MAY 2021 PROFESSIONAL EXAMINATIONS
FINANCIAL MANAGEMENT (PAPER 2.4)
CHIEF EXAMINER'S REPORT, QUESTIONS AND MARKING SCHEME

STANDARD OF THE PAPER

The standard of the paper was generally good and well-structured with improvement in precision and clarity levels of the questions, which significantly impacted candidates' understanding of the questions that attracted good answers from the candidates. The distribution of questions across the syllabus was good and also saw some level of improvement. Additionally, the distribution of the sub-questions was well done, which offered candidates the opportunity to at least be able to answer each question or part of the question satisfactorily.

The quantitative aspect covered about 62%, whilst the theory or essay aspect covered about 38%, which had more essays this time than the previous sitting of 70% quantitative and 30% essay. This development also partially contributed to the high pass rate. This was a further shift from previous sittings, which were over 75% quantitative.

The questions generally appeared unambiguous for candidates to understand and answer. There were no noted sub-standard questions in the paper. However, question two had background information that required a lot of reading and concentration to pick the relevant portions needed to answer the questions. The marks allocations were also considered good, and adjustments made where there was the need at the coordination stage.

PERFORMANCE OF CANDIDATES

The performance of the candidates was excellent and showed a historic improvement in the pass rate and one of the best sittings in recent memory. The overall pass rate improved significantly to 44.53% compared to 22.76% and 12.73% in the last two sittings, respectively.

The excellent performance was attributable to:
➤ Improvement in the quality and clarity of the questions with little or no ambiguity.
➤ Noticed improvement in the quality and standard of the candidates who sat for the paper as well as
➤ Improvement in the quality of teaching and preparations by the candidates which reflected in the quality of answers produced by the candidates

The excellent performance was generally across all centres. The varying degrees of answers and responses to questions in both the qualitative and quantitative aspects of the questions by the different candidates did not suggest any copying.

NOTABLE STRENGTHS AND WEAKNESSES OF CANDIDATES

The 44.53% of the candidates who performed well demonstrated the following strengths:

➢ Noticeable improvement in the understanding of the requirements of the questions still came up strongly.
➢ Noticed improvement in the quality and calibre of the candidates who sat for the paper
➢ Improvement in the quality and content of answers provided for the essay questions
➢ The Candidates also generally were able to answer all questions, which enhanced their ability to obtain the pass mark.

Observed reasons of the strengths:
➢ Improvement in the quality and calibre of the candidates who sat for the paper.
➢ Better tuition and preparations by the candidates also accounted for the excellent performance.
➢ Well organised and improved time management and generally answering all the questions.

The strengths can be enhanced by:
➢ Further improvement in the quality and calibre of candidates who are recruited as candidates for the Institute
➢ Improvement in the quality, easy to understand and unambiguous questions that still uphold the highest standard expected for the paper and the exams in general
➢ Continuous review of course materials relevant to the Institute's syllabus
➢ Provision of more channels of delivery of tuition and other guided studies
➢ Facilitation and sharing of best practices among candidates to the benefit of colleagues should be enhanced

Observed weaknesses demonstrated by candidates
➢ Still poor and incoherent thoughts exhibited in answering questions by some candidates.
➢ Some candidates rushed to sit for the exams on short notice without proper planning and preparation.
➢ Partial answering of questions scattered across different pages with many cancellations was still evident but better than last sittings.
➢ Difficulties experienced by some candidates in understanding the right formulas to be used for certain specific questions.
➢ Quality of handwriting still appeared a challenge to some candidates, but the examiners carefully took their time to ensure that such candidates were not disadvantaged.

Remedies for observed weaknesses
- Tuition centres should encourage candidates to ensure legible and clear handwriting and also avoid using faded pens.
- Ensuring correct numbering and labelling of questions and as much as possible avoid spreading one answer to so many pages apart.
- The Institute should establish a minimum period of preparation before a student can write an Institute exam depending on the background of the candidate being registered as a student
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QUESTION ONE

a) Management of a limited liability company is appointed to promote and protect shareholders' interest in the performance of their functions. The aim is to maximise shareholder value. Management, however, could have interest that might be incompatible and in conflict with shareholders' interest.

Required:
i) Identify this type of conflict in modern day management. **(2 marks)**
ii) Explain **THREE (3)** different factors that contribute to this conflict in (i) above. **(4 marks)**
iii) As a Management professional, explain **FOUR (4)** strategies that can be used to manage or mitigate this conflict to protect shareholders. **(4 marks)**

b) Puma Beverages Plc currently operates a single processing plant in Tema. The company plans to install and run processing plants in four other regions in Ghana.
The Finance Manager has presented an investment and financing strategy for this expansion project to the Board of Directors for their study. The proposed investment strategy is that the company sets up the four processing plants in turns. Specifically, the company will install the first plant at the end of the fifth year from now, the second at the end of the sixth year from now, and the rest follow annually in that order.
The proposed financing strategy is that the company finances the expansion project with its retained earning. To do this, the company should deposit GH¢100 million into an investment account today. The account will earn interest at an annual nominal interest rate of 16%, with monthly compounding through the account's life. The company will withdraw even amounts from the account at the end of each year starting from the end of year five until the account is closed at the end of year eight (i.e., four withdrawals in all) to finance the installation of each of the four processing plants in line with the investment strategy.

Required:
i) Compute the effective annual interest rate on the investment account. **(3 marks)**
ii) Compute the even amount that should be withdrawn from the account at the end of each year from the fifth year to the eighth year such that the account balance reduces to zero upon the last withdrawal at the end of the eighth year. **(5 marks)**
iii) Distinguish between annuity due and ordinary annuity. **(2 marks)**

(Total: 20 marks)

QUESTION TWO

Kwaafi and Sons Ltd operates a newspaper business. The business has various segments, namely: traditional media, online news, events and printing. The company's new strategy is to concentrate on online news, outsource its printing services and discontinue the printing segment.
The printing segment is one of the company's cash cows, generating 30% of its revenue of GH¢28,000,000 annually. The company aims to take advantage of the Continental Free Trade Agreement to serve other African countries.

Before deciding to concentrate on online news, the company undertook an extensive retooling of its printing segment. The Finance Director has produced the following information:

i) A new coloured printer was purchased to replace a 15-year-old printer, which was purchased for GH¢3,000,000 and is now obsolete but can be sold as scrap for GH¢15,000;

ii) The new coloured printer was purchased two years ago at GH¢8,000,000 and has a useful life of six years.

iii) A contract has been signed for the servicing of the equipment at a retainer fee of GH¢755,250 per annum over the life of the equipment;

iv) The stock of toners and rollers for the old printer worth GH¢280,000 is obsolete at no cost.

v) Replacement parts for the new equipment, which are enough for the useful life of the equipment is valued at GH¢300,000;

vi) Special carbonated tonners for the old printer costing GH¢230,000 is unusable and has to be disposed of at a residual value of GH¢13,000 as soon as possible;

vii) Eighteen (18) rolls of printing sheets and twenty-five (25) boxes of metal plates are valued at GH¢240,000 and GH¢420,000, respectively. These need replacement every year at similar costs;

viii) Annual rent and rates of GH¢800,000, payable at the end of each year, increases by 10% every 2 years.

ix) Other operating expenses of GH¢3,200,000, payable at the end of the year, increases at 10% annually until year 3.

x) It is estimated that the printing segment will now generate 10% more revenue per annum for the New Printer's remaining life. Depreciation is based on the straight-line method;

xi) For valuation purposes, an expected rate of return of 30% has been agreed upon among the parties. Ignore taxation and inflation.

Following the announcement to discontinue the printing segment, the senior staff of the segment proposed to raise funds to buy the assets of the segment. They obtained invoices of similar assets and used the prices to make an offer to the Board of Directors.

The Finance Director disagreed and suggested that an expert valuer value the assets of the company and its operations. The senior staff have objected to the valuation proposals arguing that valuations are subjective and may not reflect the accurate value of the assets to be disposed off by the company.

Required:

a) Distinguish between *market price* and *value* in the context of business valuation.
(3 marks)

b) Explain why a valuation process is described as subjective. **(2 marks)**

c) Calculate the value of the printing segment using the discounted cash flow method.
(12 marks)

d) Calculate the value of the printing segment using the assets-based method. **(3 marks)**

(Total: 20 marks)

QUESTION THREE

a) Shareholders and Management of companies generally agree that it is good to introduce gearing into a company's financing structure to enhance returns to shareholders. Excessive debt and gearing above a level that a company can comfortably afford is risky.

   Required:
   State and explain **THREE (3)** main difficulties associated with highly geared companies.
   (6 marks)

b) Gbewaa Ghana Ltd has issued 10 million shares with a market value of GH¢5 per share. The equity beta of the company is 1.2. The current yield of short-term government debt is 14% per annum, and the equity risk premium is approximately 5% per annum. The debt finance of Gbewaa Ghana Ltd consists of bonds with a book value of GH¢10,000,000. These bonds pay interest at 18% per annum, and the par value and market value of each bond is GH¢100. The company's tax rate is 25%.

   Required:
   Calculate Gbewaa Ghana Ltd's Weighted Average Cost of Capital. **(9 marks)**

c) What is a factoring Agency? **(2 marks)**

d) Discuss **ONE (1)** merit and **ONE (1)** demerit of engaging the services of a debt factoring agency. **(3 marks)**

(Total: 20 marks)

QUESTION FOUR

a) CVD Ghana Ltd, which is into the production and sale of COVID 19 vaccine in Ghana and abroad, plans to buy a new machine to expand the scope of its operations due to increased demand in both the local and the International markets.

   The cost of the machine is GH¢ 24,000,000 and has a useful life of five years. The machine will require additional investment in working capital of GH¢ 2,700,000 at the beginning of the first year of operations. At the end of year five, the machine will be sold for scrap, with the scrap value expected to be 5% of the machine's initial purchase cost. The company has no intention to replace the machine. Production and sales from the new machine are expected to be 1,000,000 packs per year.

   The selling price per pack and variable cost per pack are as follows:

Year	Selling price per pack (GH¢)	Variable cost per pack (GH¢)
1	48	33
2	48	33
3	55	38
4	55	38
5	60	42

It is also estimated that incremental fixed cost arising from the machine's operations will be GH¢4,800,000 per year. CVD Ghana Ltd has an after-tax cost of capital of 20%, which it uses as a discount rate in its investment appraisal. The company pays corporate tax at an annual rate of 25% per year. Capital allowance should be ignored.

Required:
i) Compute the Net Present Value of this project and advice CVD Ghana Ltd whether the investment is financially viable. **(8 marks)**
ii) Calculate the Internal Rate of Return of Investing in the machine and advice whether it is financially viable. **(5 marks)**
iii) Explain the meaning of the term "*sensitivity analysis*" in the context of investment.
(2 marks)

b) Most large companies maintain a treasury department to handle some specialised functions in finance. One of such functions is the Management of financial risk, which includes interest rate risk.

Required:
Explain interest rate risk and suggest two ways of managing an entity's exposure to interest rate risk. **(5 marks)**

(Total: 20 marks)

QUESTION FIVE

a) Adom Furniture Ltd is a reputable producer of office desks. A key material that is used in the production of office desks is processed wood boards. The company produces 200,000 units of office desks annually. The production of one unit of office desk requires three units of the processed wood board. The current production level and requirements will apply going forward.
Currently, the company buys 100,000 units of the processed wood board whenever it runs out of wood. The cost price of a processed wood board is GH¢120. It costs GH¢1,000 to place an order to replenish the inventory of processed wood board. On average, it costs GH¢10 to hold one processed wood board per annum.
The company has been financing each round of inventory purchase with short-term borrowing from a bank. The loan is typically granted for three months at an annual nominal interest rate of 24%. The bank charges a loan processing fee of 1.5% of the principal, which is paid upfront. The local distributor of the processed wood board is now willing to sell the product on credit terms 2/10 net 30.

Required:
With respect to inventory purchases and holding:
i) Compute the optimal quantity of the processed wood board the company should order whenever it places an order. **(3 marks)**
ii) Compute the optimal number of orders to place. **(2 marks)**
iii) Compute the average costs associated with the current purchase plan of 100,000 units per order and the cost if the optimal quantity is ordered instead. **(4 marks)**

b) Would you advise the company to continue to take the bank loan to pay for the cost of inventory purchases within the discount period to enjoy the supplier's early settlement discount? Support your answer with relevant computations. **(6 marks)**

c) Explain **TWO (2)** advantages to a company dealing with a currency risk exposure using a forward market hedge as against a futures market hedge. **(5 marks)**

(Total: 20 marks)

SOLUTION TO QUESTIONS

QUESTION ONE

a)
i) The problem in the preamble is known as the Agency problem, where Management pursues their personal interest, which conflicts with shareholder interest.

(2 marks)

ii) The factors that contribute to agency problem:
- Conflict of goals between Management and shareholders. The goals of Management and Shareholders might differ. Management might be pursuing goals and making decisions that will be maximising their personal interest instead of that of the shareholders. Goal congruence
- Divergence/Separation of ownership and control. This is where those who own the business or company do not run the day to day operations of the company but hands over that function to Management (Agents) appointed.
- Asymmetry of information that exists between Management (agents) and shareholders (principals). Management, by their role, have access to real-time and up-to-date day-to-day information on both financial and non-financial data for decisions, whereas shareholders only get historical and annual reports which are open to or subject to miss reporting and manipulations

(1.33 marks per point = 4 marks)

iii) The strategies that can be used to manage or mitigate this problem to protect shareholders are:
- Internal Firings or dismissals. Management can be fired or dismissed or warned and threaten with firings or layoffs for non-performance. This will help put Management on their toes to improve performance for shareholder value maximisation

- Use of external analysts and experts to monitor and assess the performance and quality of information by Management

- Performance-related incentives such as executive share option and compensation linked to the performance of the share price. This will push Management and help in influencing goal congruence and enable both Management and shareholders to be joint beneficiaries of the company's excellent performance.

- Performance-related pay. Management pay and bonus and other rewards linked to how well the company is performing

- Use of market forces. Threats by shareholders, especially institutional investors and pension houses, can exercise their strong voting powers to replace non-performing Management to protect their interest.

- Monitoring. Performance of Management can be monitored through monitoring schemes by shareholders. External consultants and auditors can be hired to perform this role on behalf of shareholders.

(Any four points @ 1 mark each = 4 marks)

b)

i) Effective annual interest rate

The effective annual interest rate is 17.2271%:

$$EAR = \left(1 + \frac{i}{m}\right)^m - 1$$
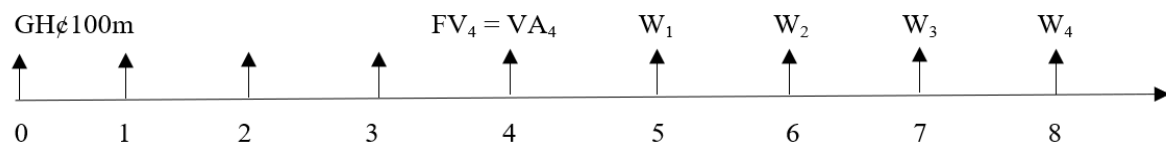
Annual interest, i = 16%
Frequency, m = 12

$$EAR = \left(1 + \frac{0.16}{12}\right)^{12} - 1 = 0.172271$$

[Marks allocation: Computation = 2 marks; Final answer = 1 mark]

(3 marks)

ii) The equal withdrawal amount

The investment period's withdrawal phase may be considered a 4-year ordinary annuity starting from the fifth year to the eighth year. Therefore, the discounted value of all the withdrawals at the beginning of the annuity (i.e., beginning of year 5, which is the same as the end of year 4) will be the future value of the deposit of GH¢100 million at the end of year 4.

The future value of the deposit at the end of year 4 is GH¢188,847,737.7:

$$FV_4 = GH¢100,000,000 \times \left(1 + \frac{0.16}{12}\right)^{4 \times 12} = GH¢188,847,737.7$$

$$VA_4 = PMT \left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right]$$

The value of the annuity at year 4, PVA$_4$ = FV$_4$ = GH¢188,847,737.7

Annual interest, effective yield = 17.23

$$\text{GH}¢188{,}847{,}737.7 = \text{PMT}\left[\frac{1 - \frac{1}{(1 + 0.1723)^4}}{0.1723}\right]$$

$$\text{GH}¢188{,}847{,}737.7 = \text{PMT} \times 2.73085$$

$$\text{PMT} = \frac{\text{GH}¢188{,}847{,}737.7}{2.73085} =$$

Annual Amount = 69,153,464

[Marks allocation: FV of the deposit at year 4 = 2 marks; Computation of withdrawal = 3 marks]

(5 marks)

ALTERNATIVE

PVa = Annual Payment x [1 – 1] x 1
[r r(1+r)^N] (1+r)N

PVa= 100m
i = effective yield = 17.23%
N=No of years = 4
Annual Payment = AP

PVa = Annual Payment x [1 – 1] x 1
[0.1723 0.1723 (1.1723)^4] (1.1723)4

100m= AP [5.80383- 3.07295] x 0.52947

100m = AP 2.73087 X 0.52947

100m=AP 1.4459

AP =100m/1.4459

AP = 69.161m

ALTERNATIVELY

If the student assumes deposit period to run up to end of year five to represent 5 years of investing the 100m.

$$FV_5 = GH¢100,000,000 \times \left(1 + \frac{0.16}{12}\right)^{5 \times 12} = GH¢221,380,251$$

$$VA_5 = PMT \left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right]$$

The value of the annuity at year 5, $PVA_5 = FV_5 = GH¢221,380,251$

Annual interest, effective yield = 17.23

$$GH¢221,380,251 = PMT \left[\frac{1 - \frac{1}{(1+0.1723)^4}}{0.1723}\right]$$

$$GH¢221,380,251 = PMT \times 2.73085$$

$$PMT = \frac{GH¢221,380,251}{2.73085} =$$

Annual Amount = 81,066,426

iii) **The distinction between annuity due and ordinary annuity**

Annuity due and ordinary annuity are both series of equal payments. The difference between them is that each payment in an annuity due occurs at the beginning of each period, whereas each payment in an ordinary annuity occurs at the end of each period.

(2 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT

This question was made up of (a) and (b) parts with sub-questions (i) to (iii) under each. The (a) part of the question was scenario situation on agency problem requiring candidates to identify the nature of management problem and the (ii) and (iii) parts

requiring the candidate to explain three factors that contribute to agency problem and the four strategies that can be used to manage or mitigate this conflict respectively.

The (a) part carried a total of 10 marks. This part was one of the best answered parts of the paper as most of the candidates were able to identify the type of conflict and the factors that contributed to that and came out with the varied but relevant strategies that could be used to manage the conflict. The (a) part was well answered.

The (b) part of the question was on an investment for expansion into four other regions in the beverages sector which involved investing into interest earning account compounded monthly from which four withdrawals will be made from the end of the 5th year to finance the installation of each of the four processing plants.

The (i) required the candidates to compute the effective annual interest rate on the investment account, which received average performance. Those who were able to calculate scored the maximum 3 marks. The (ii) required the computation of the annual withdrawals from the investment for the four instalments annually for four years to bring the account balance to zero. Again, this received average responses, but candidates who computed got the maximum marks which were 5 marks. The last aspect, (iii), which was on distinction between annuity due and ordinary annuity, was well answered, with most candidates who answered this part scoring good marks. On an overall basis Question one was one of the best answered questions.

QUESTION TWO

a) **The difference between price and value**
Price
- Price is determined by the market forces and it is obtained by the interplay of demand and supply;
- Price again is the amount that a willing buyer is ready to pay, and a willing seller is prepared to accept for the exchange of an item;
- Price is always expressed in monetary terms except in the case of barter where the price of a commodity is quoted in reference to the quantity of another commodity;
- The price of an asset can also be determined as the present value of all future cash flows of the stated asset;
- Price can be higher than the value of an item when a premium is paid or lower when a discount is granted.

Value
- Value, on the other hand, is the allocation of monetary worth to an item or a subject of valuation;
- Unlike price, value can be tangible or intangible;

- Everything has a value, which may be different from the price; though the price can be used as a measure of the value of an item;
- Whereas price is agreed is fixed between a buyer and a seller for a given item, the value of the item in question may differ among the parties;
- Processes to establish a common value of an item is often the starting point to determine the price.

(1 mark for any correct point up to 3 marks)

b) **Why valuation is subjective**
- Valuation methods apply several assumptions that may vary in future;
- Different methods produce different values, which can create disagreement on the appropriate method to apply;
- Several elements for the valuation are based on estimation (future cash flow), which may vary materially from the actual results;
- Different perspectives of interested parties influence their choice of valuation method. For instance, valuation for taxation purposes may consider factors for computation of capital gain, which may be different from valuation for accessing credit facility, which will focus on collateral value;
- Some methods, such as the discounted cash flow, have been described as subjective;
- The quality of information and completeness thereof influence the competence of the valuation process;

One mark for any correct point up to two marks

(2 marks)

c) **Discounted cash flow valuation**

Years	0	1	2	3	4
Revenue		9,240,000.00	10,164,000.00	11,180,400.00	12,298,440.00
Scrap of old printer	15,000.00				
Printing sheets	(240,000.00)	(240,000.00)	(240,000.00)	(240,000.00)	
Plates	(420,000.00)	(420,000.00)	(420,000.00)	(420,000.00)	
Rent and rates		(800,000.00)	(800,000.00)	(880,000.00)	(880,000.00)
Servicing Cost		(755,250.00)	(755,250.00)	(755,250.00)	(755,250.00)
Salaries		(3,200,000.00)	(3,520,000.00)	(3,872,000.00)	(3,872,000.00)
Tonner disp val	13,000.00				
Net Cashflow	(632,000)	3,824,750.00	4,428,750.00	5,013,150.00	6,791,190.00
DF (30%)	1.00	0.769	0.592	0.455	0.350
PV	(632,000)	2,941,232.75	2,621,820.00	2,280,983.25.	2,376,916.,50
	2 marks	**2 mark**	**2 marks**	**2 marks**	**2 marks**
NPV	9,588,952.50	**1 mark**			

Workings(1 mark)   **= (12 marks)**

d) **Assets-based valuation**

Equipment (NBV)	$\left(\dfrac{8,000,000}{6} \times 4\right)$	5,333,333
Scrap value of old printer		15,000
Scrap value of tonners		13,000
Stock of replacement parts		300,000
Printing sheets		240,000
Plates		420,000
VALUATION AMOUNT		*6,321,333*
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(Each correct tick = ½ mark x 6 = 3 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT
Question two was on valuation covering (a) to (d). The (a) part of the question that carried 3 marks was on the distinction between market price and value in the valuation context, which received some good answers from the candidates. The (b) part of the question expected candidates to explain why the valuation process in the context of the question was described as subjective, which produced average answers.

The (c), which carried 12 marks representing the biggest in the question, required candidates to compute the value of a printing business provided in the case scenario in the question using discounted cash flow method. This part received the worst answers in the whole paper, with only a few candidates been able to solve that part of the question to get below-average marks

The (d) aspect, which required the calculation of the value of the printing business using the assets-based method received average answers. The mark allocated to it was 3.

QUESTION THREE

a) High gearing introduces a number of risks or problems to companies, and these are as follows:
- **High volatility to company or equity returns**. The higher the level of debt, the higher the company's level of interest cost or expense. Volatility in interest rates, especially variable interest rate debts, can cause volatility in the company's earnings. The drops in earnings resulting from the rising interest rate environment

and vice versa expose the company and shareholder returns to a high level of volatility and uncertainty.

- **High debt burden and bankruptcy**. The over borrowing environment can cause significant interest burden payments to the company, and where earnings are not strong enough to absorb the cost and burden, it can throw the company into an interest and principal payment distress situation leading to high bankruptcy risk and the possibility of shareholders losing the value of their investments since they will be the last to be compensated in a liquidation situation.
- **Loss of market reputation and credibility**. Listed stocks require a lot of disclosure, and shareholders' and analysts can easily pick this high borrowing situation. This will begin to trigger confidence crises and challenges for the company in the market.
- **Short-termism may dominate the thinking and behaviour of Management instead of long-term shareholder value maximi**sation. For example, the pressure to service loans on debt might shift their actions into short term activities that will create cash flows to service these facilities to avoid defaults and the consequences of that.
- **Lower financial flexibility**

(Any three points @ 2 marks each = 6 marks)

b) Calculation of Gbewaa weighted average cost of Capital
Cost of Equity =14% + 5% = 19%.   (Risk free + equity risk premium)
The company's bonds are trading at par and before tax cost of debt is the same as the interest rate on the bonds which is 18%
After tax cost of debt = 18% x (1- 0.25) = 13.5%
Market value of equity = 10 million x 5 = 50 million
Market value of debt is equal to its par value of 10 million

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

	Value (millions)	Weight (%)	Cost (%)	Weighted cost (%)
Equity	50	83.33	19.0	15.833
Debt	10	16.67	13.5	2.25
Total	60	100		18.08

The weighted average cost of capital is 18.08%   **(9 marks)**

ALTERNATIVE

$$\text{WACC} = \frac{E}{E+D} \times Re + \frac{D}{E+D} \times Rd \times (1-tc)$$

Where WACC = Weighted Average Cost of Capital

E= Market value of equity
D= Market value of Debt
Re= cost of equity

Rd= cost of debt
Tc= tax rate

WACC = $\dfrac{50}{50+10}$ X 19% + $\dfrac{10}{50+10}$ X 18% x (1-0.25)

$\quad\quad$ = 15.83% + 2.25%

$\quad\quad$ = 18.08%

c) A debt factoring agency can assist the company in managing and financing its receivables. In particular, the company may engage the factoring agency to assist in administering the accounts receivables ledger and provide short-term finance secured by the receivables. **(2 marks)**

d) Using a factor may present some benefits to the company. A notable advantage of using the services of a factor is the **reduction in internal debt administration costs**. This is because the factor bears the collection cost in return for fees. As the factor is a specialist in debt administration, it can administer debt more efficiently and charge client companies a relatively lower fee than they would incur if they administered the debt internally. Another benefit is that the factor may be **a source of finance for receivables**. The company may seek an advance from the factor using its receivables as security.

Using the services of a factor may come with some demerits. One, a factor may charge **a higher interest rate on advances** than other lenders would charge. Two, the use of a factor might have a **negative effect on customer goodwill**. This might occur as the factor might not treat customers with the same level of care that the company would treat them when it comes to debt collection. Three, a factor may send a wrong signal to stakeholders that the company may be experiencing financial distress. Consequently, **the reputation of the company may be adversely affected**.

(3 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT
Question three consisted of parts (a) to (d). The (a) part was on excessive gearing, and candidates were expected to explain three difficulties associated with highly geared companies. This received good answers from the candidates, and most candidates performed very well in this question which carried a total of 6 marks.

The (b) aspect of the question was on calculating the Weighted Average Cost of Capital (WACC) which carried 9 marks. Candidates were expected to calculate the cost of equity using CAPM, cost and value of debts and the weighted average. This part was also well answered by the candidates enabling them to obtain the maximum marks.

The (c) aspect was on the explanation of a factoring agency that carried 2 marks, and the (d) was on one merit and one demerit of engaging the services of a factoring agency. Both parts were well answered by the candidates. Overall, 11 marks were essay or theory-based and 9 marks calculations based.

This question was the overall best-answered question in the paper. It was precise and concise, clear and easy to understand and apply with a mix of essay and calculation and yet standard based on the requirements of the paper.

QUESTION FOUR

a)

i) **Net Present Value**

GHS 000

Year	0	1	2	3	4	5
Sales Rev		48,000	48,000	55,000	55,000	60,000
Less Variable cost		33,000	33,000	38,000	38,000	42,000
Contribution		15,000	15,000	17,000	17,000	18,000
Less Fixed cost		4,800	4,800	4,800	4,800	4,800
Taxable Income		10,200	10,200	12,200	12,200	13,200
Tax @ 25%		2,550	2,550	3,050	3,050	3,300
After Tax cash flows		7,650	7,650	9,150	9,150	9,900
Machine cost	(24,000)					
Working capital	(2,700)					2,700
Scrap Value						1,200
Net cash flow	(26,700)	7,650	7,650	9,150	9,150	13,800
20% disc factor	1	0.833	0.694	0.579	0.482	0.402
Present Value	(26,700)	6,372	5,309	5,298	4,410	5,548

NPV= -26,700+6,372+5,309+5,298+4,410+5,548

= 237

Since NPV is positive it should be accepted

(8 marks)

ii) Internal Rate of Return
GHS 000

Year	0	1	2	3	4	5
Net cash	(26,700)	7,650	7,650	9,150	9,150	13,800
Disc @30%	1	0.769	0.592	0.455	0.269	0.207
Pr. Val	(26,700)	5,883	4,529	4,163	2,461	2,856

NPV = (6,808)

$$\textbf{IRR} = r_a + \frac{NPV\ A}{NPV\ A + NPV\ B} + (r_b - r_a)$$

Where ra= Interest at which NPV is positive, rb = interest at which NPV B is negative, NPV A= where NPV is positive and NPV B = Where NPV is negative

$$\textbf{IRR} = 20\% + \frac{237}{237 + -6,808} + (30\% - 20\%)$$

= 20% +0.336
= 20.34%

Since the IRR is higher than the internal cost of capital, it should be accepted.

(5 marks)

iii) Sensitivity analysis is a way of measuring the risk of a project or an investment to determine how responsive the NPV is to changes in the variables from which it has been based or calculated. The variables could be selling price, variable cost etc. How sensitive the NPV to percentage changes in the variables.

(2 marks)

b) **Interest rate risk**

Interest rate risk is the risk of uncertainty of a possible loss that could arise due to movements or changes in interest rates. If interest rates rise, the value of bonds or financial assets drops and vice versa. Borrowers at fixed interest rates tend to suffer or lose when interest rates vice versa.

(2 marks)

Ways of managing interest rate risk
Interest rate risk can be managed using a variety of strategies. Internal strategies that may be used include the following:
- **Interest matching**, which involves matching the interest type on the borrowing with the interest type on the investment to be financed. For instance, an investment that will return constant cash flows is financed with a fixed-rate loan.
- **Interest netting** involves setting off interest receivables and interest payables to reduce the underlying exposure to a lower amount that may be hedged using external strategies.

- **Interest smoothing**, which involves balancing the amount of fixed-rate loans with variable-rate loans. With fairly equal proportions of fixed-rate and variable-rate loans, any movement in interest rates will bring both losses and gains of fairly equal amounts that would net off.

External strategies for managing interest rate risks include the following:
- **Forward rate agreement**, which involves hedging the interest rate exposure with a forward contract with a bank.
- **Interest rate futures** involve hedging the underlying interest rate exposure by borrowing in futures (i.e., selling futures contract) or lending in futures (i.e., buying futures contract). As a result, the entity might earn some gains from futures, which can be used to offset interest rate losses from the underlying exposure.
- **Option on interest rate futures**, which involves buying a right to borrow or lend in futures. This permits the entity to enjoy gains upside when the option's strike interest rate tends to be more favourable than the futures interest rate.
- **Interest rate swap**, which involves swapping fixed interest payments for variable interest payments.

(Marks allocation: 1.5 marks for each of two strategies = 3 marks)
(5 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT
Question four was in two parts (a) and (b). The (a) part, which carried 15 marks was investment appraisal question on COIVD 19 vaccine new Machine acquisition requiring the candidates to compute the Net Present Value (NPV) in (i), Internal Rate of Returns (IRR) in (ii) and advise on the financial viability of the investment in each scenario and in (iii) on explanation of sensitivity analysis . The question was unambiguous, and part of the question information presented in a tabular format making it easy for the candidates to see and comprehend the information presented. This question attracted very good answers from the candidates across all centres, and the second-best answered question in the paper

The (b) part was centred on interest rate risk and with candidates required to explain the risk and explain two ways of managing this risk. This part again got good answers from the candidates.
Question four in total was the second-best answered question by candidates.

QUESTION FIVE

a) Inventory orders

i) Computation of the optimal quantity of the processed wood board to order.

$$EOQ = \sqrt{\frac{2 \times D \times C_0}{C_H}}$$

Annual demand, D = 200,000 x 3 = 600,000
Ordering cost, C_0 = GH¢1,000
Holding cost, C_H = GH¢10

$$EOQ = \sqrt{\frac{2 \times 600,000 \times GH¢1,000}{GH¢10}} = 10,954 \; units$$

That is, the company should order 10,954 to minimise costs associated with inventory.

[Marks allocation: Computation = 2; Final answer = 1]

(3 marks)

ii) Computation of the optimal number of orders to place.
If the optimal order size is placed, the company would have to place about 55 orders to meet its annual requirement:

$$The\;optimal\;number\;of\;orders = \frac{Annual\;demand}{optimal\;order\;size}$$

$$Optimal\;number\;of\;orders = \frac{600,000}{10,954} = 55\;orders$$

[Marks allocation: Computation = 1; Final answer = 1]

(2 marks)

iii) Computation of cost associated with inventory

$$Total\;inventory\;costs = \frac{Q}{2} \times C_H + \frac{D}{Q} \times C_0$$

For the current purchase plan, the total costs associated with inventory is GH¢1,100,000:

$$Total\;inventory\;costs = \frac{100,000}{2} \times GH¢10 + \frac{600,000}{100,000} \times GH¢1,000 = GH¢506,000$$

If the optimal order size is ordered, the total costs associated with inventory would be GH¢1,100,000:

$$Total\;inventory\;costs = \frac{10,954}{2} \times GH¢10 + \frac{600,000}{10,954} \times GH¢1,000 = GH¢109,545$$

[Marks allocation: Computation of cost for the current plan = 2; Computation of cost for the optimal order size = 2]

(4 marks)

b) Financing method

The company should continue to take the bank loan to pay for inventory purchases within the discount period to enjoy the discount. This is because the annualised cost of the bank borrowing is 30%, which is lower than the annualised implied interest cost of trade credit (i.e., 37.2%). The company will save about 7.2% in financing costs if it borrows to pay for purchases early to take the discount rather than give up the discount to enjoy the full credit period.

The annualised cost of the bank loan

As a short-term borrowing, the annualised cost of the bank loan can be computed as under:

$$Annualised\ Cost = \frac{Periodic\ Interest + Fees}{Usable\ funds} \times \frac{12}{T}$$

Assuming the company continues with its current purchase plan of buying 100,000 units at the purchase cost of GH¢120, the company would have to borrow GH¢12,000,000, and the annualised cost of the loan will be 30%:

$$Annualised\ Cost = \frac{GH¢720,000 + GH¢180,000}{GH¢12,000,000} \times \frac{12}{3} = 0.3$$

Periodic Interest = 24% x ¼ x GH¢12,000,000 = GH¢720,000
Processing fee = 1.5% x GH¢12,000,000 = GH¢180,000

Alternative computation $Annualised\ Cost = \frac{\frac{24\%}{4}+1.5\%}{100\%} \times \frac{12}{3} = 0.3$

The implied interest cost in the settlement discount

The cost of giving up the settlement discount to enjoy credit up to the maximum 30 days is 37.2%:

$$Annualised\ cost\ of\ credit = \frac{Discount}{Invoice\ value - Discount} \times \frac{365}{T}$$

Discount = 2% x GH¢12,000,000 = GH¢240,000

T = the effective credit period = 30 – 10 = 20

$$Annualised\ cost\ of\ credit = \frac{GH¢240,000}{GH¢12,000,000 - GH¢240,000} \times \frac{365}{20} = 0.372$$

Alternative computation $Annualised\ cost\ of\ credit = \frac{2\%}{100\%-2\%} \times \frac{365}{20} = 0.372$

c) **Advantages of using forward market hedge against using futures market hedge**
As the underlying risk exposure is a transaction exposure to currency risk, forward market hedge and futures market hedge are options for dealing with the risk. However, using a forward market hedge to deal with the currency risk exposure would present to the company the following advantages as gainst using a futures market hedge to deal with the same:

Perfect hedge
As a typical over-the-counter arrangement, forward contracts can be tailored to the requirements of the company. The company can arrange for the exact quantity of the foreign currency it wants to hedge against and a contract maturity that matches the maturity of the underlying exposure. Thus, it is much easier to create a hedge that perfectly protects an underlying exposure when a forward contract is used. However, it is somewhat challenging to create a perfect hedge with a futures contract as futures contracts are standardised in terms of the underlying asset, the contract size, and contract maturity. Thus, it is common to have situations where an entity must manage with a contract underlying asset different from the asset that is exposed to risk, a number of contracts that either overcovers or undercovers the underlying exposure, and contract maturity that differs from the underlying exposure maturity date.

No margin requirements
Unlike futures contract arrangements, entering a forward contract does not typically require margin deposits against potential counterparty risk. Thus, the company will not have to deposit money or equivalent value in securities with a clearing house that could otherwise be used to finance operational or other needs.

Guaranteed outcome
In a typical forward contract, the forward price is set at the commencement of the contract, and it remains fixed over the contract maturity period. This feature guarantees the outcome of the forward as the proceeds or cost of the trade is known in advance. In the case of futures contract, the futures price is marked-to-the-market and so is permitted to vary as the underlying asset value varies in the spot market. This leaves the futures contract to an uncertain outcome.

(Marks allocation: a maximum of 2.5 marks for each of two advantages = 5)
(5 marks)

(Total: 20 marks)

CHIEF EXAMINER'S COMMENT
This question posed some challenges to some candidates. It covered (a) which was on Economic Order Quantity (EOQ) and required the candidates to compute optimal

quantity of process wood boards which was a key raw material used for the production of office desks, the optimal number of orders to place and the average cost associated with the current purchases plan of 100,000 units per order as provided in the question. This part carried a total of 9 marks. A good number of candidates misunderstood the requirement of the question, which expected the EOQ in processed wood board terms and not office desk terms as provided in their answers. This confusion made a good number to get this part wrong. The candidates who, however, understood the question got very excellent marks.

The (b) aspect was for the candidate to advise based on data provided whether the company should continue to take a bank loan to finance the purchase and take advantage of the early discount offered. Again, this part received both good and poor answers, and those who understood it scored the maximum marks, but an average performance was recorded.

The (c) part was on two advantages of dealing with currency risk exposure using forward market hedge against futures market hedge. This part received average performance, but those who understood the question got good marks.