Class 12 Chemistry Most Important Questions 2026–27 – Chapter-Wise

Class 12 Chemistry | Subject Code: 043 | Annual Examination Preparation

Chapter 1: Solutions High-priority chapter

Very Short Answer Questions (1 Mark)

1. Define molarity and molality.
2. What is the mole fraction of a component in a solution?
3. State Henry's law.
4. What is an ideal solution?
5. Define osmotic pressure.

Short Answer Questions (2–3 Marks)

6. Differentiate between molarity and molality.
7. State and explain Raoult's law for a solution containing volatile components.
8. Why does the vapour pressure of a solution decrease when a non-volatile solute is added?
9. Explain positive and negative deviations from Raoult's law with examples.
10. What are azeotropes? Explain minimum and maximum boiling azeotropes.
11. Explain the abnormal molar mass of solutes with the help of van't Hoff factor.

Important Numerical Questions

12. Calculate the molarity of a solution containing 4 g of NaOH dissolved in 500 mL of solution.
13. Calculate the molality of a solution containing 18 g of glucose dissolved in 500 g of water.
14. Calculate the mole fraction of each component in a solution containing 46 g of ethanol and 54 g of water.
15. Calculate the osmotic pressure of a solution containing 2 g of a solute in 500 mL of solution at 300 K. The molar mass of the solute is 60 g mol^{-1}.
16. Calculate the depression in freezing point when 18 g of glucose is dissolved in 1 kg of water. Given Kf=1.86 K kg mol−1K_f=1.86\ K\,kg\,mol^{-1}.

Chapter 2: Electrochemistry High-priority chapter

Very Short Answer Questions (1 Mark)

1. Define electrochemical cell.
2. What is the standard electrode potential?
3. Define conductivity and molar conductivity.
4. What is a salt bridge? State its function.
5. What is the SI unit of conductivity?

Short Answer Questions (2–3 Marks)

6. Differentiate between electrolytic and galvanic cells.
7. Explain the construction and working of a Daniell cell with a diagram.
8. State Kohlrausch's law of independent migration of ions.
9. Explain the variation of molar conductivity with dilution for strong and weak electrolytes.
10. What is the Nernst equation? Write its mathematical expression.

physicsial.in

11. Explain the electrochemical theory of corrosion.
12. Differentiate between primary and secondary batteries with examples.

Important Numerical Questions

13. Calculate the standard EMF of a cell using the following electrode potentials:

ECu2+/Cu∘=+0.34VE^\circ_{\text{Cu}^{2+}/\text{Cu}}=+0.34V

EZn2+/Zn∘=−0.76VE^\circ_{\text{Zn}^{2+}/\text{Zn}}=-0.76V

14. Calculate the EMF of a cell using the Nernst equation under non-standard conditions.
15. Calculate the conductivity of a solution having resistance 50 Ω and cell constant 1.25 cm^{-1}.
16. Calculate the molar conductivity if the conductivity of a 0.01 M electrolyte solution is 0.0015 S cm−10.0015\ S\,cm^{-1}.
17. Calculate the standard Gibbs energy change of a cell reaction using the relation:

ΔG∘=−nFEcell∘\Delta G^\circ=-nFE^\circ_{\text{cell}}

Chapter 3: Chemical Kinetics

Very Short Answer Questions (1 Mark)

1. Define the rate of a chemical reaction.
2. What is the order of a reaction?
3. Define molecularity of a reaction.
4. What is the activation energy?
5. Write the unit of the rate constant for a first-order reaction.

prtutorial.in

Short Answer Questions (2–3 Marks)

6. Differentiate between order and molecularity of a reaction.
7. Explain the factors affecting the rate of a chemical reaction.
8. Derive the integrated rate equation for a first-order reaction.
9. Explain the half-life period of a first-order reaction.
10. What is the Arrhenius equation? Explain the significance of activation energy.
11. Explain collision theory of chemical reactions.
12. Why does the rate of a chemical reaction increase with an increase in temperature?

Important Numerical Questions

13. A first-order reaction has a rate constant of 2.31×10−3 s−12.31\times10^{-3}\ s^{-1}. Calculate its half-life.
14. Calculate the rate constant of a first-order reaction if its half-life is 100 minutes.
15. The rate constant of a reaction doubles when the temperature increases from 300 K to 310 K. Calculate the activation energy using the Arrhenius equation.
16. For a first-order reaction, 75% of the reactant is consumed in 40 minutes. Calculate the rate constant.
17. Calculate the time required for 90% completion of a first-order reaction.

Chapter 4: The d- and f-Block Elements

Very Short Answer Questions (1 Mark)

1. Why are transition elements called d-block elements?
2. What is lanthanoid contraction?
3. Why do transition elements show variable oxidation states?
4. Why are transition metal ions generally coloured?
5. Name one transition metal that exhibits the highest oxidation state in the first transition series.

Short Answer Questions (2–3 Marks)

6. Write the general electronic configuration of d-block elements.
7. Explain why transition elements form complex compounds.
8. Why do transition metals show catalytic properties?
9. Explain the magnetic properties of transition elements.
10. What is lanthanoid contraction? Write its consequences.
11. Differentiate between lanthanoids and actinoids.
12. Why is Zn not considered a transition element?
13. Explain the oxidising properties of potassium dichromate and potassium permanganate.

Important Chemical Reactions

14. Write the ionic equation for the oxidation of Fe^{2+} ions by acidified potassium permanganate.
15. Write the ionic equation for the reaction of potassium dichromate with Fe^{2+} ions in acidic medium.
16. Explain the preparation and oxidising properties of potassium permanganate.
17. Explain the preparation and oxidising properties of potassium dichromate.

prtutorials.in

Chapter 5: Coordination Compounds

Important for theory and numericals

Very Short Answer Questions (1 Mark)

1. Define coordination number.
2. What is a ligand?
3. Define coordination entity.
4. What is a chelating ligand?
5. What is an ambidentate ligand?
6. Define oxidation number of the central metal atom.

Short Answer Questions (2–3 Marks)

7. State Werner's theory of coordination compounds.
8. Differentiate between primary and secondary valencies.
9. Explain the nomenclature rules for coordination compounds.
10. Explain geometrical isomerism with suitable examples.
11. What is linkage isomerism? Give an example.
12. Explain crystal field splitting in octahedral complexes.
13. Differentiate between strong field and weak field ligands.
14. Explain the bonding in coordination compounds using valence bond theory.

15. Why are coordination compounds coloured?

Important Practice Questions

16. Write the IUPAC names of the following:

    (a) [Co(NH3)6]Cl3[Co(NH_3)_6]Cl_3 (b) K4[Fe(CN)6]K_4[Fe(CN)_6]

    (c) [Cr(NH3)4Cl2]Cl[Cr(NH_3)_4Cl_2]Cl (d) [Pt(NH3)2Cl2][Pt(NH_3)_2Cl_2]

17. Write the formulae of the following:

    (a) Tetraamminecopper(II) sulphate (b) Potassium hexacyanidoferrate(III)

    (c) Hexaamminecobalt(III) chloride

18. Explain why [Ni(CN)4]2−[Ni(CN)_4]^{2-} is diamagnetic.
19. Explain why [NiCl4]2−[NiCl_4]^{2-} is paramagnetic.
20. Differentiate between inner orbital and outer orbital complexes.

Chapter 6: Haloalkanes and Haloarenes

Very Short Answer Questions (1 Mark)

1. What are haloalkanes?
2. Define nucleophilic substitution reaction.
3. What is a racemic mixture?
4. What is the Wurtz reaction?
5. Why are haloarenes less reactive than haloalkanes towards nucleophilic substitution?

ptutorial.in

Short Answer Questions (2–3 Marks)

6. Explain the nature of the carbon-halogen bond.
7. Differentiate between SN1 and SN2 reactions.
8. Explain the mechanism of SN1 reaction with an example.
9. Explain the mechanism of SN2 reaction with an example.
10. Why is chlorobenzene less reactive towards nucleophilic substitution reactions?
11. Explain the Finkelstein reaction with an equation.
12. Explain the Swarts reaction with an equation.
13. How will you convert ethanol into chloroethane?
14. Explain the environmental effects of polyhalogen compounds.

Important Chemical Conversions

15. Convert:

    (a) Ethanol into bromoethane. (b) Chlorobenzene into biphenyl.

    (c) Propene into 2-bromopropane. (d) Bromoethane into ethene.

16. Write chemical equations for the following:

    (a) Wurtz reaction. (b) Fittig reaction.

    (c) Wurtz-Fittig reaction. (d) Sandmeyer's reaction.

17. Why does tert-butyl bromide undergo SN1 reaction faster than n-butyl bromide?

Chapter 7: Alcohols, Phenols and Ethers

Very Short Answer Questions (1 Mark)

1. Define alcohols and phenols.
2. What is Lucas reagent?
3. Why is phenol more acidic than ethanol?
4. What is the IUPAC name of anisole?
5. What is denatured alcohol?

Short Answer Questions (2–3 Marks)

6. Explain the classification of alcohols.
7. Differentiate between primary, secondary and tertiary alcohols.
8. Explain the dehydration of ethanol.
9. Why do alcohols have higher boiling points than corresponding hydrocarbons?
10. Explain the acidic nature of phenol.
11. Why is phenol more acidic than alcohol?
12. Explain Kolbe's reaction with a chemical equation.
13. Explain Reimer-Tiemann reaction with a chemical equation.
14. Explain Williamson ether synthesis.
15. How will you distinguish between primary, secondary and tertiary alcohols using Lucas test?

prtutorial.in

Important Chemical Conversions

16. Convert:
    (a) Ethanol into ethene. (b) Phenol into picric acid.
    (c) Phenol into salicylaldehyde. (d) Ethanol into ethanoic acid.
17. Write chemical equations for the following:
    (a) Reaction of phenol with bromine water. (b) Reaction of ethanol with sodium metal.
    (c) Reaction of anisole with HI. (d) Oxidation of primary alcohols.

Chapter 8: Aldehydes, Ketones and Carboxylic Acids

Very important for organic chemistry

Very Short Answer Questions (1 Mark)

1. What is the carbonyl group?
2. Name the functional group present in carboxylic acids.
3. What is Tollens' reagent?
4. What is Fehling's solution?
5. What is the IUPAC name of acetone?
6. What is an aldol condensation reaction?

Short Answer Questions (2–3 Marks)

7. Explain the preparation of aldehydes and ketones from alcohols.
8. Differentiate between aldehydes and ketones.
9. Why are aldehydes more reactive than ketones towards nucleophilic addition reactions?

10. Explain the mechanism of nucleophilic addition reactions.
11. Explain aldol condensation with a suitable chemical equation.
12. Explain Cannizzaro reaction with a suitable example.
13. How will you distinguish between aldehydes and ketones using Tollens' and Fehling's tests?
14. Why do carboxylic acids have higher boiling points than aldehydes and ketones of comparable molecular masses?
15. Why are carboxylic acids more acidic than phenols?
16. Explain the Hell-Volhard-Zelinsky (HVZ) reaction.

Important Chemical Reactions and Conversions

17. Write chemical equations for:
    (a) Rosenmund reduction. (b) Stephen reaction. (c) Etard reaction.
    (d) Clemmensen reduction. (e) Wolff-Kishner reduction. (f) Cannizzaro reaction.
    (g) Aldol condensation.
18. Convert:
    (a) Ethanol into ethanal. (b) Ethanal into ethanoic acid.
    (c) Benzaldehyde into benzyl alcohol. (d) Benzaldehyde into benzoic acid.
    (e) Propanone into propane. (f) Benzoic acid into benzene.
19. Write the chemical equation for the reaction of ethanal with:
    (a) HCN. (b) NH_2OH. (c) 2,4-DNP. (d) Tollens' reagent.

prtutorial.in

Chapter 9: Amines

Very Short Answer Questions (1 Mark)

1. Define amines.
2. What are primary, secondary and tertiary amines?
3. What is diazotisation?
4. What is the Hinsberg reagent?
5. Why is aniline less basic than methylamine?
6. What is the functional group of amines?

Short Answer Questions (2–3 Marks)

7. Explain the classification of amines with examples.
8. Explain the basic nature of amines.
9. Arrange primary, secondary and tertiary amines in order of basic strength in aqueous solution.
10. Why is aniline less basic than ammonia?
11. Explain the carbylamine reaction with an equation.
12. Explain the Hinsberg test for distinguishing primary, secondary and tertiary amines.
13. What is diazotisation? Explain with a chemical equation.
14. Explain the coupling reaction of benzene diazonium chloride.
15. Why are diazonium salts important in the synthesis of aromatic compounds?

Important Chemical Reactions and Conversions

16. Write chemical equations for:
    (a) Gabriel phthalimide synthesis. (b) Hoffmann bromamide degradation reaction.

(c) Carbylamine reaction. (d) Diazotisation reaction.

(e) Coupling reaction.

17. Convert:

(a) Nitrobenzene into aniline. (b) Aniline into benzene diazonium chloride.

(c) Benzene diazonium chloride into chlorobenzene.

(d) Aniline into phenol. (e) Ethanamide into methylamine.

18. How will you distinguish between aniline and ethylamine using chemical tests?

Chapter 10: Biomolecules Important theory chapter

Very Short Answer Questions (1 Mark)

1. What are biomolecules?
2. Define carbohydrates.
3. What are monosaccharides?
4. Give one example of a reducing sugar.
5. What is a peptide bond?
6. Name the vitamin responsible for blood clotting.
7. What are enzymes?
8. What are nucleic acids?

Short Answer Questions (2–3 Marks)

9. Classify carbohydrates with suitable examples.
10. Differentiate between glucose and fructose.
11. Why is sucrose called a non-reducing sugar?
12. Explain the difference between reducing and non-reducing sugars.
13. What is the difference between starch and cellulose?
14. Explain the primary and secondary structures of proteins.
15. What is denaturation of proteins? Give an example.
16. Differentiate between fibrous and globular proteins.
17. What are enzymes? Explain their biological importance.
18. Classify vitamins into fat-soluble and water-soluble vitamins with examples.
19. What are nucleic acids? Differentiate between DNA and RNA.
20. What are hormones? Write their important functions.

Important Long Answer Questions (3–5 Marks)

21. Explain the structure of glucose.
22. Describe the formation of a peptide bond.
23. Explain the classification and functions of proteins.
24. Explain the biological functions of carbohydrates.
25. Differentiate between DNA and RNA on the basis of structure and function.