

**CHEMISTRY (Subjective) GROUP - I**

Time: 02:40 Hours

Marks: 68

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

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- Calculate mass in kilograms of  $2.6 \times 10^{20}$  molecules of  $\text{SO}_2$ .
- Calculate mass in grams of 5.136 moles of  $\text{Ag}_2\text{CO}_3$ .
- Calculate mass in grams of 2.74 moles of  $\text{KMnO}_4$ .
- Define sublimation. Name two compounds which can be sublimed.
- Define (a) Solvent extraction (b)  $R_f$  value.
- Derive the units for gas constant 'R' in general gas equation when pressure is in atmosphere and volume in  $\text{dm}^3$ .
- Briefly discuss general gas equation.
- Describe centigrade scale of thermometry.
- Write two applications of Dalton's law of partial pressure.
- Define fractional distribution. Give one example.
- What is non ideal solution? Give one example.
- Define colligative properties. Name four colligative properties.

**3. Write short answers of any EIGHT parts.**

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- Write six crystallographic elements of a tetragonal crystal system.
- Explain crystal lattice briefly.
- Define transition temperature giving one example.
- Explain cleavage planes.
- Cathode rays are material particles. Explain it.
- Write any two properties of neutron.
- Explain continuous spectrum briefly.
- Define atomic absorption spectrum giving one example.
- Give one difference between reversible and irreversible reactions.
- Define pH and pOH.
- Define instantaneous rate and average rate of a reaction.
- Define order of a reaction giving one example.

**4. Write short answers of any SIX parts.**

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- What is basic assumption of VSEPR theory.
- Define coordinate covalent bond. Give example.
- Define electron affinity. Give example.
- Why  $\text{NH}_3$  is a pyramidal molecule?
- What is system and surrounding?
- Define enthalpy of combustion. Give example.
- What is electrochemistry?
- What is electrolytic conduction?
- How electrochemical series is used to calculate voltage of cell? Give example.

**SECTION – II Attempt any THREE questions. Each question carries 08 marks.****5. (a) When lime stone is roasted, quicklime is produced according to following equation:**

The actual yield of CaO is 2.5kg when 4.5kg of lime stone is roasted. Find its percentage yield.

(b) Define and explain factors affecting the London forces.

**6. (a) How Dalton's law of partial pressure calculates the partial pressure of a gas?**

(b) Explain measurement of e/m value of electron.

**7. (a) Define covalent bond. Write its types with reference to polar covalent bond.**(b) What is the first law of thermodynamics? How does it explain that  $q_v = \Delta E$ ?**8. (a) When 1.00 mole of steam and 1.00 mole of carbon monoxide are allowed to reach equilibrium,**33.3% of the equilibrium mixture is hydrogen. Calculate the value of  $K_p$ . State the units of  $K_p$ .

(b) Explain how Arrhenius equation tells us the effect of temperature on the rate constant.

**9. (a) Explain the measurement of freezing point by Beckmann's freezing point apparatus.**

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