

Important 3 marks for TN Class 12 chemistry.

Chapter 1: Metallurgy

1. Explain the Zone refining process with an example.
2. List out the observations from the Ellingham diagram.
3. Explain the froth flotation process
4. Write a note on calcination.
5. Explain the electrochemical extraction of aluminium, or Hall-Heroult process.
6. Explain the electrolytic refining.
7. Explain the Van-Arkel method for refining Zirconium/titanium.
8. Write a note on Mond process.

Chapter 2: p-block elements-II

1. Write a short note on the anomalous properties of the first element of the p-block.
2. Describe the structure of diborane.
3. Explain catenation and describe the catenation property of carbon.
4. Explain the McAfee process
5. Write the preparation of Boron trifluoride.
6. Write a note on the allotropes of carbon.
7. Explain the preparation of Carbon monoxide.
8. Write the preparation of Borazole/inorganic benzene.
9. Write a note on Zeolites.

Chapter 3: p-block elements - II

1. Give the uses of Helium.
2. How is ammonia prepared?
3. How is Phosphine prepared by using caustic soda?
4. Explain the oxidising and reducing properties of sulphur.
5. Explain the electrolytic process in the manufacture of chlorine.

Chapter 4: Transition and Inner Transition elements

1. Differentiate between Lanthanides and actinides.
2. Explain Ionisation Enthalpy.
3. List the properties of Interstitial compounds.
4. Explain the preparation of potassium permanganate.

5. Why do d-block elements exhibit variable oxidation states?
6. How is Potassium dichromate prepared from the ore chromite?
7. Which is more stable? Fe^{3+} or Fe^{2+} ?
8. Describe the position of f-block elements in the periodic table.

Chapter 5: Coordination chemistry

1. Identify the a) Central metal atom/ion, b) Ligands, c) Coordination number, d) IUPAC name in $[\text{Pt}(\text{NH}_3)_3(\text{NO}_2)]\text{Cl}$.
2. Draw and explain the figure in an octahedral crystal to show the d-orbital splitting.
3. Define Coordination number. What is the coordination number of atoms in the BCC structure?
4. What is a linkage isomer?
5. Explain ionisation isomerism with an example.
6. Based on VB theory. Explain why $[\text{Cr}(\text{NH}_3)_6]^{3+}$ is paramagnetic, while $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic.
7. Explain optical isomerism with examples.
8. What are the limitations of VB theory?

CHAPTER 6: Solid State

1. Differentiate between crystalline and amorphous solids.
2. Distinguish between tetrahedral and octahedral voids.
3. Write a note on the Frenkel defect.
4. Calculate the packing efficiency in the fcc unit cell.
5. Explain briefly the seven types of unit cells.
6. Define crystal lattice and unit cell.
7. Explain the metal excess defect.
8. Write a note on molecular solids.
9. Describe the AAA type and ABAB type of packing.
10. Explain the Schottky defect.

Chapter 7: Chemical Kinetics

1. Describe a pseudo-first-order reaction with an example.
2. Define half-life reaction and prove that the first-order reaction's half-life is independent of initial concentration.
3. Distinguish between rate and rate constant.
4. Differentiate between the order of a reaction and the molecularity of a reaction.
5. Explain the effect of the presence of a catalyst.

Chapter 8: Ionic Equilibrium.

1. Derive the relationship between PH and POH.
2. Derive Ostwald's dilution law.
3. How does ethane-1,2-diol react with anhydrous ZnCl_2 under pressure?
4. Explain the Lowry-Bronsted theory.
5. Explain the concept of ionisation of weak acids.

Chapter 9: Electrochemistry

1. How will you protect metals from corrosion?
2. Explain conductivity.
3. Explain and derive the Debye-Hückel and Onsager equations.
4. Derive the Nernst equation.
5. Explain the galvanic cell notation with an example.
6. State Kohlrausch's law and explain any one of its applications.
7. State Faraday's laws of electrolysis.
8. Mention the anode, cathode, electrolyte and the uses of the mercury button cell.
9. Write a note on sacrificial protection.
10. Explain the function of a Lithium-ion Battery.

Chapter 10: Surface chemistry

1. Discuss the optical and kinetic properties of colloids.
2. Differentiate between chemical adsorption and physical adsorption.
3. Explain the intermediate compound formation theory of catalysis.
4. Describe the adsorption theory of catalysis.
5. Write notes on Helmholtz's electrical double layer.
6. What are the uses of Brownian movement?
7. Mention the characteristics of a catalyst.
8. Write a note on any two methods of preparation of colloids by condensation methods.
9. Define heterogeneous catalysis.
10. What is the optimum temperature in an enzyme-catalysed reaction?
11. Write a note on electroosmosis.

Chapter 11: Hydroxy compounds and ethers

1. Explain the Riemer-Tiemann reaction.
2. Explain the preparation of alcohols.
3. Write the preparation of picric acid and TNG
4. How will you distinguish $1^\circ, 2^\circ, 3^\circ$ amines?
5. Explain Swern oxidation.
6. What are the colours obtained by $1^\circ, 2^\circ, 3^\circ$ alcohol in the Victor Meyer test?
7. Define the esterification reaction.

8. What is the major product obtained when 2,3 – dimethyl pentan - 3–ol is heated in the presence of H_2SO_4 ?
9. Write the test to differentiate alcohol and Phenol.
10. Explain the Schotten-Baumann reaction.
11. Explain Friedel-Craft's reaction.

Chapter 12: Carbonyl compounds and carboxylic acids.

1. Write the mechanism of aldol condensation.
2. Explain the Rosenmund reduction.
3. Write the test for the carboxylic acid group.
4. Explain the Clemmensen reaction.
5. Explain the Haloform reaction.
6. Explain the Cannizzaro reaction and its mechanism.
7. Write HVZ reaction.
8. Mention the uses of carboxylic acids and their derivatives.

Chapter 13: Organic nitrogen compounds.

1. Explain the reduction of nitromethane in an acid medium.
2. Write the mustard oil reaction.
3. Explain the Sandmeyer reaction.
4. Write the Gomberg reaction
5. Write a short note on the nitrile condensation reaction.

Chapter 14: Biomolecules

1. Discuss the importance of Proteins
2. Draw the structure of fructose and write the test which identifies the presence of carbon 6 atoms.
3. Explain the types of RNA Molecules.
4. How are proteins classified based on their structure?
5. Explain the classification of vitamins.
6. Give the structure of a zwitter ion.
7. Distinguish between hormones and proteins.
8. Explain the structure of maltose and fructose.
9. Explain the mechanism of enzyme reaction
10. Explain the difference between RNA and DNA

Chapter 15: Chemistry in everyday life

1. Write a short note on antioxidants.
2. What are food preservatives? Give two examples

3. Explain the cleansing action of soap.
4. Write a short note on detergents and their types.
5. Explain the preparation of LDPE.
6. How is nylon 6,6 prepared?
7. Explain the preparation of Bakelite.
8. Write the preparation of Neoprene.

