

**CLASS 12 – CHEMISTRY**  
**MODEL QUESTION PAPER**  
**(SET-8)**

**Time: 3 Hours**

**Maximum Marks: 70**

---

**General Instructions:**

1. All questions are compulsory.
  2. Use of calculator is not permitted.
  3. Draw neat and labelled diagrams wherever required.
  4. Internal choices are given wherever applicable.
- 

**Section A (1×16 = 16 Marks)**

(12 MCQs + 4 Assertion–Reason)

**Q1–Q12 MCQs**

1. Which colligative property is most suitable for determining molar mass of proteins?  
(a) Elevation in boiling point  
(b) Depression in freezing point  
(c) Osmotic pressure  
(d) Vapour pressure
2. For zero order reaction, half-life is:  
(a) Independent of initial concentration  
(b) Directly proportional to initial concentration  
(c) Inversely proportional to concentration  
(d) Constant
3. Which of the following is a strong field ligand?  
(a)  $\text{Cl}^-$   
(b)  $\text{H}_2\text{O}$

- (c)  $\text{CN}^-$
  - (d)  $\text{F}^-$
4. Which polymer is formed by addition polymerisation?
- (a) Dacron
  - (b) Nylon-6,6
  - (c) Polystyrene
  - (d) Bakelite
5. Which compound gives positive Tollen's test?
- (a) Propanone
  - (b) Acetaldehyde
  - (c) Ether
  - (d) Toluene
6. Oxidation state of Mn in  $\text{MnO}_2$  is:
- (a) +2
  - (b) +4
  - (c) +6
  - (d) +7
7. Which vitamin is also known as ascorbic acid?
- (a) A
  - (b) B
  - (c) C
  - (d) D
8. Geometry of  $\text{XeF}_4$  is:
- (a) Tetrahedral
  - (b) Square planar
  - (c) Trigonal bipyramidal
  - (d) Octahedral
9. In Daniell cell, oxidation occurs at:
- (a) Cu electrode
  - (b) Zn electrode
  - (c) Salt bridge
  - (d) Cathode
10. Which compound does not undergo Aldol condensation?
- (a) Acetaldehyde
  - (b) Benzaldehyde
  - (c) Propanal
  - (d) Butanone

11. Unit of molar conductivity is:

- (a)  $\text{S cm}^{-1}$
- (b)  $\text{S cm}^2 \text{ mol}^{-1}$
- (c) Ohm cm
- (d) Volt

12. Which is example of aerosol?

- (a) Jelly
- (b) Smoke
- (c) Milk
- (d) Paint

---

### Assertion–Reason (Q13–Q16)

13. A: Osmotic pressure is directly proportional to temperature.

R:  $\pi = CRT$ .

14. A: Transition metals show variable oxidation states.

R: Due to small energy difference between ns and (n-1)d orbitals.

15. A: Carboxylic acids are stronger acids than phenols.

R: Carboxylate ion is stabilised by resonance.

16. A: Increasing temperature increases rate constant.

R: Fraction of molecules with higher energy increases.

---

### Section B (2×5 = 10 Marks)

17. Define Raoult's law.

18. What is order of reaction?

19. Define ligand and give one example of bidentate ligand.

20. Write two differences between primary and tertiary amines.

21. What are hormones? Give two examples.

---

### Section C (3×7 = 21 Marks)

22. Explain boiling point elevation with derivation of formula.

23. Derive integrated rate equation for first order reaction.

24. Explain Valence Bond Theory of coordination compounds.
  25. Describe Hoffmann bromamide degradation reaction.
  26. What are biodegradable polymers? Give examples.
  27. Explain Tyndall effect.
  28. Write preparation and chemical properties of aldehydes.
- 

### **Section D (Case Study Based) (4×2 = 8 Marks)**

#### **29. Case Study: Electrochemistry**

Given:

$$E^\circ(\text{Fe}^{3+}/\text{Fe}^{2+}) = +0.77 \text{ V}$$

$$E^\circ(\text{Sn}^{4+}/\text{Sn}^{2+}) = +0.15 \text{ V}$$

- (i) Which species will act as oxidising agent?
  - (ii) Calculate  $E^\circ_{\text{cell}}$ .
  - (iii) Is reaction spontaneous?
  - (iv) Define standard electrode potential.
- 

#### **30. Case Study: Proteins**

Proteins show primary, secondary and tertiary structures.

- (i) What is primary structure?
  - (ii) What type of bonds stabilise secondary structure?
  - (iii) Define denaturation.
  - (iv) Give one example of fibrous protein.
- 

### **Section E (Long question ) (5×3 = 15 Marks)**

31. Explain electrochemical cell with labelled diagram.
  32. Describe Cross Aldol condensation with mechanism.
  33. Explain classification of drugs with suitable examples.
-