

**CLASS 12 – CHEMISTRY**  
**ANSWER KEY**  
**(SET-6)**

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**Section A (1×16 = 16 Marks)**

Q1. (b) Osmotic pressure

Q2. (b)  $\text{L mol}^{-1} \text{s}^{-1}$

Q3. (b)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$

Q4. (b) PHBV

Q5. (b) Aldehyde

Q6. (b) +6

Q7. (d) Vitamin D

Q8. (c)  $\text{sp}^3\text{d}^3$

Q9. (b) Cathode

Q10. (b) Benzaldehyde

Q11. (a)  $0.693/k$

Q12. (b) Whipped cream

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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. van't Hoff Factor

#### Definition:

It is the ratio of actual number of particles in solution to expected number.

$$i = \frac{\text{Observed molar mass}}{\text{Normal molar mass}}$$

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### Q18. Faraday's Second Law

When same quantity of electricity is passed through different electrolytes, masses deposited are proportional to their equivalent weights.

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### Q19. Ligand

Atom or molecule that donates lone pair to central metal atom.

Example:  $\text{NH}_3$

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### Q20. Difference between Aldehydes and Ketones

Aldehydes	Ketones
-CHO group	-CO- group
Easily oxidised	Not easily oxidised
Give Tollen's test	Do not give

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### Q21. Enzymes

Biological catalysts made of proteins that speed up biochemical reactions.

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## Section C (3 Marks Each)

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### Q22. Abnormal Molar Mass

Occurs due to association or dissociation.

Association → Higher molar mass

Dissociation → Lower molar mass

Corrected by van't Hoff factor.

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### Q23. Second Order Rate Equation

For  $2A \rightarrow \text{Products}$ :

$$\frac{1}{[A]} = \frac{1}{[A]_0} + kt$$

Half-life:

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

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### Q24. Crystal Field Theory (Octahedral)

d orbitals split into:

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

Energy gap =  $\Delta_0$

Strong field → Low spin

Weak field → High spin

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### Q25. Hoffmann Bromamide Reaction



Produces primary amine with one carbon less.

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### Q26. Synthetic Detergents

Synthetic cleaning agents effective in hard water.

Advantages:

1. Work in hard water
  2. More effective cleansing
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### Q27. Freundlich Adsorption Isotherm

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

Taking log:

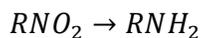
$$\log \frac{x}{m} = \log k + \frac{1}{n} \log P$$

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### Q28. Preparation & Properties of Amines

#### Preparation:

Reduction of nitro compound:



#### Properties:

1. Basic nature
  2. Diazotisation (aromatic amines)
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## Section D (Case Study)

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### Q29. Electrochemistry

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

$$E^\circ(\text{Cu}^{2+}/\text{Cu}) = +0.34 \text{ V}$$

(i) Anode: Zn

(ii) Cathode: Cu

(iii)  $E^\circ_{\text{cell}}$ :

$$E^\circ_{\text{cell}} = E^\circ_{\text{cathode}} - E^\circ_{\text{anode}}$$

$$= 0.34 - (-0.76) = 1.10V$$

(iv) Yes, reaction is spontaneous (positive EMF).

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### **Q30. Proteins**

(i) Peptide bond

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

(iii) Types:

1. Fibrous
2. Globular

(iv) Denaturation: Loss of secondary & tertiary structure due to heat or chemicals.

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## **Section E (5 Marks Each)**

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### **Q31. Electrochemical Series**

Arrangement of elements according to standard reduction potential.

Applications:

1. Predict spontaneity
  2. Compare oxidising power
  3. Calculate EMF
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### **Q32. Aldol Condensation**

Reaction of aldehyde with  $\alpha$ -H in presence of base.

Mechanism:

1. Enolate formation
  2. Nucleophilic attack
  3. Dehydration
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**Q33. Classification of Polymers**

1. Addition polymers – Polythene
2. Condensation polymers – Nylon
3. Thermoplastics – PVC
4. Thermosetting – Bakelite