram is used.

In 6(d) to state five instances when a player could be said to have committed a foul in the game associated with the illustrated diagram.

(a) Name the part labelled I, II, III, IV and V.

In 6(a) few candidates were able to name up to two parts labelled I-II-III-IV and V – like I the head , -II the necked or throat, III shaft, IV the handle or grip and V the face.

In 6(b) a goal number of candidates did reasonably well, relating the six skills associated with game in which the illustrated diagram is used like- I-the head II- the throat –III shelf - IV handle or grill and V the face .

(b) State six skills associated with the game in which the illustrated diagram is used.

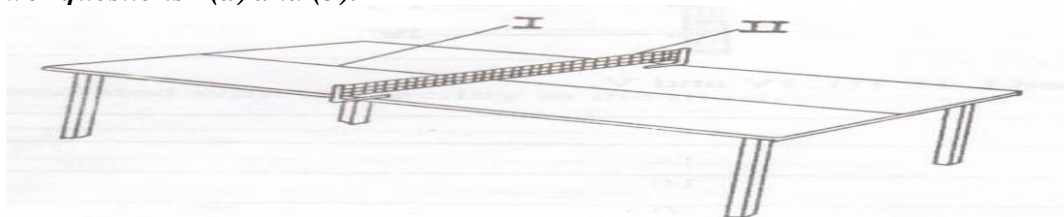
In 6(b), candidates should have named skills associated with the game in which the illustrated diagram is used like – the grip, service, drop shot, fore hand drive, back hand drive, smash, spin, volley and half volley. Here few candidates were able to state up to two skills.

(c) Mention four officials associated with the game in the illustrated diagram is used.

For 6(c) candidates should have mentioned officials associated with the game in the illustrated diagram is used like – referees- chair umpire- line umpire- and net umpire. Here, no candidates scored any mark, as tennis is not so commonly played in most schools.

QUESTION 7

The diagram below illustrates an equipment used in a racket game. Study it and answer questions 7(a) and (b).



In 7 (a) candidates were asked to name the parts labeled I and II. For 7(b) (i), to mention five skills that could be displayed on the illustrated equipment.

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For 7(b)(ii), candidates were asked to state five faults that could be committed by a player receiving service during the use of the illustrated equipment.

In 7(c) candidates were asked to state three equipment in the game of badminton .

In 7 (d) candidates were asked to state five terminologies associated with the game of badminton.

(a) Name the part labelled I and II

For 7(a) many candidates did reasonably well, as they were able to name the parts labeled I AND II as 1 the centre line and II the net.

- (b) (i) Mention five skills that could be displayed on the illustrated equipment.**
(ii) State five faults that could be committed by player receiving service during the use of the illustrated equipment.

For 7(b) (i), few candidates attempted it and were unable to mention skills that could be displayed on the illustrated equipment like- the grip, half volley, the lob, the drop shot, service, smash, the chop, forehand stroke, the drive and the back and stock or backhand drive. In 7(b) (ii) candidates should have stated faults that could be committed by a player receiving service during the use of the illustrated equipment such as: - if the – Ball touches the body/dress—the racket hits/ touches the table player fails to return the ball properly - body touches the table.- Receiver allows the ball to bounce twice consecutively on him or her table—the ball is played to net without crossing to the opponent side etc.

(c) State three equipment used in the game of badminton.

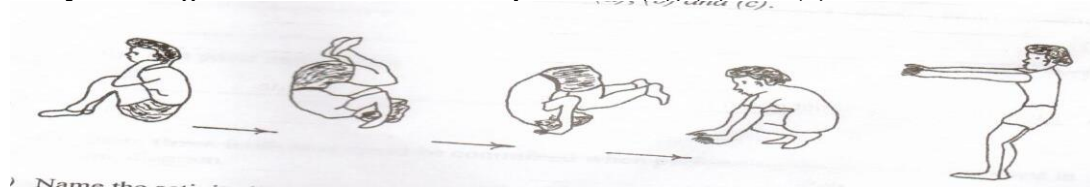
For 7(c) few candidates were able to state up to two equipment used in the game of badminton like: Racket/ badminton racket,- shuttle,- jersey including canvas.

(d) State five terminologies associated with the game of badminton.

In 7 (d) candidates should have stated terminologies associated with the game of badminton like: - let-alley-lob, clear-rally-fault-drive-drop short- service/ serve- smash and march. Since the game is unpopular, in most schools, it was not attempted by most candidates, and even the few that did were unable to score up to two marks.

QUESTION 8

Study the diagram below and answer questions (a), (b) and (c).



Here, candidates were asked to study the diagram and answer question 8(a), (b) and (c). For 8(a) candidates were asked to name the activity illustrated in the diagram. In 8(b)(i) candidates were asked to discuss the activity illustrated in the diagram under the following headings: VIZ:

- (b), (i) to advance two point under approach;
- (b), (ii) to advance three point under execution
- (b), (iii) to advance one point under finish.

In 8(c) candidates were asked to state three faults that could be committed when performing the activity in the illustrated diagram.

(a) Name the activity illustrated in the diagram.

In 8(a)- a good number of candidates were able to name the activity illustrated in the diagram as the back ward roll. Others called it as the forward roll- the correct answer is- backward roll.

(b) Discuss the activity illustrated in the diagram under the following headings:

- (i) two points under approach;***
- (ii) three points under execution;***
- (iii) one point under finish.***

In 8(b), (i) candidates should have given two points under approach like; - stand erect backing the mat, Squat with palm open- raise arms with the palm facing upward, the fingers pointing backward- no candidates attempted these questions.

In 8(b), (ii) all candidates that attempted this question were unable to advance the three points under execution like.

- ❖ Body leans backward- tuck- in the chin
- ❖ Roll back with a quick push from the feet.
- ❖ Land on the feet- palms in contact with the mat and push over.
- ❖ Stand with arms stretched forward- get into a squat position
- ❖ Raise to standing position with hands forward and upward,
- ❖ Maintain balance.

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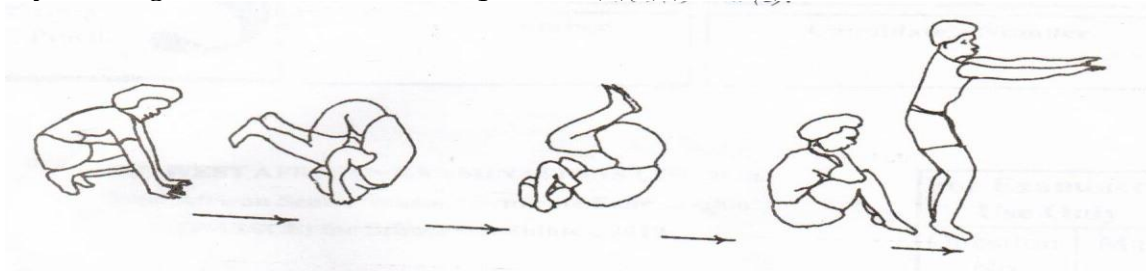
(c) State three faults that could be committed when performing the activity in the illustrated diagram.

For 8(c) no candidate was able to state any of the three faults that could be committed when performing the activity- (backward roll) like- palms not facing upward while in squatting position- not tucking in the chin- not applying enough push from legs and arms, - not keeping knees together.

Not finishing to a standing position- not able to maintain balance.

QUESTION 9

Study the diagram below and answer question (a), (b) and (c).



(a) Name the activity illustrated in the diagram.

Here, candidates were asked to study the diagram and answer question 9(a), (b) and (c). For 9(a) to name the activity illustrated in the diagram. In 9 to discuss the activity in the illustrated diagram under the following heading: - 9(a) (i) to advance two points under approach, In a 9(b) (ii) to advance three points under execution.

(b) Discuss the activity in the illustrated diagram under the following headings:

- (i) two points under approach;**
- (ii) three points under execution;**
- (iii) one point under finish.**

In 9(b), (iii) to advance one point under finish. In 9(c) candidates were asked to state three faults that could be committed when performing the activity illustrated in the diagram. In 9(a) few candidates were able to name the activity correctly as the following roll. Others named it as the backward roll- In 9(b) (i) no candidates attempted this question, here candidates should have given the two point under approach like: - stand erect facing the mat, squat and place hands on the mat- shoulder with apart, - with the fingers pointing forward.

For 9(b) (ii) candidates should have given the three faults under execution like- tuck-in the chin,- push off from the mat;- transfer body weight to the hands;- round the back and roll; Avoid head touching the mat/ ground- In 9(b) (iii) the three point under finish include: final to the squatting—get into a standing position with arms stretched forward,- try to maintain good balance.

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(c) State three faults that could be committed when performing the activity illustrated in the diagram.

In 9(c) candidates should have stated the three faults that could be committed when performing the activity illustrated in the diagram- which is the forward roll- head touching the mat;

- Not touching the chin
- Not applying enough push from the feet;
- Arms- shoulder not apart,- back not well rounded

- Heavy landing- not finishing to a standing position
- Not maintaining good balance.

SCIENCE CORE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The question paper was relatively average and consists of a few simple questions that could be answered by any enlightened person, for example to give the uses of domestic water and very challenging questions which I consider to be above their knowledge.

There were mathematical problems which presented some challenges, however some candidates circumvented the problem by simply copying from other candidates. This was very evident based on the replica of the wrong calculations presented.

Irrespective of its nature, the paper was standard and evenly spread to cover the three areas, Biology, Chemistry and Physics.

General performance was a little above average in comparison to previous years.

2. COMMENTS ON ANY SPECIFIC DIFFICULTIES

Mathematics and English language are still challenges for many candidates.

Performance in the mathematical problems in this paper was poor. They possibly could not be blamed for this deficiency. Lack of the knowledge in the subject matter may be the underline problem. This was evident in the answers that many candidates gave. They copied from their colleagues and most often were wrong. They ended up with correct answers but no work shown or wrong work given.

English Language still remains a challenge. Candidates could neither write constructive sentences nor spell correctly.

The schools have to critically consider this issue. There may be a need to reconsider the very teaching methodology and even the syllabuses used.

From the answers given by some candidates it was clear that they were guessing which could only mean that they were not taught those topics. Completion of the teaching syllabus is a problem for some schools. Equally true, some teachers evade some areas of the syllabus as they may not be conversant with all the three areas - Biology, Chemistry and Physics.

3. CANDIDATES' STRENGTHS

A good number of the candidates demonstrated fair knowledge of the content matter of the syllabus.

They scored very high marks though in some cases, these marks were questionable.

4. **CANDIDATES' WEAKNESSES**

Three major weaknesses stood out in this particular examination and even in previous ones.

- (i) English Language is a major problem. This is translated in the answers they write down. The grammar is awful, poor spellings, etc. The schools have to critically look at the teaching of English Language.
- (ii) Mathematics posed another challenge. Poor mathematical background is responsible for a lot of failures.
- (iii) Lack of knowledge in most topics also contributes to the inability to solve related mathematical problems.
- (iv) Lack of sufficient knowledge in the subject matter is another serious challenge. This was demonstrated in the types of answers the candidates wrote.

It was interesting to note that over 50% of the candidates could not write molecular formulae of chemical compound safe alone to write balanced chemical equations.

5. **DETAILED COMMENTS ON INDIVIDUAL QUESTIONS**

QUESTION 1

- (a) *Define the term classification as applied to living organisms.*
- (b) *Name two kingdoms to which living organisms are classified.*
- (c) *Give one example of each of the kingdoms named in (b).*

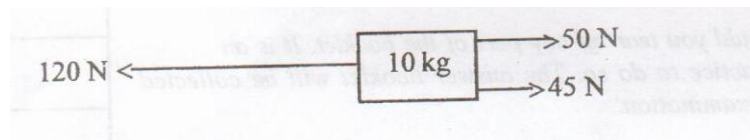
The question examined the knowledge of candidates in taxonomy. Candidates were to define classification as applied to living organisms and to name two kingdoms in which living organisms are classified. They were also to give one example of each of the kingdoms named.

It was a straightforward question, you either know it or not. The last part of the question was somehow ambiguous and many candidates lost marks.

Instead of asking candidates to name one organism from each of the kingdoms, the candidates were asked to give one example of each of the kingdoms.

QUESTION 2

Consider the following diagram and answer the questions that follow:



- (a) Calculate the resultant force;
 (b) acceleration on the object (assuming friction is zero)

This was a mathematical problem, relating force, mass and acceleration. It was a simple question solvable in 5 minutes if the theory is known.

Performance was above average as candidates copied the answers, which were easily detected from what they wrote, wrong formula or equation but ending with correct answers.

QUESTION 3

Give one reason for each of the following practices:

- (a) using aluminium for window frames;
 (b) using copper for electrical wiring;
 (c) using zinc for coating steel.

This was a good question on application of knowledge. It asked for the properties of commonly use elements are suitable for construction work i.e.

- Aluminium for window frames
- Copper for electrical wiring
- Zinc for coating steel

Performance was average as a number of candidates could not relate properties of elements to their uses.

QUESTION 4

- (a) State two stages in the purification of town water supply.
 (b) State two:
 (i) domestic
 (ii) industrial
 uses of water.

This was a very easy and direct question that did not require much scientific knowledge .

Purification method of town water supply, domestic uses of water and industrial uses of water asked by the questions could be answered by any enlightened person.

The performance was very good.

QUESTION 5

- (a) A plastic comb rubbed with a piece of cloth attracts a tiny piece of paper.*
- (i) Explain why the plastic comb attracts the piece of paper.*
 - (ii) Name the force which exists between the plastic comb and the piece of paper.*
 - (iii) State the phenomenon explained in (a)(i).*

This is a long essay question. It covered all the three sections of Science Core, Biology, Chemistry and Physics.

In actual fact, all the essay questions, Q5, Q6, Q7 and Q8 had the same composition.

This was a question on static electricity asking how it is generated, its properties and uses.

Performance was very deplorable and one could wonder whether this aspect is in their syllabus.

Those who got some answers correct received outside assistance. This clearly stood out.

- (b) (i) What is a dominant character?*
- (ii) State four discontinuous variations in human.*

This was a biology question asking for dominant character and discontinuous variables. Candidates defined dominant character but could not explain its origin, when individuals with contrasting characters crossed.

- (c) (i) What is pollution?*
- (ii) Name two pollutions of air.*
 - (iii) State two ways of minimizing air pollution.*

Candidates were asked to define pollution, name two pollutants of air and state two ways to minimize it.

It was a popular question and candidates performed well.

- (d) (i) What is rust?*
- (ii) Write a word equation for the formation of rust.*
 - (iii) State three ways by which rust formation can be prevented.*

This was about rust. Candidates were asked to define rust. They were further asked, to write a word chemical equation of the process and state three ways by which rust could be prevented.

The only problem candidates had was to write a word chemical equation correctly. In fact no candidates got it correct.

I am not sure this aspect is in their syllabus for it is a little demanding. Irrespective of the above this was the most popular among the essay questions.

QUESTION 6

(a) A refrigerator rated 1.6KW is suitable for use on 220 V and 50 Hz supply.

(i) State the electrical quantity represented by:

(α) 220 V

(β) 50 Hz;

(γ) 1.6 kW

(ii) Calculate the:

(α) current that passes through the refrigerator when it is in use.

(β) electrical energy consumed if the refrigerator is used for 6 hours a day;

(γ) number of units the refrigerator will use in 30 days;

(δ) cost of operating the refrigerator for 30 days in a unit of electricity costs 10 dalasis.

This was a very unpopular question. Candidates were not comfortable with it. Those who attempted it performed poorly.

This was on electricity, identifying electrical quantities from different units of figures given. Using these figures candidates were asked to calculate;

- (i) amount of current passing;
- (ii) electrical energy consumed;
- (iii) number of units the refrigerator will consume in 30 days and
- (iv) the cost in Dalasi if a unit costs 10 Dalasi.

Performance in this question was very poor.

(b)(i) What is air?

(ii) Name the components of air.

(iii) Write the formula of one compound found in air.

Candidates were asked to define air, name its components and write the molecular formula of one component.

Performance in this question was good.

(c) (i) What is a vector?

(ii) Name the vector for yellow fever disease.

(iii) State the causative organism for each of the following diseases:

- (α) *Tuberculosis;*
- (β) *Rabies;*
- (γ) *Measles;*
- (δ) *Malaria.*

Candidates were asked to define a vector. Though this is biology based on subsequent questions, for some strange reason some candidates thought it was vector as used in mathematics.

Even those who knew it was a biology question gave wrong definition for a vector. They wrote a vector is an organism that transmits diseases from one organism to another, instead of a disease - causing organism from one organisms to another, for tuberculosis, rabies, measles and malaria.

To confirm the above, many candidates gave ridiculous answers such as naming mosquito as a causative agent of malaria.

QUESTION 7

(a)(i) State one function of each of the following components of blood:

α *platelets;*

β *red blood cells*

(ii) Describe briefly how white blood cells carry out their function.

This was one of the popular questions attempted by candidates. Performance however was just average.

This question asked for functions of platelets and red blood cells and a brief description of the functions of the white blood cells.

The last part of the question was not very conversant with the candidates, describing the white blood cells. This could either be due to lack of knowledge or the topic is above their knowledge.

(b) (i) State two differences between boiling and evaporation.

| <i>Boiling</i> | <i>Evaporation</i> |
|----------------|--------------------|
| | |
| | |

(ii) State three factors that affect the rate of evaporation of water.

The question demanded differentiating between boiling and evaporation, and stating factors that affect the rate of evaporation.

The questions answered were variable and in some cases confusing. More is required of teachers to explain principles properly and not to take things as granted.

(c) (i) *Define each of the following terms.*

α *mass of a body;*

β *weight of a body.*

(ii) *Explain briefly why the mass of a body remains constant but its weight varies from place to place.*

Candidates were asked to differentiate between mass and weight of a body and to explain why weight varies from place to place but the mass is always constant.

Candidates had difficulty in stating what weight is and why it varies from place to place. The two are related as they are due to gravity.

(d) (i) *State two differences between neutralization and esterification reactions?*

| <i>Neutralization</i> | <i>Esterification</i> |
|-----------------------|-----------------------|
| | |
| | |

(ii) *Write a balanced chemical equation for the complete reaction between dilute tetraoxosulphate (VI) acid and aqueous sodium hydroxide.*

(iii) *Calculate the mass of salt formed in the reaction stated in (d)(ii) if 0.4g of NaOH reacts with excess dilute H₂SO₄.*

[H = 1.0; O = 16.0; Na = 23.0; S = 32.0]

It starts with differentiating between neutralization and esterification and then followed by writing a balanced chemical equation of the reaction between H₂SO₄ and NaOH. Many candidates could not write the balanced chemical equation hence affecting their performance.

QUESTION 8

(a) *A ball of mass 1.2kg rolls down from the top of a hill of height 15m.*

(i) *Calculate the weight of the ball.*

(ii) *State the energy change that takes place from the top of the hill to the bottom.*

(iii) *Calculate the potential energy of the ball at the top of the hill.*

(iv) *Determine the speed of the ball as it reaches the bottom of the hill. [g = 10ms⁻²]*

A ball of mass 1.2 Kg. rolled down a hill 15m high. Using this data candidates were asked to calculate (i) the weight of the ball (ii) the potential energy P.E. and (iii) the speed of the ball.

A sizeable number was able to do the calculations though some of them copied from colleagues or were dictated to based on the work they presented.

The question also asked candidates to state the change in energy from the top of the hill to the bottom.

Many got it wrong. The reverse answer was given from kinetic energy to potential energy instead of potential energy to kinetic energy.

This again could be attributed to spying.

- (b) (i) *What is a drug?*
(ii) *State three uses drugs.*
(iii) *List three effects of drug abuse.*

This was a question on drugs, what a drug was, uses of drugs and drugs abuse.

The performance was above average though a small number considered drugs from the negative side and so their answers for uses and abuses were the same.

- (c) (i) *Name the ore from which each of the following metals is extracted:*
α iron;
β aluminium
(ii) *Name the method of extraction of each of the metals listed in (c)(i).*
(iii) *Apart from iron ore, name the other raw materials used in the extraction of iron.*

The question considered ores of irons and aluminum, their names and methods of extraction to produce pure elements.

This should have been a popular question considering the fact that both iron and aluminum ores are mined in Sierra Leone. Sadly the opposite was the case.

TECHNICAL AND VOCATIONAL SUBJECTS

f(i)

RÉSUMÉ OF THE TECHNICAL AND VOCATIONAL SUBJECTS

1. STANDARD OF THE PAPER

The Chief Examiners maintained that the standard of the various papers compared favourably with those of previous years. The questions were clear and straightforward and were within the scope of the syllabuses.

2. CANDIDATES PERFORMANCE

The Chief Examiners for Foods and Nutrition 2(pg.260) reported that the performance was not quite good. An encouraging performance according to the Chief Examiner for Building Construction 2(pg.252)

The Chief Examiner for Home Management 2(pg.265) reported on an unsatisfactory performance as compared to previous years.

3. CANDIDATES STRENGTH

- Candidates performed well in questions that did not require much of freehand sketches – Technical Drawing (pg.287) and Metal Work (pg.285).
- Candidates adhere to the rubrics – Home Management 2(pg.265) and Metal Work (pg.285).
- Candidates demonstrated knowledge on certain aspect of the syllabus – Home Management 2(pg.265), Foods and Nutrition 2(pg.260).

- Proper presentation of work – Foods and Nutrition 2(pg.260)

4. CANDIDATES WEAKNESSES

- Difficulty in recording readings from measuring instruments – Applied Electricity 3(pg.250) and Technical Drawing (pg.287);
- Inadequate preparation for the examination – Foods and Nutrition 2(pg.260);
- Lack of motivation – Building Construction 3(pg.254);

f(ii)

- Lack of required equipment – Building Construction 3(pg.254);
- Incomplete syllabus, adequate and relevant learning materials – Home Management 2(pg.265), Wood Work (pg.289);
- Lack of qualified teachers – Home Management 2(pg.265);
- Poor drawing and labels – Technical Drawing (pg.287);
- Non adherence to rubrics – Metal Work (pg.285);
- Disorganized work – Metal Work (pg.285);

5. SUGGESTED REMEDIES

- Teachers should teach their students to construct/draw correctly;
- Schools should provide tools and equipment that would enhance effective teaching and learning of the subject – Metal Work (pg.285), Technical Drawing (pg.287) and Building Construction 2 (pg.252);
- More practical lessons should be included in the curriculum/syllabus – Wood Work (pg.289)
- Workshop space be made available for practical subjects;

- Candidates should be made to work on their reading and writing skills;
- Teachers should be made to adequately prepare their candidates for the examination.

APPLIED ELECTRICITY 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

Fifty-five candidates sat to the examination. The paper covered only 50% of the Applied Electricity syllabus. In general, the questions were very basic and fundamental. 50% of candidates scored between 30-50, of that percentage, only 15% scored over 45%. One student scored 50/50.

2. CANDIDATES' STRENGTHS

Candidates were able to state the following:-

- Effects of electric current;
- Factors that affect capacitance;
- Methods of cooling transformers;
- Merits of digital meters;
- Other methods of generating electricity other than hydro

2. CANDIDATES' WEAKNESSES

Candidates demonstrated weaknesses in the following areas

- Application of Ohm's basic laws;
- Uses of capacitors;
- Causes of over-voltage and prevention;
- New domestic installation tests;
- Workings of transformers;
- IEE regulation on wiring;
- Workshop safety.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Required candidates to show knowledge in the effects of electric current, solve to find the current and voltage in a series-parallel resistor circuit and determine the resistance of the series resistor.

QUESTION 2

Required candidates to show knowledge in capacitance. To state the factors that affect capacitance, determine the capacitor value and uses of capacitor.

QUESTION 3

Tested candidates on over-voltage and basic electricity installation safety tests. To state the causes of over-voltage and ways of avoiding it, and three tests that are required on a newly installed domestic network.

QUESTION 4

Tested candidates on transformers, cooling system used on it and to draw and explain the workings of a single-phase transformer.

QUESTION 5

Tested candidates on measuring meters; advantage of digital meters to analog meters and to determine the value of the resistor that should be in parallel to the internal resistance of a moving-coil instrument to enable it read a given current.

QUESTION 6

Required candidates to show knowledge in electrical power generation. They should consider the method of generating electricity, other methods of generating electricity other than hydro-electricity and the merits and demerits of hydro-electricity generation.

QUESTION 7

Test candidates on IEE regulation on ring wiring, methods of conducting domestic electrical installation and workshop safety.

APPLIED ELECTRICITY 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The questions were observed to be of the required standard. The tables provided were an effective guide in aiding candidates in the data required and the calculation to be undertaken. The stepwise instructions further guided candidates on the method to be used to assemble the circuit, collect readings and plot graphs.

It was clear from invigilators' report that challenges were encountered with respect to availability and adequacy of components, equipment and meters.

2. CANDIDATES' STRENGTHS

The strengths of the candidates cannot be determined as examiners were not present at the time the examination was conducted. This assessment can only be determined in the way candidates connect components and power supply and collect measured meter readings.

3. CANDIDATES' WEAKNESSES

As stated earlier, this could have been possible if examiners were present when the examination was being conducted.

However, based on the responses observed on the answer scripts, candidates were challenged in recording/obtaining readings from measuring instruments, accurately scaling and plotting of required graphs including extracting required information from the graph. Candidates were also unable to determine the nature of expected graph based on the expression of the parameters being requested to measure.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

This questions required candidates to collect data using a voltmeter and an ammeter from given circuit which they were to assemble and powered using varying applied voltages.

For question 1, candidates were required to collect voltage readings across a resistor and a capacitor connected in series to a varying ac voltage source (0 to 30 volts in steps of 5 volts). The collected readings are to be plotted on a graph. Candidates were challenged in scaling the graph (resistor voltage against capacitor voltage), determining the slope/gradient and lead angle.

QUESTION 2

Candidates were required to collect current readings across resistors of different values connected in series to varying ac applied source (0 to 3 volts in steps of 5 volts). The collected readings are to be plotted on a graph (Resistor value against current).

Candidates were challenged in scaling the graph, plotting points accurately and drawing curve.

The responses of candidates based on the collected data were relatively poor when compared to expected readings. This can be attributed to poor quality of equipment and components available in schools during the examination.

BUILDING CONSTRUCTION 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The questions were up to standard. It only needed visitation to the schools offering this subject to know their readiness on the subject matter. As it was encouraging for the amount of pupils going in for the subject.

The methodology of the teachers to this subject should be observed and give necessary advice if need be. But the pupils have the zeal to offer this subject.

2. CANDIDATES' STRENGTHS

The performance of the candidates was highly encouraging. But visitation to these schools is needed to know exactly the number of teachers in this subject. The candidates need motivation so that they will be interested in this subject area. If possible, workshop should be provided in schools for practical teaching.

3. CANDIDATES' WEAKNESSES

The contact hour provided for this subject is small because it goes with drawings for the candidates to get a better understanding.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(a) State one duty of each of the following construction personnel.

- (i) architect;*
- (ii) quantity surveyor;*
- (iii) building inspector.*

(b) Sketch each of the following brick layer's stools:

- (i) spirit level;*
- (ii) wooden float.*

(c) State three activities involved in site clearing.

QUESTION 2

(a) State one use of each of the following building drawings:

- (i) site plan;*
- (ii) sectional drawing.*

(b) Sketch to illustrate a method of supporting the sides of a trench in a firm soil and label the following parts:-

- (i) poling board;*
- (ii) folding wedges.*

- (c) *State the function of each of the following elements in a suspended timber ground floor.*
- (i) *air brick;*
 - (ii) *sleeper wall;*
 - (i) *oversight concrete.*

QUESTION 5

- (a) *State two activities involved in landscaping works.*
- (b) *List three materials used for pavement construction.*
- (c) *State two reasons for the construction of kerbs on access roads.*
- (d) *State two reasons for using a metal fence wall gate instead of a wooden gate.*

At least candidates were able to answer the questions which they chose. Questions 1, 2 and 5 were well done and encouragement should be given to the candidates who offer this subject as it is only offered at the SSS Level.

BUILDING CONSTRUCTION 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was of the required standard compared favourably with those of previous years. However, more time should be allocated to the papers.

2. CANDIDATES' STRENGTHS

Candidates demonstrated strength in drawing.

3. CANDIDATES' WEAKNESSES

Most candidates could not practice because drawing board was not available.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

The diagram on pages 3 and 4 represents both the ground floor plan and the first floor plan of a five bedroom duplex in a line diagram. All dimensions are in millimeters. Assume unspecified dimensions. Study the specification given below and answer the questions that follow:-

SPECIFICATION

FOUNDATION: *675 x 225 concrete laid at a depth of 1000 below the ground level.*

FLOOR: *Earth filling;
Hardcore 300;
Concrete slab 150;
Mortar screed 25.*

STAIR CASE: *Reinforced concrete stair;
Width 750;
Rise (riser) – 150;
Going (tread) – 225;
Waist – 100;
Total rise – 3000;
Total going – 2025*

WALLS: *All walls are 225 sandcrete hollow blockwalls except the stair enclosing wall which is 150 thick.*

BEAMS/LINTELS AND COLUMNS: *225 x 225 reinforced concrete.*

ARCHES: *All arches are semi – circular reinforced concrete type:
Height – 2400;
Span – 1450.*

THRESHOLD STEPS: *Width – 1500;
Tread - 300;
Rise - 150.*

DOORS: *D₁ - 1200 x 2100 glazed metal door;
D₂ - 900 x 2100 panel wooden door with 100 x 50 hardwood
timber frame;
D₃ - 750 x 2100 panel wooden door with 100 x 50 hardwood
timber frame.*

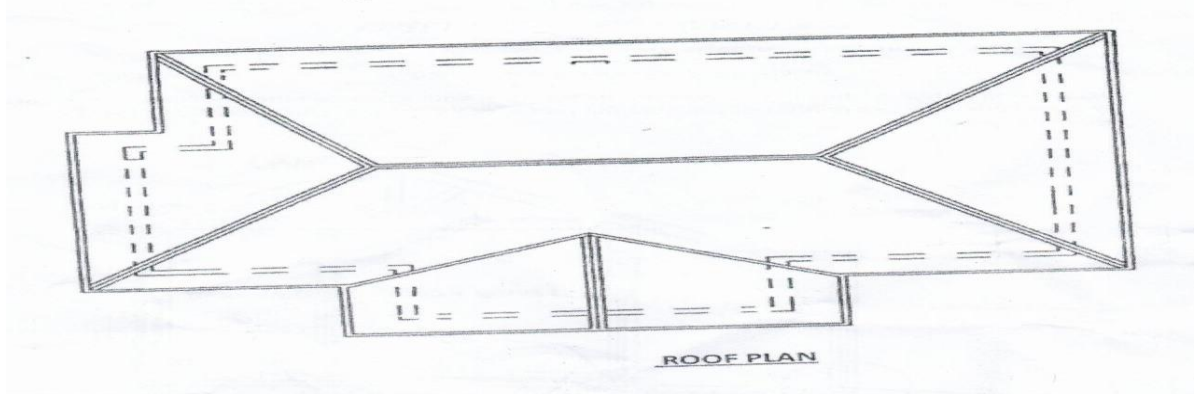
WINDOWS: *All windows are glazed aluminium sliding type:
W₁ - 1800 x 1200 [3 bays];
W₂ - 1200 x 1200 [2 bays];
W₃ - 1200 x 600 [2 bays];
W₄ - 600 x 600 [2 bays].*

WARDROBE: *2100 x 600 x 800 wooden type and partitioned into cloth an
box compartments:
Cloth compartment - 2100 x 2050;
Box compartment -0 2100 x 750.*

ROOF: *Hipped timber roof with long span aluminium roofing sheets
(Refer roof plan shown).*

*Pitch: Front and Rear - 45⁰;
Right and Left sides - 30⁰;
Porch roof - 20⁰;
Eaves projection - 750.*

*Height from ground floor to soffit of first floor – 2800;
Height from first floor to ceiling - 2800.*



1. To a scale of 1 : 50, draw the detailed section X – X of the building from foundation to roof.
2. Draw to a scale of 1 : 100, the detailed plan of the first floor.
3. To a scale of 1 : 100, draw the front elevation of the building.
4. Draw to a scale of 1 : 20, the detailed section Y – Y from the first floor slab soffit to the wall plate and indicate the following:
 - (a) external sandcrate block wall;
 - (b) ragbolt;
 - (c) wardrobe;
 - (d) ringbeam.

There was much understanding in the plain and conventional symbols to some candidates. But the school offering this subject should be visited to ascertain the classroom and the drawing materials available in order to improve the performance of candidates.

Some candidates have knowledge of the subject matter but the time allocated seemed to adversely affect their performance.

ENGINEERING SCIENCE 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The questions covered 90% of the subject area/examining syllabus and were of standard quality.

2. CANDIDATES' STRENGTHS

The overall strengths of candidates were in stating laws and writing the basic formulae.

3. CANDIDATES' WEAKNESSES

The weaknesses of the candidates were observed in all questions attempted. This includes, lack of knowledge in correctly stating laws, incorrect way of answering narrative questions; defining an electrolyte as conducting electricity instead of allowing electricity to flow through it, unable to correctly state that heat is a form of energy. 95% did not know the relationship between root mean square and alternating current/voltage value.

Other identified weaknesses are as follows:-

- ✓ Unable to correctly explain difference between specific latent heat of evaporation and fusion.
- ✓ Unable to give correct explanation for the appearance of mist on windscreen.
- ✓ Unable to transfer narrative to sketch as in the case of question 3(d)(i).
- ✓ Unable to calculate mutual inductance.
- ✓ Unable to determine bending moments along a beam.
- ✓ Unable to extract information from a plotted graph.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

(Ten short answer questions) covered Archimedes' principles, angular and linear velocities, work and efficiency, temperature and evaporation, analysis of spherical mirrors, electricity measuring instruments, relationship between ac parameters, relationship between electrolyte and non-electrolyte and basic Hook's law.

QUESTION 2

Covered two parts.

- The first part, law of linear momentum and to calculate speed and losing kinetic energy for colliding objects in a compressing spring system.
- The second part, to determine the material that an object is made of using either relative density or buoyancy and density relationship.

QUESTION 3

Covered three parts.

- ❖ The first part, to define specific heat of fusion, explain why specific latent heat of evaporation of water is greater than specific latent heat of ice, and conclude with an analysis problem that required the determination of heat supplied.
- ❖ The second part was, to define dew point and provide explanation as to why misty settle on the windscreen when it is raining.
- ❖ The third part, to sketch the arrangement of lens in relationship to object and images and to determine the focal length of one of the lens (objective lens) and distance between the lenses using basic mirror equations.

QUESTION 4

Covered two parts.

The first part, to state Ohms law and its limitations, plot a graph of potential difference against current and extract information from the graph.

The second part to define self-inductance and to calculate the mutual inductance effect of one coil on another.

QUESTION 5

Again is in two parts.

The first part to determine and sketch the bending moment and shear force effects on a cantilever with three pin loads acting on it.

The second part to write out the balanced equation for complete and incomplete combustion and state the products that result from both combustion.

A thousand candidates sat to the paper. The overall performance was very poor with less than 1% scoring 40% and over. The high score was 53% with only three candidates scoring over 50%.

FOODS AND NUTRITION 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The paper was of the required standard compared favourably with those of previous years.

COMMENTS ON ANY DIFFICULTIES THAT MIGHT HAVE AFFECTED CANDIDATES' PERFORMANCE

The standard of the paper was alright as expected. The paper covered the entire syllabus and was appreciably balanced in terms of coverage of the subject matter. The candidates were asked to answer questions that were clear, fair and straightforward. There was no ambiguity found in any of the questions set.

However, the average performance of the candidates can be attributed to the following:-

- ❖ Failure to comprehend the demands of the questions in appropriate manner in answering the questions, mastery of important topics and sub-topics or concepts in Food and Nutrition and English Language and unpreparedness by some candidates.
- ❖ Some candidates were able to express themselves in English and were able to answer some questions very well.
- ❖ Some candidates followed the rubrics given and drew diagrams accurately.

2. CANDIDATES' STRENGTHS

The general performance was not quite good, but there were areas in the paper that most candidates did very well e.g. questions 3, 4 and 5.

Those candidates who did well, were prepared for the paper. This was evident in their use of English Language and the coherence of their answers in writing and in illustrations e.g. drawing of different kitchen layouts.

They were able to put/present their ideas across vividly and had good knowledge of the questions they answered.

Furthermore, in future candidates who would be attempting an examination on this nature and should be encouraged to improve on writing and reading skills as well as practical skills to enable them answer the questions in good English, avoiding spelling mistakes, poor grammar and disjointed ideas.

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3. CANDIDATES' WEAKNESSES

The poor performance of most candidates in answering questions such as questions 1, 2 and 6 and even 4, emanated from unpreparedness, poor comprehension of the questions,

grammar and lack of adequate knowledge of the topics and sub-topics. Also poor writing skills and spellings.

Relevant and prescribed text books should be available in all schools in the city and provinces to enable, constant and well-structured information about or on the topics in the syllabus used in the sub-regions.

Some candidates concentrated on enumerating points or factors rather than explaining. For example, question 1 was treated in that manner by most candidates. This made some of them to lose marks. Some could not align points in question 3 and question 2, even though they wrote the correct answers.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Explain five factors that influence the formation of food habits.

Candidates were expected to give 5 (five) points and explain them. However, most candidates just wrote the points without explaining them. Some wrote the points and explained them wrongly e.g. Religion – Some religions forbid eating pork.

(a) *State two differences between alcoholic and non-alcoholic beverages.*

This question demanded candidates to give their answers in corresponding manner. Some were able to do so, but some could not, even though they wrote the correct statements. This made those who knew the correct answer but could not write in parallel style, lose some marks. E.g. Alcoholic beverages are sedatives, whilst non-alcoholic beverages are stimulants.

(b) *State four functions of beverages in a diet.*

This question demanded candidates to give the usefulness of beverages both alcoholic and non-alcoholic e.g. wine – improving taste, texture, flavor etc. and orange drink – refreshing the body, contributing water to the body, some were able to give the correct answers whilst others could not.

(c) *The Principle underlying tea preparation.*

This part of question 2 was not answered correctly by almost all candidates. 95% could not comprehend the question and interpreted it correctly. Candidates gave

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procedures for making tea i.e. the step by step way of preparing tea, heating up water, immersing or infusing the teabag, adding sugar and milk etc. Only few mentioned about developing the flavor of tea, without extracting too much of tannin. Majority got 0.

QUESTION 3

(a) Outline two uses of Napkins at the table.

Candidates were required to write out the usefulness of napkins when someone is eating food at the table or expected to use napkins when at the table (dining table). Most candidates gave the correct answers – used to wipe hands, mouth, protect the diner’s clothes/garments, signals the beginning and ending of meals etc.

(b) Itemize two flatware

Most candidates referred their answers to footwear e.g. slippers, sandals etc. That was a complete misconception, beyond comprehension and lack of attention on the part of the candidates. The term “Flatware” was misplaced by the candidates, the reason being flatware is a common name for low heeled wears in the home. Most got 0/2 marks. The answer should have been teaspoons, scup, tangs, butter knives, fish fork etc.

(c) Give three differences between Cocktail and Buffet Services.

This question required candidates to distinguish between cocktail and buffet service patterns/details. E.g. Cocktail Services are formal in nature whereas buffets are informal services in nature. Candidates were expected to give corresponding answers to gain full marks – 6 marks.

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Some were able to give the correct answers and in corresponding manner, whilst some could not give the correct answers and some gave the correct answers but not in corresponding manner.

QUESTION 4

(a) Sketch and label two types of kitchen layout. Here, candidates were expected to draw by sketching and writing the name of the type of layout sketched.

The layout are as follows:-

- (i) U – Shaped Kitchen***
- (ii) L – Shaped Kitchen***
- (iii) Corridor Kitchen***

- (iv) One-Wall Kitchen***
- (v) Peninsula Kitchen***
- (vi) Island Kitchen***
- (vii) Dual-Purpose Kitchen***

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The candidates who sketched without labelling scored 1 ½ / 2.

(b) State three rules for maintain Kitchen Hygiene

This question required candidates to give in the form of sentence ways to follow/or observe in order to maintain hygiene in the kitchen. However, some candidates misconstrued the nature/or demand of the question, and rather gave personal hygiene e.g. covering the head, washing of hands before cooking. Those candidates who understood the questions gave answers such as:

- ❖ Wash kitchen utensils after using;
- ❖ Wipe all spills immediately they occur;
- ❖ Clean the kitchen floor;

The marks allocated for this question was alright. Each rule went for 1 mark.

(c) State three advantages of a well-planned kitchen.

Candidates were expected to give the advantages in the form of a sentence e.g. Easy to do work, there is less accident in the kitchen.

Most candidates were able to meet this demand and scored 3/3 marks, some scored 2/3 and a few 1/3 and 0/3.

QUESTION 5

(a) Distinguish between food preparation and cooking.

This question was very popular and attracted many candidates, who gave the correct answers, though some had difficulty with spelling and sentence structure formation. The problem also seen in the answer of the candidates was the candidates using the words; whereas, and whilst in giving the distinctions between Food Preparation and Cooking.

They should have also used tabulation as a means of distinguishing the two concepts as well.

(b) State three reasons for cooking food.

Here the candidates were to give the rationale why food is cooked.

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Most of the candidates met the demand of this question and were able to score $\frac{3}{3}$ marks, $\frac{2}{3}$ marks and a few $\frac{1}{3}$ and $\frac{0}{3}$ marks.

(c) State five factors to be considered when choosing a method of cooking.

Candidates were required to give the correct answer in the form of a sentence not a single word. This question was also popular and most candidates were able to gain good marks. A few misunderstood this question, thinking that, it required them, to give factors to be considered when planning meals.

QUESTION 6

(a) What are preservatives?

Candidates struggled with this question as many could not give the correct answer. They were required to give in a sentence the forms in which fruits are served or could be served. Most wrote the items used for serving fruits e.g. fruits served in a plate, on a table, in a basket etc.

However, few wrote the correct answer, giving statement such as;

- ❖ Fruits served as puddings;
- ❖ Fruits served as salads;
- ❖ Fruits served as stews.

Marks scored in this question were as low as $\frac{2}{5}$, $\frac{1}{5}$, $\frac{0}{5}$ marks.

Those who understood the question, were able to score $\frac{3}{5}$ and $\frac{4}{5}$ marks. Very few scored $\frac{5}{5}$ mark.

(c) State three factors that can affect the drying of food items.

This part of question 6 was the most unpopular – question. It attracted very few responses and most of the few responses were wrong.

However, very few got $\frac{2}{3}$ marks and $\frac{1}{3}$ marks.

HOME MANAGEMENT 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper was within the potentials of the candidates. Questions were drawn from the syllabus and the paper consisted of six (6) questions, to answer five (5)

The questions were straightforward and required clear answers. Few candidates were able to answer their five questions correctly while a greater number were only able to attempt part of every question. For example a candidate may answer the “a” or “b” part of a question and leave out the remaining part of that same question. This is an indication that most schools do not exhaust the school syllabus.

Performances of candidates were generally unsatisfactory as compared to previous years.

3. CANDIDATES’ WEAKNESSES

Candidates’ weaknesses could be attributed to the following:

- WAEC Syllabus not exhausted by teachers
- Lack of text books
- Lack of good and qualified teachers
- Pupils not taking their school work seriously.

Most candidates were unable to understand the question especially question 2, 3(a), 4, 5(a) and question 6 and therefore misinterpreted them.

4. CANDIDATES’ STRENGTHS

Few candidates demonstrated adequate knowledge of certain aspects of the syllabus.

A few of them were able to answer the five questions correctly.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Define the following:

- (a) Goals;*
- (b) Values;*
- (c) Time management;*
- (d) Energy Management;*
- (e) Standard.*

This question was not so well done. Candidates could not define these words, for example some referred to goal as a football goal post. Although few candidates tried to define them, but the expected answers were:-

- (a) **Goal**:- are aims, objectives, ends or things that individuals or families are willing to work for and achieve. They are things we want to accomplish e.g. as a student working towards a degree in law.

OR

Observable and measurable results which can be achieved within a fixed time frame.

- (b) **Values**:- are measures of worth or importance placed on something. Values have to do with views, beliefs or feelings of what is good, important or desirable.
- (c) **Time Management**:- is the process of planning, organising, implementing and evaluating the use of time in order to increase effectiveness, efficiency and productivity.
- (d) **Energy Management**:- is the process of planning controlling and using energy judiciously in order to preserve it.
- (e) **Standard**:- is a measure of quality, quantity and method of goal attainment. It is used to measure the value of something and it influences action.

QUESTION 2

(a) *Write two differences between carpet and rug.*

This question was attempted by most candidates but only few were able to give the correct answers. The question was totally misunderstood.

The expected answers were:

DIFFERENCES BETWEEN CARPET AND RUG

1. Carpet: It covers the entire floor of the room wall to wall;
It protects the floor;
It is bigger than rug;
Carpet is permanently laid.
2. Rug: Is smaller than carpet, so it is a partial floor covering;
It is usually placed in the centre of the sitting room;
It can be placed beside the bed;
A rug is easily moved.

(b) State six uses of carpets.

USES OF CARPETS

- they help to unify the room's colour scheme;
- they add warmth to the feet;
- they reduce noise;
- they add beauty to the room;
- they protect the floor;
- they make the room more comfortable;
- they prevent slip and fall accident.

QUESTION 3

(a) Describe the following types of insurance listed below:-

- (i) Life insurance*
- (ii) Automobile insurance*
- (iii) Fire insurance*
- (iv) Theft insurance*

This was not a popular question. Most candidates that attempted it only did the (b) part and gave only one way of saving money.

These were the expected answers:-

DESCRIPTION OF TYPES OF INSURANCE

- (i) Life insurance:-* this type of insurance takes two forms, whole life and endowment. When a person takes whole life insurance, the sum of money insured will be paid to him on maturity or to his dependant on his death. However, endowment has a shorter coverage period and matures sooner, usually 10 – 20 years.
- (ii) Automobile insurance:-* it is a policy purchased by vehicle owners in the form of premium paid annually to insurance company. Then the company pays all or most of the cost associated with auto accident on any other vehicle damage.
- (iii) Fire insurance:-* it is a property insurance policy where premium is paid to insurance company to cover losses and damages caused by fires. Compensation paid helps cover the cost of replacement, repair on reconstruction of property.
- (iv) Theft insurance:-* it is an insurance policy where premium is paid to an insurance company against theft. Compensation paid by insurance company covers losses from burglary, robbery or other forms of theft.

(b) *List two ways of saving money.*

WAYS OF SAVING MONEY

- Banking
- Traditional savings
- Building societies
- Insurance
- Co-operative society

QUESTION 4

Explain five important guidelines for effective family meal management.

This question was also not a popular question. Few candidates attempted it and misunderstood it. Instead of giving guidelines for family meal management, some of them gave rules for shopping.

The expected answer was

IMPORTANT GUIDELINES FOR EFFECTIVE FAMILY MEAL MANAGEMENT

- (i) The nutritional needs of family members must be considered; for instance the adolescents invalids, children, aged and nursing/pregnant mothers must be provided for.
- (ii) Ensure variety of meals to avoid monotony e.g. fish, meat, legumes, leafy vegetables and fruit.
- (iii) Take advantage of food in season e.g. tomatoes and spring onion in November to March, fresh maize or other greens during raining season, beans and nuts during dry season.
- (iv) Consider the money available: the money available to the family will determine the type of foods which it can afford.
- (v) Plan meals several days ahead of time so as to save money and time for instance from the habit of weekly menu plan.
- (vi) Buy good quantity foods e.g. fresh vegetables, fish and meat are better bought in the morning than late afternoon.
- (vii) Serve meals as attractively as possible e.g. use suitable accompaniments and garnish dishes effectively.
- (viii) Consider the likes and dislikes of the family members as this will guide the home maker in providing adequately for everybody.

QUESTION 5

(a) Describe the following elements of design:

- (i) Line**
- (ii) Texture**

Majority of the candidates who attempted this question were able to give correct answers to sub-questions (b) and (c) leaving out the (a) part blank.

They were expected to answer the questions like this:

(a) DEFINITION OF THE FOLLOWING ELEMENTS OF DESIGNS

- (i) *Line***:- is the link between two dots. It is an element of design that forms the contours on faces of human figures and shapes of articles.

Texture:- is a surface quality of an object in terms of feel or appearance. It also refers to illusion on roughness or smoothness in a picture.

(b) REASONS FOR MAINTAINING CLOTHES

- It makes the clothes last longer;
- To make clothes look clean;
- To make wearer acceptable in public;
- To be able to kill disease carrying germs that may hide in clothes;
- They smell fresh;
- To make the wearer feel good and comfortable.

(c) WAYS OF MAINTAINING CLOTHES

- Lay garment flat or hand and leave to air when they are worn and removed before you store;
- Don't wear clean clothes on dirty body as perspiration and dirt can weaken the fibres;
- Do not wear one garment for several days continuously. Leave some days in between so that fibre can breathe;
- Wash clothes and dry them well before you store;
- Use correct method for washing e.g. friction for washing cotton;
- Use the correct temperature for ironing;
- Do not hand knitted articles like singlet, polo, skirt etc. as hanging them may make them loose shape;
- Store only clean and well dried clothes;
- Remove stains and spills immediately they occur.

QUESTION 6

(a) What are primary needs?

(b) List four primary needs and explain two of the primary needs listed.

This was a straightforward question in simple terms required the candidates to display their abilities in responding correctly. But it was very unpopular and implies few of those who attempted it did so incorrectly.

The expected answers were:-

(a) **DEFINITION OF PRIMARY NEEDS**

They are very important needs which are basic to the survival of family members, they are common to families.

(b) **PRIMARY NEEDS**

- Foods
- Housing/shelter
- Clothing
- Health care

(c) **EXPLANATION OF THE PRIMARY NEEDS**

- Food needs: should be adequately provided to meet family member's growth, energy development and body maintenance. The food needs and money spent on it will depend on family member's age, sex, health, number and occupation.
- Housing: housing is needed to protect family members against weather condition, danger and burglary. Housing provides security, privacy and warmth.
- Clothing: every family member requires good basic clothing for protection, identification and adornment. If some family members have some clothing repair or construction skills the clothing budget can be reduced.
- Health care: health care is needed for proper growth, maintenance and prevention of diseases and illnesses.

HOME MANAGEMENT 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

- a) The standard of the paper was the same as previous years. The performance of some students was below standard.
- b) Some difficulties that might have affected candidates performance are:
 - The attitude of students towards the practical examination. Some teachers did not conduct practical lessons for the students for fear of being caught in anti-corruption net
 - Most teachers have escalated the cost of items for practicals so the students run away from it
 - Some schools do not have adequate space to conduct practical
 - The attitude of school heads and teachers towards the subject have contributed towards the low performance

The practical is divided into two:

- 1) The time plan- which includes the choice of dishes, quantity of ingredients to be used and the time allocated to each task

Most candidates could not interpret the test and therefore could not select the appropriate task and dishes.

The time plan should be done with the help of text books which will enable candidates to select the correct dishes.

During the examination (for plan of work) candidates were denied access to text books by the examination monitors in some schools.

Candidates as well as teachers were not punctual at centers.

2. CANDIDATE'S WEAKNESSES

Candidates could not interpret the test well.

Their choice of dishes was wrong and the time plan was very scanty .

3. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

The home management practical test comprises of four parts.

In part 1, candidates were expected to:

a) *Select a dish and select a particular task*

Most candidates did not interpret the question well. They wrote the same questions as was given in the test. They selected the wrong dishes required by the test.

b) *Quantity of cleaning, laundry and chief ingredients*

These were carefully selected by the candidates.

c) *Reasons for choice of dishes/work*

Few candidates gave the correct reasons for choice of dishes/work. Others wrote scanty reasons for choice of dishes/work.

In part B,

Candidates were requested to give the total requirement for the four sections of the test which they were requested to do under the following headings:

- Ingredients
- Cleaning and laundry materials
- Articles for cleaning

This was done by few candidates. Others listed the ingredients leaving out the quantities. Cleaning materials were not listed by some candidates.

In part C,

Candidates were requested to give a time plan showing the order of work.

Some candidates did not state the time of some tasks to be carried out.

In part D,

This involves the practical test which lasted for three hours.

At the end of the three hours, candidates were expected to present the finished work.

This year, the candidates work was below standard. Most of them had the wrong choice of dishes. Inadequate use of cutleries, wrong table cloth and poor presentation of work.

Candidates did not put much effort in their work.

MANAGEMENT-IN-LIVING 2

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper compared to previous years was clear and within the reach of candidates. The performance of candidates in this paper was below average.

Some difficulties which might have affected candidates' performance may be due to the following factors:

- The teachers may not have completed the syllabus or did not teach certain topics.
- Some pupils might have skipped classes and therefore found it difficult to cope.
- There are no qualified teachers to teach the subject.

2. CANDIDATES WEAKNESSES

The questions were not answered orderly on the same page and this made it very difficult for examiners when marking.

Candidates must be guided in the various subject areas on how to answer questions and the effects of disorderliness in presentation of work.

Also most candidates only listed the points and did not explain as requested. They must be guided when answering questions by focusing on the terms 'Explain and State' and what is expected of them.

3. CANDIDATES' STRENGTHS

Most candidates attempted the four questions although, some questions were not fully answered.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Was a familiar question. Candidates who attempted it performed well. Section C and D were not answered well.

Candidates were expected to:

a. Explain the term child labor

This is an engagement of children under the age of 15 in income generating activities other than the usual domestic and agricultural jobs within the home which hinders growth and development of the child.

b. State five activities that can be classified under child labor.

Expected Answers:

Activities that can be classified under child labor are:

- Begging for alms
- Carrying heavy loads
- Engaging in all kinds of trading and hawking activities
- Serving as house helps
- Serving as porters
- Cracking of stones
- Splitting of woods
- Engaging in fishing activities
- Engaged in shepherd boys/girls
- Serving as drug peddlers
- Engaging in mining activities

c. Explain five reasons why child labor laws are difficult to implement in Africa.

Reasons why child labor is difficult to enforce in Africa

- Some of the children work to maintain or sponsor themselves in school
- There is no clear definition of what is excessive and exploitative labor
- Most children work to contribute to household income or production because of economic constraints
- Some law enforcement agents may be involved in the practice

d. Explain five effects of child labor on the child.

- Dropping out of school- the child may drop out of school, thus limiting his/her mental and social development
- They may not develop appreciate skills
- The child may be emotionally disturbed if he/she is exploited or abuse
- The physical growth of the child may be stunted due to poor nutrition
- Exposed to hazards: some of the children may be risky and cause physical and mental injuries
- The child may develop poor self-concept when he/she cannot perceive himself/herself as an achiever
- The child grows up without parental guidance leading to low moral/standards

QUESTION 2

Was a popular question. Those who answered it performed well.

QUESTION 3

Few candidates opted for this question. The responses were not so good. They were expected to:

a. Explain the term healthy lifestyle.

Expected Answers:

This is described as the well being of an individual by carrying out some specific activities or practices that contributes to the well being in body, mind and being free from diseases.

b. Suggest three ways each of achieving the following healthy lifestyle

i. Effective communication

- Listening actively and being responsive in communication
- Speaking one's mind with confidence and yet sensitive to others views
- Giving full attention to people when listening to them
- Being sincere, frank and friendly at the same time
- Speaking clearly for the listener to hear

ii. Showing care

- Point out special qualities of the people you meet
- Give sincere praises whenever you care
- Use people's names when you talk to them
- Encourage people to talk about themselves by asking questions and listening
- Do a favor when possible

iii. Having Empathy

- Empathy is the ability to understand what someone else is experiencing by putting oneself in another's place and trying to see things from their point of view
- Being sensitive to other people's needs
- Offering physical affection
- Understanding the other person's point of view
- Being aware and sharing the feelings or emotions of other people

iv. Co-operation

- Doing ones share of activities to goal achievement
- Being agreeable in accomplishing tasks
- Be willing to use other people's ideas
- Not imposing one's ideas on others
- Withholding judgment on people with challenges
- Offering help when needed

c. State three practices to ensure right eating for a healthy lifestyle.

Practices to ensure right eating for a healthy lifestyle

- Eat a balanced diet
- Choose a diet low in fat and cholesterol
- Choose a diet with plenty of fruits and vegetables as well as grains
- Use less sugar
- Eat less red meat
- Use salt in moderation
- Eat at the right time
- Add less butter, margarine and gravy to food

d. State eight personal hygiene practices that promote health

- Hair must be kept clean and free from lice infection
- Protect head from excessive heat, cold and injury
- Wash face frequently
- Teeth should be brushed twice a day
- Finger and toe nails should be kept short and clean
- Hands should be washed thoroughly with soap and water before eating
- Pubic hair should be shaved to prevent infection
- Hands should be washed thoroughly with soap and water after using the toilet
- Bath twice a day

QUESTION 4

Was not a popular question. Their performance was not very good. Candidates were expected to:

a. Explain the term Environment

It refers to the conditions in which a person lives and functions

Or

It consists of everything around the human being such as land, water and air

Or

Environment is the surrounding of human beings

b. Explain the causes of deforestation

Causes of deforestation

- Felling of trees for timber, fuel wood, roofing of houses and charcoal burning
- Frequent clearing of the land for farming and not allowing it to fallow

- Traditional farming purposes and burning of bushes

- Excessive grazing on the land by livestock/individuals allow animals to feed continuously on the land for a long period of time and this may expose the bare land to destruction
- Mining activities
- Over-population
- Indiscriminate bush burning leading to deforestation and desertification

c. Explain five effects of poor environmental management

Expected answers:

- Indiscriminate dumping of refuse will lead to dirty environment and outbreak of diseases
- Depletion of the ozone layer leading to global warming and diseases
- The pollution of water bodies makes the water develop unpleasant color and smell and therefore unsuitable for domestic and industrial use
- Air pollution affects the health of human beings. The gases which pollute the air can cause cardiovascular diseases, pneumonia, bronchitis as well as mental malfunctioning and cancer
- Drying up of water bodies: drying up of rivers and water sources deprives humans and animals of water

d. State five ways to ensure good sanitation

- Proper care of septic tank/cess pit
- Appropriate disposal of waste both solid and liquid
- Public education on sanitation
- Cleaning of water closets and toilets
- Controlling household pests
- Weeding of bushy areas around
- Enforcement of sanitation laws
- Cleaning of drainages and gutters

QUESTION 5

Few candidates answered this question. Their responses were very scanty. Candidates were expected to:

a. Explain the concept of management

Expected answers:

Management is making wise use of available resources to achieve goals/meets needs and wants of a family

Management is the process of making the best use of available resources to meet needs and wants/goals

b. State five characteristics of management situations

Characteristics of management studies

- Someone or more than one person has an idea of what is needed.
- Someone judges/assess what is available for use.
- Someone reconciles differences between what is wanted by different members of the group and the means available.
- Someone knows what is likely to happen/occur under certain circumstances.
- Someone has to bring together what is needed at the right time.
- Someone has to recognize the limitation of what can be done with what is available.

c. Explain five factors that affect management

- ***Age of a person:*** age influences the level of maturity and experience of a person. An adult is more experienced and likely to manage than an adolescent.
- ***Knowledge:*** knowledge about resources and how to manage as well as the ability to apply information contributes to success in management.
- ***Health:*** the health of an individual contributes to the capacity to work and put plans into action.
- ***Experience:*** the more experienced a person is the better he/she can affect the success of management.

d. State and explain the four types of goals

- Long term goals: these are goals that take relatively long periods of time to be achieved eg building a house, getting education etc
- Short term goals: these are goals that can be accomplished in a relatively short time eg learning how to cook a particular dish
- Intermediate goals: these are means to achieve long term goals. They take quite some time to accomplish eg saving towards building a house
- Means-end goals: they are simple and immediate goals that are set as steps to achieve other goals eg doing house work, studying towards examination

Most candidates stated the types of goals but in the explanation, the word relatively was omitted.

QUESTION 6

a. Explain reasons for saving money

Expected answers:

Reasons for saving money are:

- To meet emergencies that cannot be met with current income eg towards child birth etc.
- For a particular goal or goals. If one has to achieve a particular goal but cannot afford it with the income available, some money has to be put aside to meet the goal eg. paying a child's school fees.
- For investments such as starting a new business. One needs capital to start the business.
- To serve as the only income after earnings decline or cease as a result of retirement.
- For meeting a long term goal.

b. Identify two formal and two informal institutions for saving money

Formal institution for saving money

- Commercial banks
- Rural banks
- Insurance companies
- Credit unions
- Non-bank financial institutions

Informal institutions for savings

- Susu group
- Walking banks
- Welfare societies
- Keeping money at home /money box

c. Explain three factors to consider when choosing a saving institution

- ***The purpose for saving:*** whether for a short term or long term goal. If for a short term goal, walking bank will do instead of a commercial bank
- ***Safety:*** freedom from danger or risk and assurance of getting back the amount deposited
- ***Liquidity:*** ease of converting savings deposits into cash
- ***Yield:*** returns or profits usually expressed as interest or dividends and calculated as percentage of the amount deposited

d. State two differences each between savings account and current account

- A cheque is usually used by the current account holder in operating his/her account
- While a savings account holder uses a withdrawal book
- Current account holder pays service charges to the bank
- While interest is paid on savings account holder deposit
- Current account allows its customers to withdraw from the account as many times as they wish

- While savings account holder have a limited time or period for withdrawal

- Current account holder can either go personally or issue cheque for payment to be effective to anybody
- While savings account holder has to go personally to the bank to withdraw money
- A current account holder can enjoy overdraft
- While a savings account holder is not qualified to enjoy overdraft

e. State the advantages of using credit

- It encourages people to overspend.
- Excessive use of credit can become a burden on family members.
- Items obtained on credit are more expensive.
- It encourages impulse buying.
- It may cause reduction in future income.

MANAGEMENT-IN-LIVING 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper as compared to previous years was quite good. Most of the candidates were able to answer the questions. The questions were within the reach of candidates.

Some difficulties which might have affected them were the lack of teachers, most of them could not finish the syllabus and most of them did not attend school and neither their classes.

2. CANDIDATE'S WEAKNESSES

Candidates left spaces for example, a page when answering the same question. The other part of the question is answered on the same page as other questions. It was difficult for examiners to mark those questions.

3. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

Was attempted by most candidates and they did very well.

QUESTION 2

Was also attempted by most candidates. Their performance in this question was very good.

QUESTION 3

This was not a popular question. Candidates who attempted it did not perform well. Candidates were expected to:

a) Differentiate between floor and floor covering.

Floor is the lower surface of a room on which one may stand or walk.

Or

Floor is the lower surface of a room on which the wall and furniture stand.

Whiles

Floor covering is a material which is placed on top of the structural flooring/floor to protect or decorate it.

b) Give two examples of floor.

Examples of floors:

- Wooden floor
- Mud
- Cement
- Terrazzo
- Ceramic
- Stone
- Tiles
- Marble

**c) Describe systematically in four sentences how to special clean a plain concrete floor
Candidates were expected to:**

How to specially clean a plain concrete floor

- Sweep surface with a broom or brush.
- Scrub with warm soapy water and brush taking a small portion at a time .
- Wipe off/mop dirty water.
- Mop/wipe with clean water.
- Leave to dry.

QUESTION 4

This was not a popular question. Candidates who attempted it did not answer it in sequential order.

Candidates were expected to:

a) Describe systematically how to clean a wooden dirty mortar.

Expected answers:

How to clean daily a dirty wooden mortar

- Pour cold water into the mortar and remove scraps of food with a blunt knife
- Scrub inside with a metal sponge
- Scrub outside with a metal sponge
- Rinse with clean water
- Wipe with clean cloth
- Leave to dry in a cool airy place in a shade

b) State two ways a wooden table can be finished to preserve it

Ways of finishing a wooden table to preserve it:

- Oiling
- Varnishing
- Staining
- Staining
- Painting
- Polishing
- Applying lacquer
- Spraying
- Veneering

QUESTION 5

This was not a popular question. The definition of a septic tank was not appropriate and could not state clearly where liquid and solid waste from the kitchen can be disposed off.

Candidates were expected to:

a) Describe a septic tank.

It is a concealed drainage tank into which waste from water closets/flush toilets are emptied or channeled

b) State two ways in which each of the following can be disposed of at home

- Liquid waste from the kitchen
- Solid waste from the kitchen

c) State two reasons why household pests are dangerous to humans

Expected answers:

b) Ways in which the following can be disposed off:

Liquid waste from the kitchen

- Through pipes leading to drainages, gutters or soak-away pits
- Liquid waste collected in a bowl or bucket and disposed off into soak-away pits or backyard gardens

Solid waste from the kitchen

- Deposited into dust bins with fitted lids
- Sorted out for burning
- Sorted for burying

- Sorted out for composting
- Sorted out and used for animal food

c) Reasons why household pests are dangerous to humans:

- They carry germs
- They destroy properties
- They produce stench/bad smell/unpleasant smell
- They contaminate food
- They can cause allergies
- They discolor surfaces
- They cause food poisoning

QUESTION 6

A few candidates answered this question. Most of them gave the cause of deforestation instead of causes of water pollution

Candidates were expected to:

a) State four causes of water pollution.

Causes of water pollution are:

- Poor disposal of liquid waste.
- Industrial and agricultural waste dumped into water bodies.
- Farmers pollute water bodies with fertilizers and pesticides.
- Washing clothes in water bodies.
- Urinating into water bodies.
- Activities of mining.

b) State four ways of preventing water pollution in our environment

Expected answers:

Prevention of water bodies

- Sewage should be treated before being discharged into water bodies.
- Farmers should be advised against the indiscriminate use of pesticides and fertilizers.
- Bathing, washing, urinating and defecating in rivers, ponds should be avoided.
- Household refuse should not be dumped near sources of water.
- Industrial waste should not be disposed off in water bodies.
- Activities of illegal miners should be stopped.
- Avoid using chemicals for fishing.

METALWORK

1. GENERAL COMMENTS ON PAPERS AS A WHOLE

- The standard of the question was good with reference to the syllabus; some schools are not providing the facilities for the teaching of metal work.
- Yet the overall performance of the candidate suggests that there was disparity in this year's paper i.e, the performance of candidates in some schools was high whilst others did very poorly. Teachers too have not improved on their skills and teaching techniques.
- I wish to strongly advise that schools be provided with tools and equipment that would enhance effective teaching of the subject.

2. CANDIDATES' STRENGTHS

- i. Most candidates were able to answer the questions required and some of their answers showed that they had an in-depth knowledge of the subject, as they scored full mark.
- ii. Most of them performed extremely well in questions 1 and 3. They showed some understanding of the requirements of the questions and were able to satisfy the examiner. Good performance was observed in one particular area; that is the identification of machine components.

All candidates can identify types of metal testing of metals and their carbon content.

3. CANDIDATES' WEAKNESSES

A good number of the candidates showed weaknesses in the manner they expressed themselves. These are shown in the following areas:

- i. Most candidates cannot read and comprehend questions well.
- ii. Some candidates cannot write properly, making it very difficult for most examiners to mark their scripts.
- iii. Candidates did not adhere to the instructions on the answer booklet. Example New questions were not answered on a new page and no space was left between sub-questions.
- iv. Answers were not properly organized and numbered.

SUGGESTED REMEDIES

- i. Candidates should be taught to read and write well to enable them to interpret questions.
- ii. Candidates should be taught how to draw hand tools and machine tools.
- iii. They should be taught to number and organize their questions well.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTIONS 1 AND 2

These parts of the questions were not well answered. Some candidates misunderstood and gave wrong answers.

QUESTION 3

Responses were poor.

QUESTION 4

Dealt with floor plan response satisfactorily.

QUESTION 5

Was a technically related question and was satisfactorily answered.

TECHNICAL DRAWING 2 & 3

1. GENERAL COMMENTS ON THE PAPER AS A WHOLE

The standard of the paper was within the reach of candidates in this year's examination. It is hoped that this trend continues.

However candidates lost marks due to wrong equipment especially for questions that required drawing straight lines. Teachers must help their candidates construct correctly and follow the instructions set on the question paper, but some candidates ignored this aspect. Some candidates attempted questions for Nigerian candidates. This affected their overall performance.

The choice of questions by candidates clearly showed the trend of the syllabus taught by teachers. In all the schools the candidates showed inadequacies in the areas of naming building parts or equipment. These have been the problems all the years and teachers should endeavour to clarify and stress these points in their teaching.

2. CANDIDATES' STRENGTHS

Candidates performed better in questions that did not require much of free hand sketches.

3. CANDIDATES' WEAKNESSES

The main weaknesses of candidates this year are as follows.

- a) Wrong spelling of technological terms, labels and scanty answers to questions.
- b) Poor drawing and labels were evident in most of the scripts.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

85% of the candidates who answered this question got it correct.

QUESTION 2

Some candidate's lost marks in question 2 since the question involved sketched hand tools.

QUESTION 3

These questions were straight forward. On the average, most candidates attempted it.

QUESTION 4

This was the most unpopular question, apparently, candidates did not understand the question and the methods of constructing windows and doors.

QUESTION 5

Most candidates answered this question and earned themselves good marks.

WOODWORK 2

1. GENERAL COMMENTS ON PAPERS AS A WHOLE

The standard of the question was good with reference to the syllabus.

The questions set in Section A were within their standard. In section B pupils found it difficult to answer this section, may be because of less practical facilities in schools.

The following are the main difficulties responsible for this year's poor performance of candidates.

1. Poor command of English language.
2. Incomplete coverage of the syllabus.
3. Lack of appropriate reading materials i.e inappropriate preparation for the exam.
4. Lack of or inadequate practical exercises during the course of study.
5. Inability to visit local industries to see the application of Technology in solving problems.
6. The workshop is being refurbished and all the work tables or work benches are being removed with the exception of three. The posed problems of accommodation for the practical examination.

From the confidential, the dimensions of the four pieces that will form the frame of the box differ in width, there is no piece indicated for the base of the box.

Referencing the dimension given for the four work pieces of the framing of the box by adjusting to suit the convenience of the work from the dimension, the shape of the box had taken a different form which could not be the fault of the candidate. That is why even the handle of the box was suspended.

2. CANDIDATES' WEAKNESSES

SECTION A

This section was not well answered as it tested for candidates' recall and comprehension of knowledge.

SECTION B

Pupils had difficulties in answering to questions related to application of technological principles. E.g. Prevention from rust on attaching materials i.e wood. Prevention from tools corrossions etc.

SECTION C**Test of Practical Work**

Candidates responses demonstrate a clear lack of practical knowledge. More practical courses should be taught in schools.

The solutions to these are as follows-

- a) More practical lessons be included in the curriculum/syllabus.
- b) The provision of simple hand bench tools and related practical exercises.
- c) Enough workshop space to be made available
- d) Adequate time for practical work.

3. CANDIDATES' STRENGTHS

Candidates lost marks because they misunderstood some of the questions asked ; e.g. hard wood was misunderstood for soft wood. Candidates must have a proper drill in the classes of practical and Technical Drawing generally. There has been some improvement over the years with trained teachers in carpentry coupled with the provision of practical equipment there is sure to be great improvement on the performance of candidates.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS**QUESTION 1**

Poor responses - lack of understanding of the question.

QUESTION 2

- (a) Not so good-inadequate knowledge of the correct sequence of planning of the faces of a piece of timber.
- (b) Evidence of lack of knowledge of business challenge faced by a beginner wood work entrepreneur.

QUESTION 3

- (a) Are Technical Drawing related questions and were answered satisfactorily.
- (b) Lack of practices – poor responses.

QUESTIONS 4A, B, & C

Dealt with season timber and methods of converting timber. Satisfactory answers were given.