

CHEMISTRY (Subjective) GROUP - II

Time: 02:40 Hours

Marks: 68

SECTION - I**2. Write short answers of any EIGHT parts.**

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- (i) Define isotopes. Write isotopes of carbon.
- (ii) Mg atom is twice heavier than carbon atom. Justify.
- (iii) What is macro molecule? Give example.
- (iv) Define partition chromatography with example.
- (v) State distribution law.
- (vi) How fluted filter paper is prepared?
- (vii) State Charle's law. Write its mathematical form.
- (viii) Define critical temperature and critical pressure of a substance.
- (ix) Differentiate between natural and artificial plasma.
- (x) Differentiate between reversible and irreversible reactions.
- (xi) Define Buffer capacity.
- (xii) What is the effect of common ion on solubility?

3. Write short answers of any EIGHT parts.

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- (i) Why is boiling point of H_2O greater than that of HF ?
- (ii) What are London forces? Give an example.
- (iii) Define lattice energy. Give one example.
- (iv) What are molecular solids? What type of interactions hold them together?
- (v) Define spectrum. Give its two types.
- (vi) The e/m values of positive rays for different gases are different but those for cathode rays, the e/m values are same. Why?
- (vii) How are the neutrons involved in the conversion of $^{65}_{29}Cu$ into $^{66}_{30}Zn$?
- (viii) What are x-rays? How are they produced?
- (ix) Aqueous solution of $CuSO_4$ is acidic in nature. Give the reason.
- (x) Why are $NaCl$ and KNO_3 used to lower the melting point of ice?
- (xi) What are Pseudo first order reactions? Give one example.
- (xii) How does the surface area of reactants affect the rate of reaction? Give an example.

4. Write short answers of any SIX parts.

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- (i) How does the electronegativity difference decide the nature of ionic bond?
- (ii) Why an ionic bond is stronger than covalent bond?
- (iii) Why the atomic radii increase down the group?
- (iv) How the bond length is affected by hybridization?
- (v) What is state and state function?
- (vi) What do you mean by internal energy of chemical system?
- (vii) Define surroundings and give examples.
- (viii) Write the cathodic reaction in fuel cells.
- (ix) Give the structure of anode and cathode in lead acid battery.

SECTION - II Attempt any THREE questions. Each question carries 08 marks.

- (a) Write various steps to calculate the empirical formula of a compound. 1,1,1,1
- (b) What is Plank's Quantum Theory? Write its main points. 1,1,1,1
- (a) $250cm^3$ of the sample of hydrogen effuses four times as rapidly as $250cm^3$ of an unknown gas. Calculate the molar mass of unknown gas. 04
- (b) Describe fuel cells. Give their uses. 02,02
- (a) Write postulates of M.O.T. and explain oxygen molecule by this theory. 04
- (b) Explain first law of thermodynamics. 04
- (a) What are liquid crystals? Give their uses. 04
- (b) The solubility of CaF_2 in water at $25^\circ C$ is found to be $2.05 \times 10^{-4} mol dm^{-3}$. What is the value of K_{sp} at this temperature? 04
- (a) Give applications of elevation of boiling point and depression of freezing point. 04
- (b) Explain rate determining step in detail. 04