Physical Sciences

Time : 2 1/2 Hours. **PARTS A & B** Marks : 50

Instructions : 1. **Answer the questions under Part A on a separate answer book.**
2. **Write the answers to the questions under Part B on the question paper itself and attach it to the answer book of Part A.**

Time : 2 Hours. **PART - A** Marks : 35

SECTION - I (Marks : 5 × 2 = 10)

Note : 1. *Answer **ANY FIVE** questions, choosing at least **TWO** from each **Group.***

2. *Each question carries **TWO** marks.*

Group - A

1. Explain the working of Laundry drier. *(Unit - 4.1)*
2. State and explain Lenz's law. *(Unit - 9.9)*
3. What are Isotopes ? Give an example. *(Unit - 10.3)*
4. Write newton's law of Universal Gravitation. Calculate the gravitational force on an object of mass 10 kg. *(Unit - 2)*

Group - B

5. What is the Heat of Neutralization ? Give its value for a reaction between a strong acid and strong base. *(Unit - 6)*
6. Draw the shape of PCl_5 molecule. *(Unit - 2)*
7. How does the ionization energy vary in period and in a Group ? *(Unit - 3)*
8. Write the difference between Alkanes and Alkenes. *(Unit - 7)*

SECTION - II (Marks : 4 × 1 = 4)

Note : 1. *Answer **ANY FOUR** questions from the following.*

2. *Each question carries **ONE** mark.*

9. Define a Byte. *(Unit - 11.6)*
10. What is Radiography ? *(Unit - 5)*
11. Distance between a node and the next antinode in a stationary wave is 10cms. Find the wavelength. *(Unit - 6)*
12. Name two molecules having Pyramidal shape. *(Unit - 2)*
13. What is Nodal plane ? *(Unit - 1)*
14. What is catenation ? *(Unit - 7)*

SECTION - III (Marks : 4 × 4 = 16)

Note : 1. *Answer **ANY FOUR** questions, choosing at least **TWO** from each **Group.***

2. *Each question carries **FOUR** marks.*

Group - A

15. How do you determine the diameter of a wire using a Screw gauge ? *(Unit - 1)*
16. Give a comparison between Newton's Corpuscular theory and wave theory ? *(Unit - 7)*
17. Describe an experiment to verify Faraday's second law of Electrolysis. *(Unit - 9.6)*
18. State the properties and uses of Junction transistor ? *(Unit - 11.4)*

Group - B

19. Sate the postulates of Bohr's model and its defects of Bohr's model. *(Unit - 1)*
20. Define Molarity 2.12 gms of Sodium Carbonate is present in 250 ml of its solution. Calculate the molarity of the solution. [Molecular Weight of Na_2CO_3 is 106] *(Unit - 5)*
21. Write the reactions of Group - II A elements with (i) Water, (ii) Oxygen, (iii) Hydrogen, (iv) Chlorine. *(Unit - 4)*
22. Define a drug. Write the characteristics of an ideal Drug. *(Unit - 10)*

SECTION - IV (Marks : 1 × 5 = 5)

Note : 1. *Answer **ANY ONE** of the following questions*

2. *This question carries **FIVE** marks..*

23. Draw a neat diagram of magnetic lines of force, when N- pole of a bar- magnet facing N- pole of the Earth. Locate the null points. *(Unit - 8.4)*
24. Draw a neat labelled diagram of manufacture of Alcohol. *(Unit - 8)*

Time : 30 Minutes **PART - B** Marks : 15

Note : 1. Answer ALL questions. 2. Each question carries 1/2 mark.
3. Candidates must use the CAPITAL LETTERS while answering the multiple choice questions.
4. Marks will NOT be awarded in case of any overwriting or re-writing or erased answers.

I. Pick up the correct answer and fill in the brackets with the CAPITAL LETTERS of the correct answer chosen. 10 × 1/2 = 5

1. The time taken by a body thrown up to reach maximum height 'h' is called its : [ ]
A) Time of descent B) Time of flight
C) Time of ascent D) None

2. The velocity of sound in air is : [ ]
A) $\upsilon = \sqrt{\frac{\rho}{\gamma P}}$ B) $\upsilon = \sqrt{\frac{\rho P}{\gamma}}$
C) $\upsilon = \sqrt{\frac{\gamma P}{\rho}}$ D) $\upsilon = \sqrt{\frac{P}{\rho}}$

3. The charges carried in a Semi - conductor are : [ ]
A) Electrons B) Holes
C) Ions D) Electrons and holes

4. When a α - particle is emitted by an atom, its mass number decreases by : [ ]
A) 2 units B) 3 units C) 4 units D) 1 unit

5. What is the equivalent resistance of two resistors 6 Ω and 12 Ω when connected in series :[ ]
A) 18 Ω B) 12 Ω C) 6 Ω D) 4 Ω

6. Among 3p, 4s, 3d and 4p the orbital having least energy is : [ ]
A) 4s B) 3p C) 3d D) 4p

7. $-NH_2$ is called : [ ]
A) Acid group B) Amine group
C) Ester group D) Ketone group

8. The scientist who introduced elliptical orbit is : [ ]
A) Bohr B) Schrodinger
C) Zeeman D) Sommerfeld

9. Shaving soap contains excess of : [ ]
A) Builders B) Perfume
C) Stearic acid D) Glycerol

10. If the P^H of a solution is 8, its $[H^+]$ is : [ ]
A) log 10^{-8} B) 10^8 C) 10^{-8} D) 8

II. Fill in the blanks : 10 × 1/2 = 5

11. The symbol of battery is .....
12. Air, water, bismuth are examples of ..... magnetic substances.
13. Acceleration due to gravity at poles is .....
14. the unit of Specific resistance is .....
15. Transistor acts as .....
16. The colour of methyl orange indicator in acidic medium is .....
17. The chemical formula of Magnesite is .....
18. The solid carbon dioxide is called .....
19. In periodic table, elements from 57 atomic number to 71 are known as .....
20. $Fe_2O_3 + 3CO \rightarrow$ .....

III. Match the following.

i) Physics **5 × 1/2 = 2 1/2**

Group - A		**Group B**
21. α - particle	[ ]	(A) No. of protons
22. β - particle	[ ]	(B) Electrically neutral
23. γ -ray	[ ]	(C) Positive charge
24. Atomic number	[ ]	(D) Sum of the number of Protons and Neutrons
25. Mass Number	[ ]	(E) Sum of the No. of protons and electrons.
		(F) Negative charge
		(G) Positive and Negative charge

ii) Chemistry **5 × 1/2 = 2 1/2**

Group - A		**Group B**
26. Benzene	[ ]	(A) CH_3COOH
27. Acetylene	[ ]	(B) H_3PO_4
28. Acetic acid	[ ]	(C) C_4H_8
29. Phosphoric acid	[ ]	(D) C_2H_2
30. Carbonic acid	[ ]	(E) CH_4
		(F) H_2CO_3
		(G) C_6H_6

PART - B : ANSWERS

I. (1) C (2) C (3) D 4) C (5) A (6) B (7) B 8) D (9) C (10) C

II. (11) ⊣⊢ or —|⊢ (12) dia, (13) maximum, (14) ohm - metre, (15) amplifier or oscillator, (16) red, (17) $MgCO_3$, (18) dry ice, (19) lanthanoides, (20) $2Fe + 3CO_2 \uparrow$

III. **(i)** (21) C (22) F (23) B (24) A(25) D **(ii)** (26) G (27) D (28) A (29) B (30) F