



MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK

STD: 12

5 Marks:

UNIT-1:

1. Explain the principle of electrolytic refining with an example.
2. Explain zone refining process with an example.
3. Explain Van-Arkel method for refining zirconium/titanium
4. Explain Froth Floatation method.
5. Explain Magnetic separation method.

UNIT-2:

1. What is catenation ? describe briefly the catenation property of carbon.
2. Write a note on zeolites.
3. Write a note on Fisher tropsh synthesis.
4. Write a short note on hydroboration.

UNIT-3:

1. Give two equations to illustrate the chemical behaviour of phosphine.
2. i) Give the uses of argon. ii) What is inert pair effect?
3. i) Why fluorine is more reactive than other halogens? ii) Write the reason for the anomalous behaviour of Nitrogen.

UNIT-4:

1. Compare lanthanoids and actinoids.
2. i) Compare the ionization enthalpies of first series of the transition elements.
ii) Transition metals show high melting points. Why?
3. i) Actinoid contraction is greater from element to element than the lanthanoid contraction, why?
ii) Describe the variable oxidation state of 3d series elements.

UNIT-5:

1. Write the postulates of Werner's theory.
2. Write Importance and applications of coordination complexes
3. i) Give the difference between double salts and coordination compounds.
ii) What is linkage isomerism? Explain with an example.
4. i) What are the limitations of VB theory? ii) Classify the following ligands based on the number of donor atoms. a) NH_3 b) en c) ox^{2-} d) pyridine iii) In an octahedral crystal field, draw the figure to show splitting of d orbitals.

UNIT-6:



**MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK**

STD: 12

1. Explain Schottky and Frenkel defect.
2. i) What is meant by the term “coordination number”? What is the coordination number of atoms in a bcc structure? ii) Distinguish tetrahedral and octahedral voids.
3. i) Differentiate crystalline solids and amorphous solids. ii) Distinguish between hexagonal close packing and cubic close packing.

UNIT-7:

1. Derive integrated rate law for a zero order reaction $A \rightarrow \text{Product}$.
2. Explain briefly the collision theory of bimolecular reactions.
3. Explain pseudo first order reaction with an example.
4. Define half life of a reaction. Show that for a first order reaction half life is independent of initial concentration.

UNIT-8:

1. Derive an expression for Ostwald’s dilution law
2. Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base
3. i) Explain common ion effect with an example ii) Define pH and Calculate the pH of 1.5×10^{-3} M solution of $\text{Ba}(\text{OH})_2$
4. i) Write the expression for the solubility product of HgCl_2 . ii) Define ionic product of water. Give its value at room temperature.

UNIT-9:

1. Derive an expression for Nernst equation
2. Explain the function of H_2O_2 fuel cell.
3. Describe the construction of Daniel cell. Write the cell reaction.
4. i) State Kohlrausch Law. How is it useful to determine the molar conductivity of weak electrolyte at infinite dilution. ii) State Faraday’s Laws of electrolysis

UNIT-10:

1. What are enzymes? Write a brief note on the mechanism of enzyme catalysis.
2. Explain intermediate compound formation theory of catalysis with an example
3. Write a note on electro osmosis.

UNIT-11:

1. How is phenol prepared from i) chloro benzene ii) isopropyl benzene
2. i) Explain Kolbe’s reaction ii) What is metamerism? Give the structure and IUPAC name of metamers of 2-methoxy propane
3. i) How will you convert acetylene into n-butyl alcohol. ii) How are the following conversions effected benzylchloride to benzylalcohol ii) benzyl alcohol to benzoic acid



MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK

STD: 12

UNIT-12:

1. What is the action of HCN on (i) propanone (ii) 2,4-dichlorobenzaldehyde. (iii) ethanol
2. How are the following conversions effected (a) propanal into butanone (b) Hex-3-yne into hexan-3-one. (c) phenylmethanal into benzoic acid (d) phenylmethanal into benzoin

UNIT-13:

1. I) Schotten – Baumann reaction ii) Mustard oil reaction iii) Hofmann's bromide reaction
2. I) How will you distinguish between primary secondary and tertiary aliphatic amines. ii) Gomberg reaction

UNIT-14:

1. I) Give any three difference between DNA and RNA ii) How are vitamins classified.
2. Explain in detail about the structure of Glucose
3. Explain in detail about the structure of Fructose
4. I) 18. Write a note on formation of α -helix . ii) Define enzymes iii) Write the Zwitter ion structure of alanine

UNIT-15:

1. I) Write a note on vulcanization of rubber ii) What are bio degradable polymers? Give examples.
2. I) How is terylene prepared? ii) What are narcotic and non – narcotic drugs. Give examples
3. I) What are drugs? How are they classified ii) How do antiseptics differ from disinfectants?
4. I) Write a note on co –polymer ii) Write a note on synthetic detergents

2 Marks and 3 Marks:

UNIT-1:

1. What are the differences between minerals and ores?
2. Give the uses of zinc.
3. Explain the following terms with suitable examples. (i) Gangue (ii) slag
4. Give the limitations of Ellingham diagram.
5. Give the basic requirement for vapour phase refining.
6. Explain the electrometallurgy of aluminium.

UNIT-2:

1. Give the uses of Borax.
2. Give the uses of silicones.
3. How will you convert boric acid to boron nitride?
4. CO is a reducing agent. Justify with an example.



**MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK**

STD: 12

5. Write a note on metallic nature of p-block elements.

UNIT-3:

1. Chalcogens belongs to p-block. Give reason.
2. Give the uses of helium.
3. What are interhalogen compounds? Give examples.
4. Give the uses of sulphuric acid.
5. Write the reason for the anomalous behaviour of Nitrogen.
6. Give the uses of argon.
7. What happens when PCl_5 is heated?

UNIT-4:

1. What are transition metals? Give four examples.
2. What are interstitial compounds?
3. Which is more stable? Fe^{3+} or Fe^{2+} explain.
4. Which metal in the 3d series exhibits +1 oxidation state most frequently and why?
5. Why do Zirconium and Hafnium exhibit similar properties?
6. Why Europium (II) is more stable than Cerium (II)?

UNIT-5:

1. What is linkage isomerism? Explain with an example.
2. Give the difference between double salts and coordination compounds.
3. What is the coordination entity formed when excess of liquid ammonia is added to an aqueous solution of copper sulphate?
4. What is crystal field splitting energy?
5. Why tetrahedral complexes do not exhibit geometrical isomerism.

UNIT-6:

1. Define unit cell.
2. What are point defects?
3. Calculate the number of atoms in a fcc unit cell.
4. Calculate the percentage efficiency of packing in case of body centered cubic crystal.
5. Why ionic crystals are hard and brittle?
6. Write short note on metal excess and metal deficiency defect with an example.

UNIT-7:

1. Define average rate and instantaneous rate.
2. Define rate law and rate constant.
3. Give two examples for zero order reaction



**MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK**

STD: 12

4. Write Arrhenius equation and explain the terms involved.
5. How do concentrations of the reactant influence the rate of reaction?
6. How do nature of the reactant influence rate of reaction.

UNIT-8:

1. What are Lewis acids and bases? Give two examples for each.
2. Discuss the Lowry – Bronsted concept of acids and bases.
3. Define solubility product
4. Write the expression for the solubility product of $\text{Ca}_3(\text{PO}_4)_2$.
5. Calculate the pH of 1.5×10^{-3} M solution of $\text{Ba}(\text{OH})_2$.

UNIT-9:

1. Why is AC current used instead of DC in measuring the electrolytic conductance?
2. 0.1M NaCl solution is placed in two different cells having cell constant 0.5 and 0.25cm respectively. Which of the two will have greater value of specific conductance?
3. Why does conductivity of a solution decrease on dilution of the solution?
4. Why is anode in galvanic cell considered to be negative and cathode positive electrode?
5. 9.2×10^{12} litres of water is available in a lake. A power reactor using the electrolysis of water in the lake produces electricity at the rate of $2 \times 10^6 \text{ kJ s}^{-1}$ at an appropriate voltage. How many years would it take to completely electrolyse the water in the lake. Assume that there is no loss of water except due to electrolysis.

UNIT-10:

1. What is the difference between a sol and a gel?
2. Addition of Alum purifies water. Why?
3. Give three uses of emulsions.
4. Explain any one method for coagulation
5. Heat of adsorption is greater for chemisorptions than physisorption. Why?
6. What are enzymes? Write a brief note on the mechanism of enzyme catalysis.

UNIT-11:

1. Can we use nucleophiles such as NH_3 , CH_3O^- for the nucleophilic substitution of alcohols?
2. What happens when 1-phenyl ethanol is treated with acidified KMnO_4 ?
3. Arrange the following in the increasing order of their boiling point and give a reason for your ordering (i.) Butan-2-ol, Butan-1-ol, 2-methylpropan-2-ol (ii.) Propan-1-ol, propan-1,2,3-triol, propan-1,3-diol, propan-2-ol
5. Write the mechanism of acid catalysed dehydration of ethanol to give ethene.

UNIT-12:

1. How will you prepare Lactic acid from ethanol?



**MALAR TRUST INDIA – EACHAMPALLAM (CHENGALPATTU DIST.,)
CHEMISTRY QUESTION BANK**

STD: 12

2. How will you prepare Cinnamic acid from benzaldehyde
3. Write the structure of the major product of the aldol condensation of benzaldehyde with acetone.
4. A carbonyl compound A having molecular formula $C_5H_{10}O$ forms crystalline precipitate with sodium bisulphite and gives positive iodoform test. A does not reduce Fehling solution. Identify A.
5. An alkene (A) on ozonolysis gives propanone and aldehyde (B). When (B) is oxidised (C) is obtained. (C) is treated with Br_2/P gives (D) which on hydrolysis gives (E). When propanone is treated with HCN followed by hydrolysis gives (E). Identify A, B, C, D and E

UNIT-13:

1. How will you convert nitrobenzene into aniline
2. How will you convert nitrobenzene into hydrozobenzene
3. How will you convert diethylamine into i) N, N – diethylacetamide ii) N – nitrosodiethylamine
4. Gabriel phthalimide synthesis

UNIT-14:

1. Give the differences between primary and secondary structure of proteins.
2. Give two difference between Hormones and vitamins
3. Write the structure of α -D (+) glucopyranose
4. What are the functions of lipids in living organism.
5. What are reducing and non – reducing sugars?

UNIT-15:

1. What are antibiotics?
2. Write the structural formula of aspirin.
3. Classify the following as linear, branched or cross linked polymers a) Bakelite b) Nylon-6,6 c) LDPE d) HDPE
4. What are anti fertility drugs? Give examples.
5. Write the structural formula of aspirin.

Prepared by

S. AJITH KUMAR., B.E., MBA.