

CLASS 12 – CHEMISTRY
MODEL QUESTION PAPER
(SET-2)

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 in some questions.
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Section A (1×16 = 16 Marks)

(12 MCQs + 4 Assertion–Reason)

Q1–Q12 MCQs

1. Colligative properties depend upon:
 - (a) Nature of solute
 - (b) Number of solute particles
 - (c) Volume of solution
 - (d) Chemical properties
2. The unit of rate constant for first order reaction is:
 - (a) $\text{mol L}^{-1} \text{s}^{-1}$
 - (b) s^{-1}
 - (c) $\text{L mol}^{-1} \text{s}^{-1}$
 - (d) $\text{mol}^{-1} \text{L s}^{-1}$
3. Which complex shows optical isomerism?
 - (a) $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - (b) $[\text{Co}(\text{en})_3]^{3+}$

- (c) $[\text{NiCl}_4]^{2-}$
(d) $[\text{PtCl}_4]^{2-}$
4. Which is an example of addition polymer?
(a) Nylon-6,6
(b) Bakelite
(c) Polythene
(d) Dacron
5. Which of the following is strongest acid?
(a) Phenol
(b) Ethanol
(c) Acetic acid
(d) Methanol
6. Oxidation number of Cr in $\text{K}_2\text{Cr}_2\text{O}_7$ is:
(a) +3
(b) +6
(c) +4
(d) +7
7. Which vitamin is fat soluble?
(a) Vitamin C
(b) Vitamin B₁
(c) Vitamin A
(d) Vitamin B₁₂
8. Shape of NH_3 molecule is:
(a) Linear
(b) Tetrahedral
(c) Trigonal planar
(d) Trigonal pyramidal
9. Which electrode acts as cathode in Daniell cell?
(a) Zn
(b) Cu
(c) Salt bridge
(d) SO_4^{2-}
10. Which is a secondary amine?
(a) CH_3NH_2
(b) $(\text{CH}_3)_2\text{NH}$
(c) $(\text{CH}_3)_3\text{N}$
(d) NH_3

11. Half life of first order reaction is:
(a) Depends on concentration
(b) Independent of concentration
(c) Zero
(d) Infinite
12. Which colloid is lyophilic?
(a) Gold sol
(b) Sulphur sol
(c) Starch solution
(d) Arsenic sulphide
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Assertion–Reason (Q13–Q16)

13. A: Freezing point of solution decreases on adding solute.
R: Vapour pressure of solution decreases.
14. A: Transition elements form coloured compounds.
R: Due to d–d transition.
15. A: Aldehydes are more reactive than ketones.
R: Ketones have two alkyl groups.
16. A: Rate constant increases with temperature.
R: Activation energy decreases with increase in temperature.
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Section B (2×5 = 10 Marks)

(Very Short Answer Type)

17. Define molar conductivity.
18. Write Arrhenius equation.
19. State two differences between SN1 and SN2 reactions.
20. What is coordination number? Give example.
21. Write two differences between glucose and fructose.
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Section C (3×7 = 21 Marks)

(Short Answer Type)

22. Explain elevation in boiling point with formula.
 23. Derive integrated rate equation for first order reaction.
 24. Explain crystal field splitting in octahedral complex.
 25. Describe Kolbe's electrolysis.
 26. What are detergents? Write types and advantages.
 27. Explain adsorption and factors affecting it.
 28. Write preparation and properties of alcohols.
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Section D (Case Study Based) (4×2 = 8 Marks)

29. Case Study: Electrochemical Cell

A galvanic cell consists of Zn/Zn²⁺ and Cu/Cu²⁺ electrodes.

- (i) Write cell notation.
 - (ii) Write anode reaction.
 - (iii) Write cathode reaction.
 - (iv) Define EMF of cell.
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30. Case Study: Amines

Aniline reacts with nitrous acid at low temperature.

- (i) Name the product formed.
 - (ii) Write reaction equation.
 - (iii) What is diazotisation?
 - (iv) Write one use of diazonium salt.
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Section E (Long Answer Type) (5×3 = 15 Marks)

31. Explain Nernst equation and its applications.
 32. Describe Aldol condensation with mechanism.
 33. Explain types of isomerism in coordination compounds.
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