

Note: There are three sections in this paper i.e. Section A, B & C.

VERSION : C

Time Allowed: 20 Minutes

"Section-A"

Marks: 18

INSTRUCTIONS:

- Attempt this section on the MCOs Answer Sheet only.
- Use black ball point or marker for shading only one circle for correct option of a question.
- No mark will be awarded for cutting, erasing, over writing and multiple circles shading.

Q. 1. Choose the correct option i.e. A,B,C, or D.

- How many moles are in 6.023×10^{23} formula units of MgO ?
 A 0.5 moles B 1.5 moles C 1 mole D 2 moles
- Bohr Model of Hydrogen atom is based on
 A Rutherford model B Dalton's model C Plank's theory D Einstein theory
- Which one of the following will have angular geometry?
 A NH_3 B $SnCl_2$ C $BeCl_2$ D BF_3
- The S.I unit of pressure is
 A atm B psi C Nm^{-2} D All of these
- The attractive forces within a molecule of a liquid are called
 A Intermolecular forces B Hydrogen bonding C Intra molecular forces D Vander waal forces
- Which one is the example of liquid crystals?
 A Benzo cane B Stearin C Hydrazine D All of these
- A cubic crystal has centres of symmetry.
 A One B Two C Three D Six
- The value of K_c is independent of the
 A Temperature B Initial concentration C Pressure D None of these
- 10^{-3} moles of HNO_3 is dissolved/litre, its pH is
 A -3 B 5 C 3 D 1
- No work is done at constant
 A Pressure B Volume C Temperature D Mass
- The fuel used in fuel cell can be
 A Gas B Liquid C Solid D All of these
- ΔH is positive when heat is
 A Absorbed B Released C Removed D Equal to temperature
- Which one is not Electromagnetic?
 A IR rays B Uv rays C γ - rays D Cathode rays
- The efficiency of chemical reaction can be determined from
 A Actual yield B Theoretical yield C Percentage yield D Quantum yield
- Weak acid and its salt with a strong base will have P^H
 A More than 7 B Less than 7 C Neutral D More than 14
- The enzyme used to convert starch into sugar during enzyme catalysis is
 A Zymase B Invertase C Ptyalin D Pepsin
- The stability of colloidal system depends on
 A Charge B Solvation C Brownian motion D All of these
- Endothermic reactions are favored in forward direction by
 A Cooling B Freezing C Heating D Adding catalyst

"Section-B"

Marks: 40

Q. 2. Write short answers of any Ten (10) of the following parts. Each part carries equal marks.

- (i) Justify the statement "Total heat provided to a system at constant volume is used to change internal energy of the system."
- (ii) Calculate the cell potential for the following two half cells.

(a) $\frac{\text{Pb}^{+2}}{\text{Pb}} \quad E^\circ_{\text{red}} = -0.13 \text{ V}$	(b) $\frac{\text{Cl}_2}{\text{Cl}^-} \quad E^\circ_{\text{red}} = +1.36 \text{ V}$
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- (iii) Calculate the percentage composition of each element in H_2SO_4 .
- (iv) How will you differentiate between a continuous and a line spectrum?
- (v) Why MOT is more important than VBT?
- (vi) Prove that: $PV = nRT$
- (vii) HF is liquid at ordinary temperature while HCl is a gas. Why?
- (viii) What is the difference between isomorphism and polymorphism?
- (ix) The ionization of NaCl is suppressed by passing HCl gas over it. Why?
- (x) Why a solution of FeSO_4 is acidic?
- (xi) Why evaporation of a liquid causes cooling?
- (xii) Determine the relative rates of diffusion of H_2 and CO_2 at same conditions of temperature and pressure.
- (xiii) Write four uses of X-rays.

"Section-C"

Marks: 27

Note: Answer any Three (3) questions. Each question carries equal marks.

- Q. 3. (a) Define absolute temperature. How it can be represented graphically? Why it is not attainable?
 (b) 800 cm^3 of a gas at 400 torr pressure and 60°C was heated up to 832 K. what is final volume of the gas?
- Q. 4. (a) Prove that: $K_p = K_c = K_x$
 (b) Calculate K_c for synthesis of ammonia at 500°C where $K_p = 1.44 \times 10^{-5}$.
- Q. 5. (a) Enlist the postulates of collision theory for chemical reaction.
 (b) Define Molarity? When 4.5 g of glucose dissolved in 100 g of water, calculate its molality.
 Molecular mass of glucose = 180 g. mol^{-1} .
- Q. 6 (a) What is enthalpy of a system? Prove that $\Delta H = q_p$
 (b) Liquid Ethanol when burnt in oxygen at 25°C shows $\Delta H = -1402.14 \text{ kJ/mol}^{-1}$. The heats of formation of CO_2 and H_2O are -393.50 and $-285.81 \text{ kJ/mol}^{-1}$ respectively at the same temperature. Calculate the heat of formation of Ethanol at 25°C .