GENERAL SCIENCE, Paper - I

(English version)

Parts A and B

Time : 2½ Hours] **[Maximum 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****.*

Part - A

Time : 2 Hours ***Marks : 35***

SECTION - I *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. What are the factors that influence the value of '*g*' ?

2. What are the characteristics of Simple Harmonic Motion ?

3. What are basic processes involved in the working of a LASER ?

4. Define the terms Electro-typing and Electro-plating.

GROUP - B

5. Into how many classes the Elements are divided based on the electronic configuration ? What are they ?

6. Calculate the pH of 0.001 M HCl solution.

7. Define Solubility and write the factors which influence the solubility.

8. Sketch the structure of any drug molecule.

SECTION - II

4×1=4

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

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

9. State Lenz's law.

10. Write the equations of motion for a freely falling body.

11. In a Stationary wave, the distance between a node and the next antinode is 10 cm. What is the value of its Wavelength ?

12. Write the names of Inert gases.

13. Draw the shape of Water molecule.

14. What is the use of adding cullet to the raw material of Glass ?

SECTION - III

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 guage ? Explain.

16. Compare the values of Relative Permeability and Magnetic Susceptibility of Dia, Para and Ferro magnetic substances.

17. State the properties and uses of a Junction transistor.

18. What is *(a)* mass defect, and *(b)* binding energy in Oxygen $^{16}_{8}O$; whose nuclear mass is 15.995 amu. (m_p = 1.0078 amu; m_n = 1.0087 amu)

GROUP - B

19. Explain the formation of Triple bond with diagram.

20. Write reactions of group IIA elements with
    1. Water
    2. Oxygen
    3. Hydrogen
    4. Chlorine

21. Compare the structures of Diamond and Graphite.

22. Define a Drug. What are the characters of an ideal drug ?

SECTION - IV

1×5=5

NOTE :

1. Answer **ANY ONE** of the following questions.
2. This question carries **FIVE** marks.

23. Draw and label the diagram showing various regions of Electro-magnetic spectrum and their wavelength ranges.

24. Draw the shapes of five *d*-orbitals.