This Question Paper contains 3 printed pages.

19E (A)

GENERAL SCIENCE, Paper-I

(Physical Sciences)

(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 x 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 characteristics of a simple harmonic motion?

2. Calculate the value of the magnetic moment of a short bar magnet of length 5 cm and pole strength 3×10^{-2} A–m.

3. Draw the symbol of the forward bias and the reverse bias condition in a *p–n* junction diode.

4. Name four high level machine languages.

Group - B

5. Explain why electrons enter into $4s$ orbital but not $3d$ after filling the $3p$ orbital.

6. Draw the bond formation in a HCl molecule.

7. 2.12 grams of Na_2CO_3 is present in 0.25 liters of its solution. Calculate the molarity of the solution. (Molecular weight of Na_2CO_3 is 106).

8. What are fertilizers? Give their types.

SECTION II

4 x 1 = 4

Note : 1. Answer **any four** questions from the following.

2. Each question carries **one** mark.

9. State Hooke's law.

10. Explain the phenomenon of resonance.

11. State the law of radioactive disintegration.

12. Define a strong acid.

13. What are the "degenerate orbitals"?

14. What is glass-blowing?

SECTION III

4 x 4 = 16

Note : 1. Answer **any four** questions, choosing at least **two** from each group.

2. Each question carries **four** marks.

Group - A

15. Mention any eight uses of laser light in the field of medicine, industry and in space science and defence.

16. State Faraday's second law of electrolysis. How do you verify it in the laboratory?

17. Compare the properties of α, β, γ radiation in a tablular form.

18. What are the basic principles of radio and TV communication?

Group - B

19. State and explain the Aufbau principle and Hund's rule with one example each.

20. Explain the formation of a coordinate covalent bond.

21. Mention the features of the modern periodic table.

22. How do you test the quality of a soap?

SECTION IV

1 x 5 = 5

Note : 1. Answer **any one** of the following questions.

2. This question carries **five** marks.

23. Draw a neat diagram of a screw gauge and label its parts.

24. Draw the chart showing the alcohol manufacture and label its parts.
