

**CLASS 12 – CHEMISTRY**  
**ANSWER KEY**  
**(SET-10)**

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**Section A (1×16 = 16 Marks)**

- Q1. (a) Osmotic pressure
- Q2. (b) Straight line with negative slope
- Q3. (c)  $\text{NO}_2^-$
- Q4. (c) Teflon
- Q5. (b) Formaldehyde
- Q6. (b) +5
- Q7. (d) Vitamin D
- Q8. (c)  $\text{sp}^3\text{d}^2$
- Q9. (b) Positive
- Q10. (c) Acetaldehyde
- Q11. (b) Independent of concentration
- Q12. (b) Gold sol
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**Assertion–Reason**

13. ✓ Both A and R are true and R is correct explanation.
14. ✓ Both A and R are true and R is correct explanation.
15. ✓ Both A and R are true and R is correct explanation.
16. ✓ Both A and R are true and R is correct explanation.
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**Section B (2 Marks Each)**

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**Q17. Mole Fraction**

Mole fraction is ratio of moles of one component to total moles in solution.

$$X_A = \frac{n_A}{n_A + n_B}$$

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**Q18. Nernst Equation**

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

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**Q19. Chelating Ligand**

Multidentate ligand forming ring structure with metal.

Example: EDTA

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**Q20. SN1 vs SN2****SN1**

Two-step

Carbocation formed

Rate depends on substrate

**SN2**

One-step

No carbocation

Rate depends on both

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**Q21. Carbohydrates**

Polyhydroxy aldehydes or ketones.

Examples:

1. Glucose

2. Fructose

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**Section C (3 Marks Each)**

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### Q22. Raoult's Law

$$P = P^0 X_A$$

Limitations:

1. Applicable to ideal solutions
  2. Fails for strong interactions
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### Q23. Zero Order Reaction

$$[A] = [A]_0 - kt$$

Half-life:

$$t_{1/2} = \frac{[A]_0}{2k}$$

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### Q24. Valence Bond Theory (Octahedral)

Metal undergoes  $sp^3d^2$  hybridisation.

Six hybrid orbitals formed.

Ligands donate electron pairs.

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### Q25. Hoffmann Bromamide Reaction



### Q26. Biodegradable Polymers

Decomposed by microorganisms.

Advantages:

1. Reduce pollution
  2. Environment friendly
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### Q27. Tyndall Effect & Brownian Movement

Tyndall: Scattering of light.

Brownian: Random movement of particles.

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### Q28. Preparation & Properties of Alcohols

#### Preparation:

Hydrolysis of alkyl halide.

#### Properties:

1. Oxidation
  2. Dehydration
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## Section D (Case Study)

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### Q29. Electrochemistry

$$E^\circ(\text{Zn}^{2+}/\text{Zn}) = -0.76 \text{ V}$$

$$E^\circ(\text{Ag}^+/\text{Ag}) = +0.80 \text{ V}$$

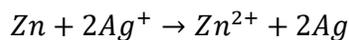
(i) Anode: Zn

Cathode: Ag

(ii)

$$E^\circ_{\text{cell}} = 0.80 - (-0.76) = 1.56 \text{ V}$$

(iii)



(iv) Standard EMF: Potential difference under standard conditions.

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### Q30. Proteins

(i) Primary structure: Sequence of amino acids.

(ii) Peptide bond:  $-\text{CO}-\text{NH}-$

(iii) Denaturation: Loss of native structure due to heat/chemicals.

(iv) Example: Hemoglobin

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## Section E (5 Marks Each)

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### Q31. Kohlrausch's Law

$$\Lambda_m^0 = \lambda_+^0 + \lambda_-^0$$

Applications:

1. Degree of dissociation
  2. Solubility of sparingly soluble salts
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### Q32. Aldol Condensation

Two aldehydes with  $\alpha$ -H react in base.

Mechanism:

1. Enolate formation
  2. Nucleophilic attack
  3. Dehydration
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### Q33. Crystal Field Theory (Octahedral)

d orbitals split into:

- $t_{2g}$
- $e_g$

Energy gap =  $\Delta_0$

Strong field  $\rightarrow$  Low spin

Weak field  $\rightarrow$  High spin