

CLASS 12 CHEMISTRY

ANSWER KEY

(SET-1)

Section A (1×16 = 16 Marks)

Q1. (b) NaCl

Q2. (a) But-2-enal

Q3. (a) $S \text{ cm}^2 \text{ mol}^{-1}$

Q4. (b) $K_4[Fe(CN)_6]$

Q5. (c) 10°C

Q6. (c) PHBV

Q7. (b) Water soluble

Q8. (c) sp^3d^2

Q9. (b) Cu^{2+}

Q10. (a) Isomers

Q11. (b) OH^-

Q12. (b) 2

Assertion–Reason

13. ✓ Both A and R are true and R is correct explanation.

14. ✓ A is true but R is false. (Oxidation occurs at anode)

15. ✓ Both A and R are true and R is correct explanation.

16. ✓ Both A and R are true and R is correct explanation.

Section B (2 Marks Each)

Q17. Molality

Definition:

Molality (m) is defined as the number of moles of solute dissolved in 1 kg (1000 g) of solvent.

$$m = \frac{\text{Moles of solute}}{\text{Mass of solvent in kg}}$$

Unit: mol kg⁻¹

Q18. Order of Reaction

Definition:

The sum of powers of concentration terms in the rate law expression is called order of reaction.

Example:

$$\text{Rate} = k[A]^2$$

Order = 2

Q19. Difference between Adsorption and Absorption

Adsorption

Surface phenomenon

Concentration higher at surface

Example: Gas on charcoal

Absorption

Bulk phenomenon

Uniform throughout

Example: NH₃ in water

Q20. Uses of Coordination Compounds

1. In medicine (e.g., Cisplatin in cancer treatment)
 2. In analytical chemistry (EDTA titration)
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Q21. Structure of Benzene

Benzene (C₆H₆) is a planar cyclic molecule having:

- Six carbon atoms
- Alternating double bonds
- Resonance structure

(Exam में षट्कोण बनाकर alternating double bond दिखाएँ)

Section C (3 Marks Each)

Q22. Raoult's Law

Statement:

The vapour pressure of a solution is directly proportional to mole fraction of solvent.

$$P = P^0 X_A$$

Where:

P = Vapour pressure of solution

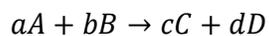
P⁰ = Vapour pressure of pure solvent

X_A = Mole fraction

Example: Sugar dissolved in water.

Q23. Derivation of Nernst Equation

For reaction:



$$E = E^0 - \frac{RT}{nF} \ln Q$$

At 298K:

$$E = E^0 - \frac{0.0591}{n} \log Q$$

Where:

E° = Standard EMF

n = Electrons transferred

Q24. SN1 Reaction

Definition:

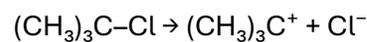
Unimolecular nucleophilic substitution reaction.

Mechanism:

Step 1: Formation of carbocation

Step 2: Attack of nucleophile

Example:



Rate depends only on substrate concentration.

Q25. Enzymes

Definition:

Enzymes are biological catalysts made of proteins.

Properties:

1. Highly specific
 2. Work at optimum temperature
 3. Reusable
 4. High efficiency
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Q26. Freundlich Adsorption Isotherm

$$\frac{x}{m} = kP^{1/n}$$

Taking log:

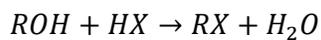
$$\log \frac{x}{m} = \log k + \frac{1}{n} \log P$$

Graph between $\log(x/m)$ vs $\log P$ is straight line.

Q27. Preparation & Properties of Haloalkanes

Preparation:

From alcohol:



Properties:

- Undergo nucleophilic substitution
 - Show elimination reaction
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Q28. Polymerisation

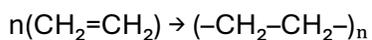
Definition:

Process of formation of polymer from monomers.

Addition Polymerisation:

Monomers combine without elimination of small molecule.

Example:



Section D (Case Study)

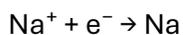
Q29. Electrolysis of Molten NaCl

(i) Cathode \rightarrow Sodium (Na)

(ii) Anode \rightarrow Chlorine gas (Cl_2)

(iii) Half reactions:

Cathode:



Anode:



(iv) Graphite used because it is inert and good conductor.

Q30. Glucose Structure

- (i) Due to cyclic hemiacetal form.
 - (ii) Cyclic structure formed by intramolecular reaction.
 - (iii) Mutarotation: Change in optical rotation.
 - (iv) Yes, glucose is reducing sugar.
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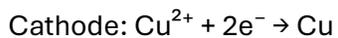
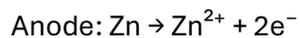
Section E (5 Marks Each)

Q31. Electrochemical Cell

Definition:

Device converting chemical energy into electrical energy.

Example: Daniell Cell

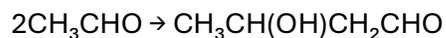


(Exam में neat labelled diagram बनाना आवश्यक)

Q32. Aldol Condensation

Reaction of aldehyde with α -hydrogen in presence of base.

Example:



Mechanism:

1. Formation of enolate ion
 2. Nucleophilic attack
 3. Dehydration
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Q33. Crystal Field Theory (Octahedral Complex)

In octahedral field:

d orbitals split into:

- t_{2g} (lower energy)
- e_g (higher energy)

Splitting energy = Δ_o

Strong field ligand \rightarrow Low spin

Weak field ligand \rightarrow High spin