Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION – I)

2. Write short answers to any EIGHT questions. $(2 \times 8 = 16)$

i. Why most of the elements have fractional atomic mass?
ii. Differentiate between "Molecular Formula" and "Empirical Formula".
iii. Why 80 g of glucose and 342 g of suscrose have same number of molecules but different number of atoms?
iv. Write down four properties of best solvent choosen for crystallization.
v. Differentiate between adsorption and partition chromatography.
vi. Define critical temperature and critical pressure.
vii. Calculate the S.I units of 'R'.
viii. Define plasma. How it is formed?
ix. Why gases show Non-Ideal behavior at low temperature and high pressure?
x. Write two differences between Ideal and Non-Ideal solutions.
xi. Define Heat of solution. Give example.
xii. Why aqueous solution of CH_3COONa is basic?

3. Write short answers to any EIGHT questions. $(2 \times 8 = 16)$

i. Define vapour pressure. Name the factors which affect vapour pressure.
ii. What are dipole-dipole forces. Name the properties which are affected by these forces.
iii. Define Anisotropy and Allotropy.
iv. Boiling point of water is high as compared to boiling point of ether. Why?
v. State Moseley's Law. Give its two importances.
vi. Justify that the distance gaps between different orbits go on increasing from the lower to the higher orbits.
vii Why are positive rays called canal rays?
viii. Draw shapes of 'S' and 'P' orbitals.
ix. Define common ion effect giving an example.
x. State law of Mass Action.
xi. Define order of reaction. Give an example of pseudo first order reaction.
xii. Write two properties of enzyme catalysis.

4. Write short answers to any SIX questions. $(2 \times 6 = 12)$

i. Define octet rule. Give two examples.
ii. Atomic Radii increase in group and decrease in period, explain it.
iii. Cationic radius is smaller than parent atom, give reason.
iv. How electronegativity is used to find nature of chemical bond.
v. Define exothermic reaction. Give two examples.
vi. Define Spontaneous process. Give two examples.
vii. Find oxidation number of "Mn in $KMnO_4$"
viii. Explain electrolysis of fused $PbCl_2$.
ix. Write the function of salt bridge in Galvanic cell.