



BOARD OF INTERMEDIATE EDUCATION, KARACHI

Bakhtiari Youth Center, North Nazimabad, Karachi – 74700

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ZOOLOGY PAPER-II **(MODEL PAPER)**

Annual Examination 2021
(Science Pre-Medical Group)

SECTION A (MULTIPLE CHOICE QUESTIONS)

NOTE: Attempt all multiple-choice questions. All carry equal marks. (22 marks)

1. Which one the following is the functional unit of excretory organ in vertebrates
* Protonephridia * Metanephridia * Malphigian tubule * Nephron
2. Kidney stones or Calculi are 70% composed of
* Calcium * Calcium phosphate * Magnesium phosphate * Sodium oxalate
3. The locomotion in snail takes place with the help of
* Muscular foot * Muscular arm * Tentacle * Jet propulsion
4. Smooth muscle are found in
* Heart * Skeleton * Hollow structure * Nerve
5. Which one of the following is the locomotory organs of Class Mastigophora
* Flagella * Ciliate * Pseudopodia * Parapodia
6. Knee-jerk is an example of
* Poly synaptic * Monosynaptic * Synaptic * Tetrasynaptic
7. The cavities which are present in the brain are called
* Atrium * Sac * Ventricles * Auricle
8. Glucagons, ADH, Oxytocin belongs to which one of the following
* Enzymes * Peptide hormones * Steroid hormones * Modified hormones
9. The part of brain involved in the long term memory is
* Amygdala * Hippocampus * Hypothalamus * Thalamus
10. Somatotropin hormone is responsible for
* Sperm production * Melanin production * Production of milk * Growth
11. The end of the fertility in human female is called
* Menopause * Lactation * Ovulation * Gestation
12. The total number of polar bodies in oogenesis are
* 4 * 6 * 9 * 3
13. Ventral roots of spinal cord contains axons of
* Motor neuron * Inter neuron * Sensory neuron * Neuroglial cells
14. The cells of pancreas which are responsible for the production of Insulin is
* Beta cells * Gamma cells * Alpha cells * Dry cells
15. Which of the following is the correct order
* morula-cleavage-blastula * blastula-gastrula-morula * cleavage-morula-blastula * neurula-morula-blastula
16. The non-coding sequence of gene are
* Codon * Exon * Intron * Anti-codon
17. Which of the following can serve as a vector in rDNA technology
* Plasmid * Bacteriophage * Algae * Mosquito
18. Unifactorial defects refers to
* One gene * Many genes * Environmental factors * Genome
19. The non-renewable resource is
* Wildlife * Forests * Water * Coal
20. The gas responsible for global warming is
* Oxygen * Nitrogen * Carbon dioxide * Chlorine
21. Which one of the following is used as refrigerants and foaming agents
* Oxygen * Nitrogen * Chloroflouro-Carbon * Chlorine

22. Which one of the following is not vestigial organs found in man

* Coccyx

* Vermiform appendix

* Eye lids

* Ear muscles

SECTION B

NOTE: Attempt any FOUR questions from Reasoning questions and THREE from Non-reasoning questions. All questions carry equal marks.

(14

marks)

(a) Reasoning Questions :

- i. Why hypothalamus is called thermostat of the body. **OR** Why do freshwater fishes excrete dilute urine and marine fishes excrete concentrated urine?
- ii. Why moderate form of fever is good for health. **OR** Why the cardiac muscles are striated and involuntary in nature.
- iii. What causes abnormal muscle contraction in sportsman? **OR** How hydrostatic skeleton facilitates locomotion in soft bodied animals?
- iv. What are the causes of eutrophication? **OR** Why nervous coordination is quick as compared to the chemical coordination?
- v. Why parthenogenesis is considered as semi-sexual in nature. **OR** Why identical twins are similar but fraternal twins are not.
- vi. How hermaphroditic condition is advantageous for the parasitic mode of life? **OR** How DNA fingerprinting helps in solving criminal cases?

(b) Non-Reasoning Questions:

- i. Explain the role of brain in regulating fever. **OR** Write any four functions of liver.
- ii. Define Joints. Name different types of joints. **OR** Differentiate between Cortical and Juxta-medullary nephron.
- iii. Explain three types of neuron on the basis of function. **OR** Different between Parasympathetic and Sympathetic nervous system.
- iv. Write four objections on Lamarck's Theory. **OR** Write a short note on principal of competitive exclusion.
- v. Define Regeneration and Aging. **OR** Discuss briefly Artificial selection and its role.
- vi. Differentiate between renewable and non-renewable resources. **OR** Describe Gene sequencing.

SECTION C

DESCRIPTIVE QUESTIONS

NOTE: Attempt any ONE question. All questions carry equal marks. Attempt all parts of a question. Draw labelled diagram where necessary.

(9

marks)

- Q3.** (a) Define Thermoregulation and explain thermoregulation in mammals in detail. (5)
(b) Discuss the homeostatic function of liver. (4)
- Q4.** (a) Define muscles and describe in detail structure of skeletal muscles. (5)
(b) Describe the mechanism of contraction of skeletal muscles. (4)
- Q5.** (a) Define Ovarian cycle. Describe the phases of menstrual cycle in detail with the help of a labeled diagram. **OR** Describe in detail Central nervous system in man (Diagram is not required). (5)
(b) Explain the process of Spermatogenesis or Oogenesis. (4)
- Q6.** (a) What is Biotechnology. Explain the four steps of Recombinant DNA technology. (5)
(b) Write a note on DNA finger printing. (4)

- *Amitosis * Mitosis * Animal cell division * Meiosis
 (xx) Total aggregate of gene in a population is called as:
 * Chromosome *Gene pool *Multiple Gene * Chromonema

Time: 1 hour 40 minutes

Marks: 20

SECTION 'B'(SHORT-ANSWER QUESTIONS)

Marks: 12

Q2. Attempt any Four-part questions. Each question carries one mark. Give answer not more than two lines.

- (i) Name the pyrimidine bases in DNA structure
- (ii) Define Apomixis and Parthenocarpy?
- (iii) Define any one of the followings: (a) Autosome (b) Sex chromosomes
- (iv) Name the types of RNA involved in protein biosynthesis.
- (v) What happens when a cell is placed in a hypotonic solution?
- (vi) Write number of chromosomes in Pea (*Pisum sativum*) and Sugarcane (*Saccharum officinarum*)?
- (vii) Define meristematic tissues and name its types. OR How young stem gives mechanical support to plant body

Q3. Attempt any Four-part questions. Each question carries Two marks. Give answer not more than five lines.

- (i) What is the phenotypic ratio if cross between color blind male and carrier female, with the help of checker board.
- (ii) Describe the changes occurs in Prophase of Mitosis.
- (iii) Describe any one of the followings:
 (a) Pollination (b) Double fertilization
- (iv) Name only the Biotic components of an ecosystem.
- (v) How is Photonasty different from Phototropism?
- (vi) State the law of Segregation.
- (vii) Define Nastic movement.
- (viii) Discuss Abiotic components of desert ecosystem

SECTION 'C' (DETAILED-ANSWER QUESTIONS)

Max Marks: 08

Note: Attempt any **Two** questions from this section. All questions carry equal marks. (Diagram is not required)

Q4. Explain the climatic factors of an ecosystem. **OR** Describe osmoregulation in flowering plants

Q5. Define Meiosis. Explain the various stages of Prophase -I of meiosis.

Q6. Define “Law of Independent assortment” and explain with checkerboard.

Q7. Explain ultrastructure of Chromosomes.

OR what do you mean by sex determination? Discuss linked inheritance with reference to colour blindness.



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CHEMISTRY PAPER-II

(MODEL PAPER)

Annual Examination 2021

Total Time: 2 hours.

Total Marks: 85

Time :30 min SECTION 'A' (M.C.Qs. (Multiple Choice Questions)) Marks: 43

Note: This section consists of 43 questions. Attempt all M.C.Qs. Each carries 1 marks.

Q 1:- Choose the correct answers for each from the given options:

The element which is present in group V A and period 3rd, its atomic number is:

- * 15 * 7 * 8 * 18

2) Hydrides of group V A are ----- in nature:

- * Acidic * Basic * Amphoteric * Neutral

3) Potassium when combines with oxygen form:

- * Normal oxide * Super oxide * Per oxide * All

4) Lithium has many similarities to its diagonal neighbour-----in “Be” family:

- * K * Mg * Ca * Na

5) $\text{Li}^{+1}_{(\text{aq})}/\text{Li}$ couple has exceptionally high negative electrode potential because of its large value of

- * Ionization potential * Hydration enthalpy

- * Electron Affinity * Electronegativity

6) Aluminium does not react with Nitric acid due to

- * Low reactivity * High Ionization Potential

- * Formation of oxide layer * It is a metal

7) “A” is the element of III A group which “B” belongs to V A group. When “A” reacts with “B” forms:

- * A_2B_3 * AB * AB_3 * A_3B_2

8) The mixture of “Al” and Fe_2O_3 is used in :

- * Pyrolysis * Thermite process * Electrolysis * Washing

9) This element is solid at room temperature and pressure:

- * Oxygen * Flourine * Bromine * Iodine

10) Electronic configuration of Cu^{+1} :

- * $4s^1, 3d^{10}$ * $4s^0, 3d^9$ * $4s^0, 3d^{10}$ * $4s^2, 3d^{10}$

11) The coordination number of Pt in $[\text{Pt}(\text{en})_2\text{Cl}_2]^{+2}$ is:

* 6 * 4 * 3 * 8

12) Only one of this compound given below obeys Markownikoff rule on reaction with HCl:

* $\text{CH}_3\text{-CH=CH}_2$ * $\text{CH}_2=\text{CH}_2$ * $\text{CH}\equiv\text{CH}$ * $\text{CH}_3\text{-CH=CH-CH}_3$

13) Unsaturated Hydrocarbon containing a double bond are called

* Parafins * Alkynes * Proteins * Olefines

14) The self linkage of carbon atoms is called:

* Homologue * Catenation * Isomerism * Polymerization

15) In ethyne (C_2H_2) each carbon is ----- is hybridized:

* dsp^3 * sp * sp^2 * sp^3

16) When acetylene is passed through red hot tube in presence of organonickel, it polymerizes to:

* Polyethene * Benzene * Protein * Polyacetylene

17) Aromatic compounds burns with sooty flame because:

* They have high percentage of carbon * They have high percentage of hydrogen atom
* They have ring structure * They resist reaction with air

18) This gas is used for ripening of fruit:

* Ethene * Ethane * Ethanol * Ethyne

19) Formaldehyde does not undergo aldol condensation due to:

* Presence of β -carbon * Absence of α -hydrogen
* Absence of ketonic group * Absence of -OH group

20) This is an example of oligosaccharides:

* Glucose * Fructose * Maltose * Starch

21) This will give Iodoform reaction on the treatment with Na_2CO_3 and I_2 :

* Acetic acid * Acetone * Acetic Anhydride * Methanol

22) The body store part of glucose for rainy days in-----in form of glucose:

* Liver * Lungs * Kidney * Heart

23) The colour of transition metal complexes is due to

* d-d transition of electrons * ionization * loss of s-electron * diamagnetic nature

24) Laughing gas is chemically:

* NO * N_2O * NO_2 * N_2O_4

25) Which element forms an ion with charge +3:

* Be * Al * O * Na

26) Nelson cell is used to prepare:

* Sodium Carbonate * Sodium Metal * Sulphuric Acid * Chlorine

27) which one of the following does not belong to alkaline earth metal

* Be * Ra * Ba * Pb

28) The hybridization in the carbon atom of carbonyl group is:

* sp^3 * sp^2 * sp * dsp^3

29) β, β' – dichloro diethyl sulphide is commonly known as:

* Biogas * Marsh Gas * Mustard gas * phosgene gas

30) The presence of double bond in a compound is the sign of:

* Saturation * unsaturation * Substitution * Combustion

31) The benzene molecules contains:

* Four double bonds * Two Double bonds
* One double bond * Delocalized π electrons

32) benzene cannot undergo:

* Substitution reactions * addition reactions
* oxidation reactions * elimination reactions

33) ethanol can be converted into ethanoic acid by:

* Hydration * Hydrogenation * Oxidation * Fermentation

34) It is not a nucleophile:

* OH^{-1} * CN^{-1} * SH^{-1} * BF_3

35) The hydrofluoric acid (HF) is used to make design on glass surface this process is called:

* Knocking * etching * hydrogenation * Sublimation

36) The polymer named bakelite is the product of formaldehyde and:

* Acetylene * PVC * Phenol * Vinyl Cyanide

37) E.D.T.A is this type of Ligand:

* bidentate * tetradentate * hexadentate * tridentate

38) This element has greatest tendency to lose electrons:

* Be * Li * Na * Cs

39) Alkali metals acts as:

* reducing agent * Bleaching agent * Oxidizing agent * Nitrating Agent

40) Galvanized iron is protected against rusting by a thin layer of:

* Cr * Sn * Pb * Zn

41) The metallic character of p-block elements depends electron population of outermost shell and

* Hydration energy * Electron affinity
* Ionization potential * Oxidation number

42) Tollen's reagent is:

* Ammonical cuperous oxide * Ammonical silver nitrate
* Ammonical silver oxide * Ammonical silver bromide

43) Acetone is formed by oxidation of:

* Primary Alcohol * Secondary Alcohol
* Tertiary Alcohol * Ether

Time: 1 hour 30 min

Section 'B' (Short Answer Questions)

(Marks: 24)

Note: Attempt any six part questions, Three from organic and Three from inorganic chemistry.
All questions carry equal marks.

Inorganic Chemistry

Q2: (i) Refer to the list of given compounds.

Compound	A	B	C	D
Specific Name	Dolomite	Whitrite	Blue vitriol	Potash Alum

* Write the formula of A & B. * Write the equation when C is heated up to 230 °C

* Write the chemical formula of D and also write two uses.

(ii) Write the IUPAC names of the following.

* $K_3[Fe(CN)_6]$ * $[Zn(OH)_4]^{2-}$ * $[Cr(NH_3)_3Cl_3]$ * $[Ni(en)_2Cl_2]$

(iii) Why Hydrogen gas cannot be placed in Group I A and VII A of the periodic table (at least four point for each)

(iv) Identify the groups of the periodic table that have following ground state electronic configuration in their outer most shell

* $3s^2, 3p^2$ * $3s^2, 3p^6 4s^1$ * $4s^2, 3d^1$ * $4s^2, 3d^{10} 4p^5$

(v) Describe the extraction of sodium from rock salt on industrial scale

(vi) What happens when (write equation)

* Nitric acid reacts with Phosphorous * Sodium reacts with oxygen

* Carbon mono oxide is treated with chlorine * Aluminum is treated with H_2SO_4 (conc.)

(Organic Chemistry)

(vii) Define the following.

* Glycosidic linkage * Plasticizer * Aromaticity * Homologous series

(viii) Define the Polymerization and Isomerism. Identify the following pair of compounds as Isomers and which pair contains polymer

* Glucose and Starch * CH_3-O-CH_3 and CH_3-CH_2-OH

* CH_3-CH_2-CHO and $CH_3-CO-CH_3$ * Vinyl Chloride and PVC

(ix) How can we prepare following compounds (any four)

* ethylene glycol from ethene * phenyl hydrazone from formaldehyde

* White solid from Acetylene * ethane from chloro methane * ethene from ethane

(x) Write the IUPAC names of the following (any four)

* $CH_3-CH(CH_3)-CH(CH_3)-CH_3$ * $CH_2=C(CH_3)-CH(CH_3)-C\equiv CH$

* CHI_3 * $CH_3-CH(CH_3)-CH(Cl)-CHO$ * $(CH_3)_3C.CO-CH_2CH_3$

(xi) Why benzene gives electrophilic substitution reaction. Discuss acylation of Benzene with mechanism.

(xii) What happens when, (write only equation)

* acetylene reacts with water in presence of H_2SO_4 and $HgSO_4$ at $75^\circ C$.

* Formaldehyde is polymerized in presence of H_2SO_4

* Vapors of acetic acid are passed over MnO_2 at $500^\circ C$.

* Ethanol in excess, is heated in presence of H_2SO_4 .

OR

* Write a short note on Amino Acid or Fertilizer.

SECTION 'C' (Detailed-Answer Questions)

(Marks: 18)

NOTE: Attempt three question from this section in all, selecting atleast one question from Inorganic chemistry and one from organic chemistry.

INORGANIC CHEMISTRY

Q3. Describe the extraction of 99% pure Aluminum from bauxite ore containing SiO_2 and Fe_2O_3 as Impurities.

(6)

Q4. The following chart represents stages in manufacture of HNO_3

(6)



* Describe the chemical process in stage A along with the conditions for maximum conversion.

* Describe the process in C and D. * How 98% concentrated HNO_3 is obtained.

OR

Define d-Block elements, why they are called transition elements? Discuss the following properties of d-Block elements.

* Variable Oxidation States * Magnetic Properties * Catalytic Properties

ORGANIC CHEMISTRY

Q5. Explain the reaction mechanism of S_N1 and S_N2 reactions.

(6)

Q6. What is fermentation and how ethyl alcohol manufactured by fermentation of the following? (6)

* Starch

* Molasses

OR

Discuss the effect of substituent group (G) already present on benzene ring on the entry of the second substituent. Prepare the following compounds from benzene.

* m-nitrobenzoic acid

* o and p-nitrotoluene



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ENGLISH (C) NORMAL PAPER-II

(MODEL PAPER)

Annual Examination 2021

Max. Marks: 50

SECTION 'A' MCQs

Time: 50 Minutes

1. Choose the correct answer for each from the given options:

- i) In 'Twenty Minutes with Mrs. Oakentubb', the Porter says that his job is fit for:
 - lap dog * shaggy dog * bull dog * pet dog
- ii) Liaquat Ali Khan delivered his speech in the University of:
 - Punjab * Karachi * Kansas * Texas
- iii) The word **Polytheist** means one who believes in:
 - one God * many gods * two gods * idols
- iv) Hugh the Miller has:
 - 4 milch cows * 5 milch cows * 6 milch cows * 7 milch cows
- v) **Twenty Minutes with Mrs. Oakentubb** is notable for its skilful manipulation of:
 - tragedy * comedy * suspense * seriousness
- vi) During the early part of T'ang dynasty, Europe was sunk in:
 - chauvinism * nepotism * barbarism * extremism
- vii) Einstein believes that every man should be respected as an individual and no man be:
 - satirized * ridiculed * idolized * subjugated
- viii) It is a fruit that must be earned before it can be enjoyed:
 - lemon * tyranny * liberty * peace
- ix) According to Einstein, true democracy found in:
 - Pakistan * India * America * England
- x) **The Devoted Friend** has been written by:
 - Albert Einstein * Frank Arthur * Oscar Wilde * John Galsworthy
- xi) Second childishness is this stage of man's life:
 - fourth * fifth * sixth * seventh
- xii) The feats of strength are performed by:
 - Milton * guide * Samson * John
- xiii) In 'Say Not the Struggle Naught Avaieth', tired waves of the ocean give the message of:
 - struggle * effort * hard work * strength
- xiv) **The Seven Ages of Man** was taken from:
 - Midsummer Night's Dream * As You Like It * Twelfth Night * The Tempest
- xv) **Samson** had been taken captive through the treachery of his:
 - father * brother * wife * sister
- xvi) 'No nightingale did ever chaunt, the line is from the poem:
 - Samson Agonistes * The Solitary Reaper * The Lost Star * Endymion

- xvii) **If hopes were dupes, fear may be:**
- liars * baseless * blessings * deceivers
- xviii) **Shakespeare used the word capon for eating in this stage of man's life:**
- second * third * fourth * fifth
- xix) **G. Allana started his political career joining Sindh Muslim League as:**
- worker * President * General Secretary * spokesman
- xx) **Each stanza of 'The Solitary Reaper' consists of:**
- six lines * seven lines * eight lines * nine line
- xxi) **Samson Agonistes was blinded by the:**
- Philistines * Germans * Israelites * English
- xxii) **Wordsworth wrote 'The Solitary Reaper' when he saw a girl:**
- Reaping crop in a field * addressing people
 - cooking food alone * reaping and singing in a field
- xxiii) **Human labour never fails, according to:**
- Shakespeare * Arthur Hugh Clough * Keats * Wordsworth
- xxiv) **Ghulam Ali Allana is a poet of the:**
- 18th century * 19th century * 20th century * 21st century
- xxv) **According to Shakespeare, being a soldier is this stage of man's life:**
- third * fourth * fifth * sixth
- xxvi) **'Say Not The Struggle Naught Availeth' teaches us the lesson of:**
- optimism * pessimism * dejection * mysticism
- xxvii) **The struggle and hard work is never:**
- fruitful * good * wasted * considerable
- xxviii) **John Milton was influenced heavily by:**
- Shakespeare * Wordsworth * Spenser * Keats
- xxix) **Honour is superior to love, is the message conveyed in:**
- Hamlet * As You Like It * Macbeth * The Prisoner of Zenda
- xxx) **The hirelings of Black Michael were known as:**
- the Three * the Five * the Six * the Six
- xxxi) **Princess Flavia was to be married to:**
- Black Michael * Rupert of Hentzau * Rudolf Rassendyll * Rudolf Elphberg
- xxxii) **The new King was to be crowned on:**
- Sunday * Monday * Tuesday * Wednesday
- xxxiii) **The King was imprisoned in a small room in the old castle just by the:**
- drawbridge * wood bridge * Westminster bridge * rope bridge
- xxxiv) **George Featherly was a diplomat in the:**
- French Embassy * British Embassy * American Embassy * Canadian Embassy
- xxxv) **Rupert inflicts a fatal wound on:**
- Bersonin * Detchard * Krafstein * Michael
- xxxvi) **In 'The Prisoner of Zenda', the name of Rassendyll's uncle is:**
- William * Tom * George * Josef
- xxxvii) **Rassendyll's plan ends with:**
- Michael's death * Michael's trial * Elphberg's death * Elphberg's rescue

xxxviii) Antonitte de Mauban was liked by:

- De Gautet * Black Michael * Rupert of Hentza * Bersonion

xxxix) 'The Prisoner of Zenda' is written by:

- William Shakespeare * St. John G. Ervine * Anthony Hope * J.H. Walsh

XL) Black Michael was the duke of:

- Strelsau * Dresden * Tyrol * Trieste

XLI) The iron tea table incident occurred at:

- Summer House * Dresden * Tyrol * New Castle

XLII) Rudolf Elphberg was abducted by:

- Rassendyll * Black Michael * Rupert of Hentza * Johann

XLIII) She was coming from the cocktail party, when accident occurred:

- Charlotte * Rose * Mrs. Oakentubb * Hannah

XLIV) The maintenance of freedom requires constant:

- struggle * fight * vigilance * work

XLV) Hans used to remain unhappy during:

- winter * summer * autumn * spring

XLVI) The book 'Past and Present', is the masterpiece of:

- Dickens * Eliot * Carlyle * Hardy

XLVII) 'Art for art's sake', was strongly supported by:

- Oscar Wilde * Coleridge * Liaquat Ali Khan * Shakespeare

XLVIII) The East got the leadership in power and culture after the fall of the:

- Tang dynasty * Caliphate dynasty * Roman Empire * Hindu Dynasty

XLIX) The smile of Korean girl gave the man a purpose in life which was:

- forgiveness * goodness * revenge * love

XL) According to Bertrand Russell, the traditions of civilizations in Asia are ancient and:

- renowned * glorious * outdated * highly held

Max. Marks: 50

Time :1 hr 10 min

SECTION 'B' (SHORT-ANSWER QUESTIONS) (Max. Marks: 30)

NOTE: Attempt SIX part-questions from this section, including at least One part question from each sub-section.

Answer should not exceed six sentences. All questions carry equal marks.

SUB-SECTION I (Intermediate English Book –II)

2. i) Why did the gentleman kill Mrs. Oakentubb?
ii) What is genuine freedom according to Liaquat Ali Khan?
ii) What in Bertrand Russel's opinion, should Asian countries accept from the West and what should they reject?

SUB-SECTION II (Selections from English Verse: Part-II)

- i) What are the seven stages into which Jaques divides a man's life?
ii) Describe the incident that led Wordsworth to write **The Solitary Reaper**.
iii) What message has been conveyed in the poem, '**Say Not the Struggle Naught Availeth**'?

SUB-SECTION III (The Prisoner of Zenda)

- i) Where was King Rudolf imprisoned? By whom was he looked after?
ii) Why does Madam de Mauban turn against Black Michael?

iii) Who is the heroine in the novel **The Prisoner of Zenda**? Describe three qualities of her character.

SUB-SECTION IV (Grammar)

- i) Use any **Three** of the following phrasal verbs in sentences:
give up; let down; put off; take after; run out; get on; put up with
- ii) Use any **Three** of the following pairs of words in your own sentences (total six sentences)
brake: break, allowed: aloud, altar: alter, pore: pour, ensure: insure, accident: incident
- iii) Match any Five of the following **words** in Row **A** with the **meaning** in Row **B**:
Row **A**: blot out, oblivion, insular, strain, ball, jeopardy
Row **B**: dance party, melody, narrow-minded, danger, eliminate, forgetfulness

SECTION 'C' (DETAILED-ANSWER QUESTIONS) (Max. Marks: 20)

Note: Attempt **Two** questions from this section. Question No. 3 is compulsory.

3. Write an essay on any One of the following topics:

- i) Tourism in Pakistan ii) PSL 2021 iii) The Impact of Corona on Education

4. Change the Narration:

- i) He said, 'Put the bag here, Haris'. iv) My mother said, 'May you live long'.
ii) The leader said, 'Alas! I have lost election'. v) She said to me, 'Why do you not believe me?'
iii) She taught us, 'The moon is satellite of the earth.'

5. Read the following **passage** and answer the questions given below:

War seems to me a mean, contemptible thing; I would rather be hacked in pieces than take part in such an abominable business. And yet so high in spite of everything, is my opinion of the human race that I believe this bogey would have disappeared long ago, had the sound sense of the nations not been systematically corrupted by commercial and political interest acting through the schools and the press.

- i) Identify the title of the text and the writer.
ii) Give the meaning of the following words: * **Abominable** * **hacked** * **bogey**
iii) Identify the part of speech of the following words: - **seem** - **business** - **through**
iv) What opinion does the writer hold about war?
v) What forces does the writer blame for the persistence of war?



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PHYSICS PAPER-II

(MODEL PAPER)

Annual Examination 2021

(Science Group)

Max. Marks: 40 **SECTION A (MULTIPLE CHOICE QUESTIONS) – (M.C.Qs.)** Time: 40 min

- NOTE:**
- This section consist of 40 part questions and all are to be answered each question carries one mark.
 - Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.
 - The code of your question paper is to be written in bold letters in the beginning of the answer script.
 - The use of scientific calculator is allowed. All notations are used in their usual meanings.

1. **Select the most appropriate answer for each from the given options:**

- Which of the following statements does not represent ohm's law?**
 - * current / potential difference = constant
 - * potential difference / current = constant
 - * potential difference = current x resistance
 - * current = resistance x potential difference
- Three resistors 2 ohm , 3 ohm and 4 ohm are connected so that the equivalent resistance is 9 ohm . The resistors are connected:**
 - * all in series
 - * all in parallel
 - * 2 Ohm and 3 Ohm in parallel and the combination in series with 4 Ohm
 - * 2 Ohm and 3 Ohm in series and the combination in parallel to 4 Ohm
- In order to increase the range of an ammeter. The shunt resistance should be:**
 - * Increased
 - * Decreased
 - * Kept constant
 - * none of them
- Galvanometer has _____ resistance**
 - * Variable
 - * fixed
 - * both a & b
 - * none of them
- The working of all electrical instruments depends upon _____ effect of current.**
 - * Magnetic
 - * Chemical
 - * Electromagnetic
 - * no
- For accurate measurement of current through a circuit the resistance of ammeter should be:**
 - * Large compared to the circuit resistance
 - * Very small compared to the resistance
 - * Neither too small nor too large
 - * None of these
- Amplitude Modulation in a signal means:**
 - * Decrease in the time period of signal
 - * The increase in the vertical width of a signal
 - * The increase un the horizontal width of signal
 - * All of them

viii) Transistor is a device which has _____ terminals.
* One * Two * Three * Four

ix) Geiger counter is a device to detect:
* Mass * Momentum * Charge *

Radiation

x) A Wilson cloud chamber uses:
* Super heated liquid * Vapour's * Supersaturated vapour *

Saturated vapour

xi) At constant temperature, the graph between V and $1/p$ is:
* Hyperbola * Parabola * Straight line * Ellipse

xii) A set of coordinate axes with respect to which measurements are made is called:

* frame of reference * inertial frame of reference
* non-inertial frame of reference * none of these

xiii) The photoelectrons emitted from a metal surface _____.
* are all at rest * have the same kinetic energy

* have the same momentum
* have speeds varying from zero up to a certain maximum value

xiv) When we try to stop a very high photon it loses its identity and disintegration into an electron and a positron. This is called:

* Pair production * Annihilation * X-rays production * Compton effect

xv) The force acting on a charged particle projected into a magnetic field of induction 'B' is maximum when the angle between B and the velocity of the particle is:
* 0 * 90 * 60 * 45

xvi) What is the capacity of a capacitor when a charge of one Coulomb raises its potential by one volt?

* 1 Farad * 2 Farad * - 2 Farad * None of them

xvii) In order to increase the number of electrons in photo electric effect, _____ should be

increased
* Intensity of source of light * Threshold frequency * Velocity *

K. E

xviii) Isobaric process is the process which takes place at constant:

* Pressure * Volume * Heat * Area

xix) Capacitors of capacitance upto 10μ F are usually made of alternate layers of aluminum foil and:

* Tin * Paper * Waxed paper * Carbon

xx) A current of 1.6 Amperes is drawn from a battery for 10 minutes. How much charge flows through the circuit in this time?

* 96 C * 960 C * 69 C * 690 C

xxi) According to Lenz law, the emf opposes the change that induces e.m.f. and it is therefore known as:

* Forward emf * Back emf * conventional emf * None of these

xxii) Transistor can never be used as a/an:

* rectifier * Amplifier * Switcher * None

- xxiii) _____ transfers energy to and from its surroundings by the process of heating (or cooling) and the process of mechanical work
 * closed system * Open system * Both a & b * None
- xxiv) When the temperature of source and sink of a heat engine become equal, the efficiency will be:
 * Zero * Maximum * Minimum * Negative
- xxv) The temperature at which the gases if they remain in gaseous state exert zero pressure and have zero volume is called:
 * 1°C * 1°F * 1K * Absolute Zero
- xxvi) Gas in a closed container at temperature of 27 C has pressure P. what will be the pressure if temperature is raised to 127 C?
 * $4 P / 3$ * $27 / 127 P$ * $3 P / 4$ * $127 P / 27$
- xxvii) The average energy release per fission of U^{235} is about:
 * 200 M eV * 2 M eV * 2 K eV * 2 eV
- xxviii) The amount of energy required to break the nucleus into its constituent particles is called
 * Mass defect * binding energy * ionization energy * ionization potential)
- xxix) The sun which is largest source of heat energy gets its energy by the process of:
 * Nuclear Fusion * Nuclear Fission * Nuclear Chain reaction * all of them
- xxx) According to Bohr's theory of the hydrogen atom, the total energy of the hydrogen atom with its electron revolving in the nth stationary orbit is:
 * proportional to n * proportional to n^2
 * inversely proportional to n * inversely proportional to n^2
- xxxi) X-rays are a part of electromagnetic spectrum and are characterized by frequencies higher than those of:
 * visible radiation * infrared radiation
 * ultra violet radiations * none of these
- xxxii) The terminal voltage of a battery is observed to fall when the battery supplies a current to an internal resistor.
 * The battery's e.m.f. and its internal resistance. * The battery's e.m.f. and the current.
 * The current and the battery's internal resistance. * The current and the external resistance.
- xxxiii) A spherical shape charged rubber balloon whose charge is distributed uniformly over the surface has Electric intensity inside the charged rubber balloon is:
 * Zero * Infinite * Same as outside * More than outside charge
- xxxiv) An electron is moving along the axis of the solenoid carrying a current.
 * The force acts radially inwards * The force acts radially outwards
 * The force acts in the direction of motion * No force acts.
- xxxv) The picture on a TV screen become distorted when a magnet is brought near the screen, because :

- * The beam of electron will not be deflected due to the magnetic field
 - * The beam of electron will be deflected due to the magnetic field
 - * The beam of electron will stop in electron gun
 - * Magnetic field will destroy the coating of screen
- xxxvi) **The path along which a unit positive charge moves in an electric field is called:**
- * Direction of charge
 - * path of charge
 - * An electric line of force
 - * Magnetic line of force
- xxxvii) **The magnitude of drift velocity is of the order of:**
- * 0.1 m/s
 - * 0.01 m/s
 - * 0.001 m/s
 - * 0.001 m/s
- xxxviii) **The charge moving perpendicular to the magnetic field 'B' with a certain velocity 'v' experiences**
- * No force
 - * Maximum force
 - * Minimum Force
 - * None of these
- xxxix) **The direction of magnetic lines of force is given by the:**
- * head to tail rule
 - * right hand rule
 - * left hand rule
 - * none of these
- xxxx) **According to Bohr's theory of hydrogen atom, an electron can revolve around a proton indefinitely if its path is**
- * a perfect circle of any radius
 - * a circle of constantly decreasing radius
 - * a circle of an allowed radius
 - * an ellipse

Max.Marks:45

Time: 80 Minutes

SECTION B

SHORT-ANSWER QUESTION (28MARKS)

NOTE: Attempt any seven part questions from this section. All questions carry equal marks. The use of scientific calculator is allowed. All notations are used in their usual meanings. Draw diagram where necessary.

Q 2

- (i) A 20 loop coil lies on a table top in a region where the magnetic field is vertically upward and has a value of 30 Gauss. the field is reduced to zero in 50 sec. If the radius of each loop is 7.0 cm, what is the average induced emf in the coil (a) while the field is changing (b) before the field begins to change? (c) As viewed from above, is the induced e.m.f. in the coil clockwise or anticlockwise? [1 Gauss = 1×10^{-4} Tesla]
- (ii) A galvanometer of resistance 50Ω gives full scale deflection with a current of 5 mA resistance of $0.1 \text{ M} \Omega$ is connected in series to convert it into volt meter. Find the range of voltmeter obtained.
- (iii) An iron ball has a diameter of 5cm and is 0.01mm too large to pass through the hole in a brass plate when the ball and the plate are at a temperature of 30°C . At what temperature, will the ball just pass through the hole. For iron $\alpha = 1.2 \times 10^{-5} \text{ C}^{-1}$, For Brass $\alpha = 1.9 \times 10^{-5} \text{ C}^{-1}$
- (iv) Give the principle, construction and working of Geiger Counter.
- (v) Determine the longest and shortest wavelength for Balmer's series ($R_H = 10967800 \text{ m}$)

- (vi) What will be the relativistic speed and momentum of the particle if relativistic mass of the particle will be doubled than the rest mass?
- (vii) A building has 5 electric bulbs of 100 watts each, 10 fans of 60 watts each, 10 tube lights of 40 watts each and one electric iron of 1000 watts. Find the number of units used in 30 days if all the appliances are used 4 hours a day. Find also the expenditure if the electric rate per unit is 90 paise.
- (viii) the surface charge density of a charged sheet having $6 \mu\text{C}$ charge on it exerts a force of $4.3 \times 10^{-5} \text{ N}$. ($\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 / \text{N m}^2$)
- (ix) Find out the decay Constant of ${}_{84}\text{Po}^{210}$, If its half life is 138.38 days.
- (x) Explain working of transistor as an amplifier
- (xi) State Boyle's Law and Charles's laws. Derive General Gas Equation
- (xii) What is magnetic induction? State Faraday's law of electromagnetic induction and explain Lenz's law with the help of an experiment

SECTION C
(DETAILED ANSWER QUESTIONS) ★ (17 Marks)

NOTE: Attempt any **One** question from this section. Draw diagrams, where necessary. The use of scientific calculator is allowed. All notations are used in their usual meanings.

- Q3)
- a) State the basic postulates of Bohr's atomic theory. Derive an expression for the nth radius of hydrogen atom. (06)
 - b) State Gauss's law. Derive an expression for the electric intensity due to a charge sheet of infinite extent at a point. (06)
 - c) Derive an expression for the force on a current carrying conductor in a uniform magnetic field (05)
- Q4)
- a) Describe Carnot's cycle. Establish the relation for its efficiency. (06)
 - b) Describe Compton's Effect. Derive the formula for Compton's shift (06)
 - c) Prove that the resistance of the conductor depends upon its dimension (05)