CLASS 12 – CHEMISTRY

ANSWER KEY

(SET–9)

Section A (1×16 = 16 Marks)

Q1. (b) Acetone + Chloroform

Q2. (b) –Ea/2.303R

Q3. (b) [Pt(NH$_3$)$_2$Cl$_2$]

Q4. (c) Nylon-6,6

Q5. (c) Methanol

Q6. (b) +5

Q7. (d) Vitamin K

Q8. (b) sp^{3}d

Q9. (b) Anode to cathode

Q10. (b) Benzaldehyde

Q11. (c) Inversely proportional to initial concentration

Q12. (b) Jelly

Assertion–Reason

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

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

16. ✓ A is true but R is false.
    (Temperature increases rate by increasing kinetic energy, not by decreasing activation energy.)

Section B (2 Marks Each)

Q17. Abnormal Molar Mass

When observed molar mass differs from calculated value due to association or dissociation.

Q18. Arrhenius Equation

$$k = Ae^{-E_a/RT}$$

Q19. Chelation

Formation of cyclic complex by multidentate ligand.

Example:
$[Cu(en)_2]^{2+}$

Q20. Aldehydes vs Carboxylic Acids

Aldehydes	Carboxylic Acids
–CHO group	–COOH group
Less acidic	More acidic
Oxidised to acids	Do not oxidise easily

Q21. Nucleic Acids

Biomolecules that store genetic information.

Types:

1. DNA
2. RNA

Section C (3 Marks Each)

Q22. Depression in Freezing Point

$$\Delta T_f = K_f m$$

Derived from:

$$\frac{P^0 - P}{P^0} = X_B$$

Q23. First Order Rate Equation

$$k = \frac{2.303}{t} \log \frac{[A]_0}{[A]}$$

Q24. Crystal Field Splitting (Octahedral)

d orbitals split into:

- t_2g
- e_g

Energy gap = Δ_0

Q25. Aldol Condensation

Two molecules of aldehyde with α-H react in presence of base.

Mechanism:

1. Enolate formation
2. Nucleophilic attack
3. Dehydration

Q26. Synthetic Polymers

Man-made polymers.

Classification:

1. Addition

2. Condensation

3. Thermoplastics

4. Thermosetting

Q27. Coagulation

Process of precipitation of colloid by addition of electrolyte.

Based on Hardy-Schulze rule.

Q28. Preparation & Properties of Haloalkanes

Preparation:

From alcohol:

$$ROH + HX \rightarrow RX$$

Properties:

1. Nucleophilic substitution

2. Elimination

Section D (Case Study)

Q29. Electrochemical Cell

$E°(Cu^{2+}/Cu)$ = +0.34 V
$E°(Ag^+/Ag)$ = +0.80 V

(i) Anode: Cu

(ii)

$$E°cell = 0.80 - 0.34 = 0.46V$$

(iii)

$$Cu + 2Ag^+ \rightarrow Cu^{2+} + 2Ag$$
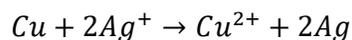
(iv) EMF: Potential difference between two electrodes.

Q30. Amino Acids

(i) Zwitter ion: Molecule with both positive and negative charges.

(ii) Isoelectric point: pH where net charge is zero.

(iii) Peptide bond

(iv) Example: Lysine

Section E (5 Marks Each)

Q31. Nernst Equation

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

Applications:

1. Calculate EMF

2. Predict spontaneity

Q32. Reimer–Tiemann Reaction

Phenol + $CHCl_3$ + NaOH → Salicylaldehyde

Introduces –CHO at ortho position.

Q33. Isomerism in Coordination Compounds

1. Structural

2. Stereoisomerism (Geometrical & Optical)