

CHEMISTRY (Subjective) GROUP - II

Time: 02:40 Hours

Marks: 68

SECTION – I

16

2. Write short answers of any EIGHT parts.

- Many reactions taking place in our surrounding involve limiting reactant. Justify with examples.
- Define mole with example.
- Discuss reason for low actual yield.
- Describe sintered glass crucible.
- Discuss folding of filter paper briefly.
- Give uses of chromatography.
- Define effusion with one example.
- Explain Boyle's law from kinetic molecular theory of gases.
- Derive units of 'a' and 'b' used in van der Waals equation of real gas.
- How K_c is used to predict direction of reaction?
- Discuss effect of pressure change on reaction $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$
- Define pK_a and pK_b

3. Write short answers of any EIGHT parts.

16

- Complete these nuclear reactions: (a) ${}^4_2\text{He} + {}^9_4\text{Be} \rightarrow$ (b) ${}^{14}_7\text{N} + {}^1_0\text{n} \rightarrow$
- Differentiate between continuous and line spectrum.
- Calculate ionization energy of H-atom.
- Give relationship between (a) Energy and Frequency (b) Frequency and wavelength
- What are advantages of vacuum distillation?
- Evaporation is a cooling process. Explain why?
- The crystals showing isomorphism mostly have the same atomic ratios. Explain the statement.
- Molecular solids are relatively soft. Why?
- Define upper consolute temperature.
- What are azeotropic mixture?
- What do you mean by poisoning of a catalyst?
- What do you mean by heterogeneous catalysis? Give two examples.

4. Write short answers of any SIX parts.

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- Why size of anion is always larger than its neutral atom?
- Why second ionization energy is greater than first?
- Define bond length. Give two factors affecting bond length.
- Define bond order. Give its formula.
- Burning of candle is spontaneous process. Justify.
- Define enthalpy of combustion. Give one example.
- Why enthalpy of some compounds cannot be measured directly?
- What is anodized aluminum? Give its use.
- What is the function of salt bridge?

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

5. (a) What is limiting reactant? How does it control the quantity of the product formed? Explain with three examples.

04

- (b) What are covalent solids? Discuss six properties of covalent solids in detail.

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6. (a) What pressure is exerted by a mixture of 2.00g of H_2 and 8.00g of N_2 at 273K in a 10dm^3 vessel?

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- (b) Write four defects of Bohr's model.

04

7. (a) Define orbital hybridization and explain the structure of ethyne (C_2H_2) according to hybridization concept.

01,03

- (b) The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25°C . Calculate the solubility of the compound.

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8. (a) Explain Hess's law of constant heat summation giving one example.

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- (b) Describe the construction and working of galvanic cell.

04

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

04

- (b) Explain the effect of concentration of reactants on rate of reaction.

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