

III B.Tech. II Semester Regular Examinations, April/May -2005

NON FERROUS EXTRACTIVE METALLURGY

(Metallurgy & Material Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Explain the differences between general roasting and flash roasting.
(b) How is sulphur removed in conventional roasting and matte smelting of copper ore?
(c) Explain the flash smelting techniques in copper extraction process.
2. (a) What are the important ores of Zinc?. Mention places where Zinc ore deposits occur in India. List out the main applications of Zinc.
(b) What are the important steps in the production of zinc from its sulphide ores by pyrometallurgical process? Explain them
3. (a) What are the important ores of lead?. Mention places where lead ore deposits occur in India. List out the main applications of lead.
(b) What are the important steps in the production of lead from its sulphide ores by pyrometallurgical process? Explain them.
4. (a) What are the sources of Aluminium ores? Explain.
(b) Give specific consumption of raw materials for the production of one tonne of Aluminium.
(c) With the aid of Flow sheet describe the Bayer's process.
5. (a) Give details of occurrence of Magnesium ores & location of its industries in India with production capacities
(b) Briefly discuss the Physico-Chemical principles underlying the chlorination process. Why the chlorination performed in the presence of carbon.
6. (a) Explain the KROL's process for the production of Titanium
(b) Explain the Iodide refining process
7. (a) Explain in detail the production of uranium in India.
(b) Explain chemical beneficiation of Uranium ores.
8. (a) Differentiate between Hydro and Pyro metallurgical extraction process.
(b) What do you mean by Iodide process of refining?. Where it is used.

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1. (a) What are the important ores of copper? Mention places where copper ore deposits occur in India List out the main applications of copper.
(b) What are the important steps in the production of copper from its sulphide ores by Pyrometallurgical process? Explain them.
2. (a) Draw a neat sketch of Imperial smelting blast furnace for zinc extraction.
(b) Explain various reactions that takes place in blast furnace. Also give the advantages.
3. (a) What are the important ores of lead?. Mention places where lead ore deposits occur in India. List out the main applications of lead.
(b) What are the important steps in the production of lead from its sulphide ores by pyrometallurgical process? Explain them.
4. (a) Discuss Bayer process employed at HINDALCO for the production of alumina with the help of flow sheet.
(b) Explain ALCOA process for the production of aluminium.
5. (a) Discuss the electrolytic refining of Magnesium and Titanium.
(b) What are the problems arise during eletrowinning of Magnesium extraction.
6. (a) Discuss upgrading of Ilmenite ores.
(b) Discuss various ores , properties & applications of Titanium
7. (a) Discuss the alkali and leaching of Uranium oxide with appropriate chemical reactions.
(b) With the help of flow sheet ,discuss the production of yellow cake Uranyl sulphate liquor
8. Write short notes on.
(a) Electrolyte refining of Nickel.
(b) Solvent Extraction process.
(c) Review of non-ferrous metal industries in India

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(b) What are the important steps in the production of copper from its sulphide ores by Pyrometallurgical process? Explain them.
2. (a) What are the problems associated with the condensation of Zinc vapour? How are they overcome.
(b) Draw the flow sheet for hydrometallurgical extraction of Zinc
3. (a) What are the important ores of lead?. Mention places where lead ore deposits occur in India. List out the main applications of lead.
(b) What are the important steps in the production of lead from its sulphide ores by pyrometallurgical process? Explain them.
4. (a) Mention important ores of aluminium and explain the Bayer process for Alumina production.
(b) Explain about Newer process for aluminium production
5. (a) Discuss the electrolytic refining of Magnesium and Titanium.
(b) What are the problems arise during eletrowinning of Magnesium extraction.
6. (a) What are the advantages and disadvantages of the Magnesium reduction of UF_4 as compared to calcium.
(b) What are the various types of refining processes used in extractive metallurgy and explain with suitable examples.
7. (a) Discuss the purification of Uranium crude salt.
(b) Explain the production of reactor grade UO_2 and Uranium.
8. (a) Write a brief account on the cynidation process of gold extraction with relevant chemical reactions.
(b) Write down flow sheet for the production of Nickel from its ore minerals & explain.

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1. (a) Explain the importance of comminution process in the extraction of metals from their ores. Discuss the efficiency of the process.
(b) Why roasting of copper sulphide ore is done? Give the main reactions which take place during roasting operation.
2. Explain the production of zinc by electrolysis process & refining process.
3. (a) What are the important ores of lead?. Mention places where lead ore deposits occur in India. List out the main applications of lead.
(b) What are the important steps in the production of lead from its sulphide ores by pyrometallurgical process? Explain them.
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