

CHEMISTRY MODEL PAPER CLASS-11

NOTE: Attempt all questions of section A by filling the corresponding bubble on the MCQs RESPONSE SHEET. It is mandatory to return the attempted MCQs sheet to the Superintendent within time.

Section A

Time: 20 minutes

Marks:18

- For a reaction $CO_{(g)} + Cl_{2(g)} \rightleftharpoons COCl_{2(g)}$, $\frac{K_p}{K_c}$ is equal to:
(a) $\frac{1}{RT}$ (b) 1.0 (c) \sqrt{RT} (d) RT
- Spectral line of Lyman Series lies in:
(a) ultra violet region (b) visible region (c) near IR (d) far IR
- How many moles of Aluminum oxide is formed when 6 moles of oxygen is used?
 $Al + O_2 \longrightarrow Al_2O_3$
(a) 4 mol (b) 6mol (c) 8 mol (d) 10 mol
- Which of the following series shows correct bond angle order?
(a) $NH_3 > BF_3 > C_2H_6$ (b) $BF_3 > NH_3 > C_2H_6$ (c) $NH_3 > C_2H_6 > BF_3$ (d) $BF_3 > C_2H_6 > NH_3$
- What is the ratio between Sigma and pi bonds in acetylene molecule?
(a) 1:4 (b) 4:1 (c) 3:2 (d) 2:3
- Which property of liquid crystals resemble with solids?
(a) expansion (b) optical (c) density (d) hardness
- What will be the change in temperature of a gas if its volume increases four times from its initial volume at $0^\circ C$?
(a) $819^\circ C$ (b) 819K (c) $1092^\circ C$ (d) 1192K
- Conversion of gas into solid is called
(a) sublimation (b) condensation (c) deposition (d) solidification
- The most unsymmetrical crystal system is called:
(a) triclinic (b) cubic (c) tetragonal (d) rhombic
- Solution contains 36g of water and 2 mole of methanol, mole fraction of H_2O will be:
(a) 0.5 (b) 0.4 (c) 0.3 (d) 0.1
- In which of the following compound nitrogen exhibit -1 oxidation state?
(a) N_2O (b) NO_2^- (c) NH_2OH (d) N_2O_4
- When ideal gas expands from $15dm^3$ to $20dm^3$ against standard external pressure, the work done will be:
(a) $10 \text{ atm } dm^3$ (b) $-10 \text{ atm } dm^3$ (c) $5 \text{ atm } dm^3$ (d) $-5 \text{ atm } dm^3$
- Which of the following is not the example of giant covalent structure?
(a) diamond (b) solid carbon dioxide (c) graphite (d) silicon dioxide
- pH of 0.001 M H_2SO_4 is:
(a) 3.0 (b) 2.69 (c) 2.9 (d) 1
- For a reaction; $2A + B \rightleftharpoons 3C + D$ by doubling the concentration of C, the value of equilibrium constant (K_c) would be:
(a) double (b) half (c) increase by 2 (d) not change
- Reverse of salt hydrolysis is known as:
(a) Combustion (b) neutralization (c) fusion (d) dissociation
- Which of the following element cannot oxidize by hydrogen in galvanic cell?
(a) Al (b) Mn (c) Ag (d) Zn
- If a reaction rate is represented as $\text{rate} = k[A]^{-2}[B]$, the reaction's order will be:
(a) 3 (b) -3 (c) 2 (d) -1

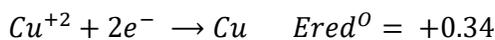
Time: 2 Hour 40 Minutes

Section B

Marks: 40

Attempt any ten of the following short questions. Each question carries four marks?

- i. Calculate the number of molecule in 8cm³ of CO₂?(C=12, O=16)
- ii. Which one is limiting reagent if 24g of carbon reacts with 32g of oxygen to form CO₂?
$$C + O_2 \rightarrow CO_2$$
- iii. Determine the wave number of photon emitted when electron jumps from 5th to 2nd shell in hydrogen atom?
- iv. Why in hetero- nuclear molecules, the bond length deviates from calculated sum of covalent radii? Justify with the help of an example
- v. Derive ideal gas equation for 3 mol of an ideal gas?
- vi. A buffer solution is made of CH₃COOH and CH₃COONa, what happens to this solution by the addition of strong acid and strong base?
- vii. What is the role of hydrogen bonding in strength of acid and solubility of substances in water?
- viii. 5g of NaOH dissolved in water to form 100g of solution calculate molality.
- ix. Write properties of liquid crystals.
- x. Differentiate between rate of reaction and rate constant?
- xi. Why hydrogen show positive deviation while carbon dioxide shows negative than positive deviation from ideal behavior.
- xii. Define Hess's law. Calculate ΔH sublimation for the given reactions.
$$H_2(g) + I_2(s) \rightarrow 2 HI(g) \quad \Delta H = 51.8KJ/mol$$
$$H_2(g) + I_2(g) \rightarrow 2 HI(g) \quad \Delta H = -10.5KJ/mol$$
- xiii. Calculate cell voltage for the following reaction.



SECTION C

Marks: 27

Attempt any three of the following questions. each question carries 9 marks.

2. i. Calculate radius of 3rd and 6th orbit of hydrogen atom? (4 marks)
- ii. Complete the following table.

Total number of electron pair present	Types of electron pairs	Name of molecular shape	Example
2	?	Linear	BeCl ₂
3	2 bond pair 1 lone pair	?	?
4	3 bond pair 1 lone pair	?	NH ₃
4	?	angular	H ₂ O

(5 marks)

3. i. 5.6 g of solid CO₂ is put in an empty sealed 4.00L container at a temperature of 300K. When all the solid CO₂ becomes gas, what will be pressure in this container? (4 marks)

ii. Define unit cell? Write four factors that affect the shape of ionic crystal? (5marks)

4. i. When 50cm³ of 1 molar HCl is added into 1 molar of NaOH the temperature raised from 21.0 to 27.5 °C. determine enthalpy of neutralization. (Specific heat capacity of H₂O IS 4Jg⁻¹k⁻¹) (4 marks)

ii. Define ionic product and solubility product constant? What information we got from ionic and solubility product constant? (5 marks)

5. i. What do you know about freezing point depression? Justify your answer with the help of graph? (5marks)

ii. Balance following equation by half -cell reaction method? (4 marks)

