

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) No individual neon atom has a mass of 20.18 amu.
- (ii) What is a limiting reactant?
- (iii) What is percentage yield? Give its importance.
- (iv) Define sublimation. Give example.
- (v) What is solvent extraction?
- (vi) Derive Avogadro's Law from KMT.
- (vii) Give characteristics of plasma.
- (viii) What is law of distribution of velocities?
- (ix) What is centigrade scale of temperature?
- (x) Give two differences between ideal and non-ideal solutions.
- (xi) Define solubility and solubility curves.
- (xii) Define enthalpy or heat of solution.

3. Write short answers of any EIGHT parts.

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- (i) Define polymorphism by giving one example.
- (ii) Define unit cell. Write dimensions of unit cell.
- (iii) What is difference between crystal and crystallite?
- (iv) Why H_2O is liquid and H_2S is gas at room temperature?
- (v) Why the positive rays are also called canal rays?
- (vi) Why alpha rays are bounced back in Rutherford experiment?
- (vii) Calculate mass of electron by using e/m value.
- (viii) What is difference between orbit and orbital?
- (ix) Define acidic and basic buffers.
- (x) Define common ion effect by giving one example.
- (xi) Define rate determining step by giving one example.
- (xii) Define energy of activation.

4. Write short answers of any SIX parts.

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- (i) How electronegativity helps us to understand the nature of bond?
- (ii) Differentiate between ionic and covalent bond.
- (iii) Why some covalent bonds are polar while others are non-polar?
- (iv) What is oxonium ion? How it is formed?
- (v) What is enthalpy?
- (vi) What is standard enthalpy of a reaction?
- (vii) Calculate oxidation number of manganese in KMnO_4 .
- (viii) Calculate oxidation number of sulphur in sulphate ions.
- (ix) Define electrode potential.

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

5. (a) Calculate the number of grams of K_2SO_4 and water produced when 14g of KOH are reacted with excess of H_2SO_4 . $2\text{KOH} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$

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- (b) Explain the following properties of crystalline solids. Give one example in each case:

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(i) Anisotropy (ii) Symmetry (iii) Polymorphism (iv) Habit of a crystal

6. (a) Derive general gas equation for one mole of a gas from gas laws at S.T.P.

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- (b) What is spectrum? Explain atomic emission spectrum and atomic absorption spectrum.

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7. (a) Give the postulates of VSEPR theory.

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- (b) Explain these terms: (i) Standard heat of neutralization (ii) Standard enthalpy of solution

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8. (a) $\text{N}_2(\text{g})$ and $\text{H}_2(\text{g})$ combine to give $\text{NH}_3(\text{g})$. The value of K_c in this reaction at 500°C is 6.0×10^{-2} . Calculate the value of K_p for this reaction.

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- (b)(i) Define activation energy and activated complex. (ii) What is meant by specific rate constant?

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9. (a) Explain Landsberger's method for the measurement of boiling point elevation.

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- (b) Define electrochemical series. Write its any two applications.

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