

Model Paper

11th Class - 2024

CHEMISTRY

TIME: 20 MINUTES

MARKS: 17

OBJECTIVE

1. Formula mass of MgSO_4 is g/mole:
(A) 150 (B) 120 (C) 130 (D) 140
2. One mole of SO_2 contains oxygen atoms:
(A) 6.02×10^{23} (B) 12.04×10^{23} (C) 1 mole (D) 3 moles
3. The iodine present in water can be separated by which one of the following techniques:
(A) sublimation (B) chromatography (C) filtration (D) solvent extraction
4. Mathematically Boyle's law is shown as:
(A) $PT=K$ (B) $VT=K$ (C) $P/T=K$ (D) $PV=K$
5. Absolute zero is equal to:
(A) 273°C (B) -273°C (C) 0°C (D) 273 K
6. At Murree hills water boils at:
(A) 98°C (B) 100°C (C) 0°C (D) 50°C
7. Coordination number of Na^+ ion in NaCl is:
(A) One (B) Two (C) Four (D) Six
8. Quantum number value for 2p orbital are:
(A) $n=2, \ell=1$ (B) $n=1, \ell=2$ (C) $n=1, \ell=0$ (D) $n=2, \ell=0$
9. Electronegativity values of F, Br, Cl, I are in the order of:
(A) $\text{I} > \text{Br} > \text{Cl} > \text{F}$ (B) $\text{Br} > \text{I} > \text{Cl} > \text{F}$ (C) $\text{F} > \text{Cl} > \text{I} > \text{Br}$ (D) $\text{F} > \text{Cl} > \text{Br} > \text{I}$
10. Standard enthalpy change is measured at:
(A) 298 K (B) 273°C (C) 273 K (D) 373 K
11. In a bomb calorimeter, the reaction are carried out at constant:
(A) pressure (B) Work (C) volume (D) None of these
12. The term pH was introduced by:
(A) Henderson (B) Sorenson (C) Goldstein (D) Thomson
13. The relationship between K_p and K_c is given by:
(A) $K_c=K_p$ (B) $K_c=K_p \left[\frac{P}{N} \right]^{\Delta n}$ (C) $K_p=K_c(RT)^{\Delta n}$ (D) $K_p=K_c(RT)^{-\Delta n}$
14. Two solutions of NaCl and KCl are prepared separately by dissolving same amount of the solute in water. Which of the following statements is true for these solutions?
(A) KCl solution will have higher boiling point than NaCl solution
(B) Both the solutions have different boiling points
(C) KCl and NaCl solutions possess same vapour pressure
(D) KCl solution possesses lower freezing point than NaCl solution
15. Electrolysis is used for:
(A) electroplating (B) manufacture of Al
(C) manufacture of sodium metal (D) all of these
16. Nelson's cell and Down's cell are example of:
(A) electrochemical cell (B) galvanic cell (C) electrolytic cell (D) none of these
17. Decomposition of nitrogen penta oxide has order of reaction:
(A) zero (B) first (C) second (D) third

CHEMISTRY

SUBJECTIVE

TIME: 2 HRS 40 MINUTES

MARKS: 68

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

(SECTION -I)

2. Write short answers to any EIGHT (8) questions:

2 × 8 = 16

- Why actual yield is less than theoretical yield?
- Calculate the mass in grams of 2.74 moles of KMnO_4 (Atomic mass of K=39, Mn=55 and O=16)
- N_2 and CO have same number of electrons, protons, and neutrons? Justify.
- What are physical states of matter? Why liquid state of matter is less common than solid and gas states?
- Give two statements of Boyle's law.
- State Joule Thomson effect. Write its application.
- What is discharge tube? Draw its labeled diagram.
- Why the gases are non conductor at low voltage and become conductor at high voltage?
- Give reasons for the production of positive rays.
- Why burning of a candle is a spontaneous process?
- Define enthalpy of atomization. Give an example.
- Differentiate between internal energy change (ΔE) and enthalpy change (ΔH).

3. Write short answers to any EIGHT (8) questions:

2 × 8 = 16

- Define solvent extraction and partition law.
- What is paper chromatography? Name its two types.
- Write down the main characteristics of a solvent selected for crystallization of a compound.
- Name four types of intermolecular forces and define dipole-dipole with one example.
- What are dipole-induced dipole forces?
- Differentiate between crystalline solids and amorphous solids.
- Define molarity and molality. Give their mathematical expression.
- The concentration in terms of molality is independent of temperature but molarity depends upon temperature. Justify it.
- One molal solution of glucose is dilute as compared to one molar solution of glucose. Why?
- What is meant by activation of catalyst? Give two examples?
- Define negative catalyst along with an example.
- Discuss autocatalysis with example.

4. Write short answers to any SIX (6) questions:

2 × 6 = 12

- Bond distance is the comprise distance between the two atoms. Justify it.
- Why the radius of an atom cannot determine precisely?
- How does atomic radius vary in groups and periods?
- Differentiate between reversible and irreversible reactions.
- What are K_c and K_p and how these are related?
- Write two applications of equilibrium constant.
- Explain the difference between electrolytic cell and voltaic cell.
- Differentiate between metallic conduction and electrolytic conduction.
- Explain the difference between ionization and electrolysis.

(SECTION -II)

NOTE: Attempt any THREE Questions. Each carries 08 marks.

3 × 8 = 24

- (a) Define molecular formula with two examples and explain relationship between molecular formula and empirical formula. 4

(b) A gas having a volume of 10dm^3 is enclosed in a vessel at 0°C and the pressure is 2.5 atmospheres. This gas is allowed to expand until the new pressure is 2 atmospheres. What will be the new volume of this gas, if the temperature is maintained at 273K ? 4
- (a) Write down the properties of metallic crystals. 4

(b) Define and explain the term Enthalpy and prove that $\Delta H = q_p$ 4
- (a) What is J.J Thomson's experiment for determining the e/m value of electron? 4

(b) N_2 and H_2 gases combine to give NH_3 gas. The value of K_c in this reaction at 500°C is 6×10^{-2} Calculate the value of K_p for this reaction. 4
- (a) Define ionization energy? Give factors upon which it depends. Also give its variation in periodic table. 4

(b) Define oxidation number and state any six rules for assigning of oxidation number. 4
- (a) Differentiate between : i. ideal and non-ideal solution. ii. Hydration and hydrolysis 4

(b) Discuss any four characteristics of catalyst. 4