

2022-26*Full Marks : 60**Time : 3 Hours*

Candidates are required to give their answer in their own words as far as practicable. Their figures in the margin indicate full marks.

Answer **all** the questions.

Group-A**(Compulsory)**

1. Answer the following : 1×5=5
 - (a) How many orientations are possible for p- and d- orbitals ?
 - (b) Write the electronic configuration of Cr.
 - (c) Arrange the halogens in order of their increasing electronegativity.
 - (d) Define Lattice energy.
 - (e) What is π -bond ?

2. State and explain Heisenberg's Uncertainty principle. 5

3. Why the first ionisation potential of an element is less than the second ionisation potential ?
5

Group-B

Answer any **three** questions :

4. Explain Quantum numbers and write the significance of each number. 15
5. Define the following and explain their trends in a period and in a group. $5 \times 3 = 15$
- (a) Ionisation energy
 - (b) Electronegativity
 - (c) Atomic radius
6. (a) Explain VSEPR theory with examples. $5 \times 3 = 15$
- (b) What are the limitations of VSEPR theory ?
 - (c) Predict the shape and geometry of CH_4 and NH_3 .
7. Write short note on : $5 \times 3 = 15$
- (a) Vander Waals forces
 - (b) Hydrogen bond
 - (c) Electrolytic Kroll process

8. (a) Write the differences between Inorganic and Organic polymers. $5 \times 3 = 15$
- (b) Explain the types of Inorganic polymers.
- (c) Write short note on Silicones.

