
# Padasalai's Telegram Groups!

( தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்! )

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## UNIT – 1 METALLURGY

**Two marks**

**Book Back**

1. What is the difference between minerals and ores?
2. What are the various steps involved in extraction of pure metals from their ores?
3. Which type of ores can be concentrated by froth floatation method? Give two examples for such ores.
4. Give the uses of zinc.
5. Give the basic requirement for vapour phase refining

**Book inside**

**1. What do you meant by cementation?**

**Long answers**

**Book Back**

1. Describe a method for refining nickel.
2. Explain zone refining process
3. Explain the principle of electrolytic refining with an example.
4. Give the limitations of Ellingham diagram.
5. Explain the electrometallurgy of aluminium. Or Hall - Herold Process

**Book inside**

1. Explain froth floatation method.
2. Explain about Magnetic separation
3. Explain about Van-Arkel method for refining zirconium/titanium:
4. Difference between calcination and roasting

**See all the application of metals and Ellingham diagram**

## CHAPTER – 2 p BLOCK ELEMENTS I

**Two marks**

**Book Back**

1..Describe briefly allotropism in p- block elements with specific reference to carbon.
2. Boron does not react directly with hydrogen. Suggest one method to prepare diborane from $BF_3$.
3. What is catenation ? describe the catenation property of carbon
4. Write a note on Fisher tropsch synthesis.
5. $AlCl_3$ behaves like a lewis acid .Substantiate this statement
6. Write a short note on hydroboration
7. How will you identify presence of borate radical

**Book inside**

1. What is burnt alum
2. Explain McAfee Process
3. What is inert pair effect
4. How will you prepare borax beads from borax

**Long answers**

**Book Back**

1. Write the Anomalous properties of the first elements of p – block
2. Explain about structure of diborane

**Book inside**

1. Difference between graphite and diamond
2. How is inorganic benzene prepared?
3. How is potash alum prepared?
4. Explain about Types of Silicones and their preparation

**See all the uses and preparation , chemical properties (action of heat)**

## Unit – 3 p BLOCK ELEMENTS – II

**Two marks**

**Book Back**

1. Explain why fluorine always exhibit an oxidation state of –1?
2. What are inter halogen compounds? Give examples
3. Why fluorine is more reactive than other halogens?
4. Give a reason to support that sulphuric acid is a dehydrating agent.
5. Write the reason for the anamolous behaviour of Nitrogen. W
6. rite the molecular formula and structural formula for the following molecules

a)Nitric acid b)dinitrogen pentoxide c)phosphoric acid d)phosphine

**Book inside**

1. What is Aquaregia?.Write down its use.
2. Write down tests for sulphate/sulphuric acid

**Long answers**

**Book Back**

**1.Complete the reaction**

**Book inside**

1. Explain about Holmes signal
2. Prove that nitric acid is an oxidising agent & nitrating agent.
3. Write about the bleaching action of chlorine.
4. What are the Properties of inter halogen compounds
5. Explain the manufacture of chlorine by electrolytic method and Deacon's process
6. Explain about Manufacture of sulphuric acid by contact process
7. Show that sulphuric acid is an oxidising agent
8. How is nitric acid manufactured using Ostwald's process?
9. Explain the action of nitric acid on metals with one example.

**See all the uses and structure**

## Unit – 4 TRANSITION AND INNER TRANSITION ELEMENTS

**Two marks**

**Book Back**

1. What are transition metals?. Give four examples
2. What are inner transition elements?
3. Justify the position of lanthanoids and actinoids in periodic table
4. Explain why compounds of $Cu^{+2}$ are coloured but those $Zn^{+2}$ are colourless.
5. Describe the preparation of potassium dichromate
6. Which is more stable? $Fe^{3+}$ or $Fe^{2+}$ - explain.
7. What are interstitial compounds?
8. Calculate the number of unpaired electrons in $Ti^{3+}$ , $Mn^{2+}$ and calculate the spin only magnetic moment
9. Why do zirconium and Hafnium exhibit similar properties?

**Book inside**

1. What is Bayer's reagent and write down its use
2. Explain about Hume-Rothery rule to form a substitute alloy
3. What are the properties of interstitial compounds
4. What is Chromyl chloride test

**Long answers**

**Book Back**

1. Explain the oxidation state of 4d series elements

2. Explain the variation in $E^0_{M^{2+}/M}$ 3d series.
3. What is lanthanide contraction and what are the effects of lanthanide contraction?
4. Compare lanthanides and actinides
5. Describe the variable oxidation state of 3d series elements.

**Book inside**

1. Explain about preparation of potassium permanganate
2. Potassium permanganate is a strong oxidising agent. Explain
3. Potassium dichromate is powerful reducing agent .Explain

## Unit – 5 COORDINATION CHEMISTRY

**Two marks**

**Book Back**

1.$[CuCl_4]^{2-}$ exists while $[CuI_4]^{2-}$ does not exist why?
2. Give an example of coordination compound used in medicine and two examples of biologically important coordination compounds.
3. In an octahedral crystal field, draw the figure to show splitting of d orbitals.
4. Give one test to differentiate $[Co(NH_3)_5Cl]SO_4$ and $[Co(NH)_3SO_4]Cl$
5. What is linkage isomerism? Explain with an example
6. What are hydrate isomers? Explain with an example.
7. What is crystal field stabilization energy (CFSE) ?
8. What are the limitations of VB theory?

**Book inside**

1.What are the Limitations of Werner's theory:
2. Define Coordination sphere
Define Coordination polyhedron
3. In an tetrahedral crystal field, draw the figure to show splitting of d orbitals
4. What is spectrochemical series ?.Explain the difference between a weak field ligand and strong field ligand

**Long answers**

**Book Back**

1.Based on VB theory explain why $[Cr(NH_3)_6]$ is paramagnetic, while $[Ni(CN)_4]$ is diamagnetic.
2. Explain optical isomerism in coordination compounds with an example.
3. Give the difference between double salts and coordination compounds.
4. Write the postulates of Werner's theory.
5. Discuss briefly the nature of bonding in metal carbonyls.

**Book inside**

1.Explain about Coordination isomers
2. What are the Main assumptions of Valence bond theory (VBT)

**Using VB Theory find the geometry , hybridization of the respective complex**

## Unit – 6 SOLID STATE

**Two marks**

**Book Back**

1.Give any three characteristics of ionic crystals

2. Define unit cell.

3. What is meant by the term "coordination number"? What is the coordination number of atoms in a bcc structure?

**Book inside**

1. Define isotropy and anisotropy

2. Explain about impurity defect

**Long answers**

**Book Back**

1. Differentiate crystalline solids and amorphous solids

2. Distinguish between hexagonal close packing and cubic close packing

3. Distinguish tetrahedral and octahedral voids.

4. Explain Schottky defect

5. Write short note on metal excess and metal deficiency defect with an example

6. Calculate the percentage efficiency of packing in case of body centered cubic crystal

7. Write a note on Frenkel defect.

**Book inside**

1. Determine packing efficiency simple cubic unit cell

2. Determine packing efficiency Face centered cubic unit cell or cubic closed packing

**See all density based problems**

## Unit – 7 CHEMICAL KINETICS

**Two marks**

**Book Back**

1. Define average rate and instantaneous rate.

2. Define rate law and rate constant.

3. Write Arrhenius equation and explains the terms involved.

**Book inside**

1. Define activation energy

**Long answers**

**Book Back**

1.Derive integrated rate law for a zero order reaction A → product

2.What is an elementary reaction? Give the differences between order and molecularity of a reaction.

3.Describe the graphical representation of first order reaction.

4.Explain the effect of catalyst on reaction rate with an example.

5.Explain briefly the collision theory of bimolecular reactions.

6.Explain pseudo first order reaction with an example.

**Book inside**

1. Differences between rate and rate constant of a reaction

**Study all the effects on reaction rate and problems based on finding whether it is first order or not**