

**III B.Tech II Semester Supplementary Examinations,
November/December 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) 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. [8+8]
2. Explain how the zinc is recovered from Lead Slags. Explain about the production of zinc in India. [16]
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. [8+8]
4. (a) What is anode effect in a aluminium refining ? Give the reasons for anode effect & remedies for it.
(b) Discuss how silica in bauxite effect its digestion for alumina production?[8+8]
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. [8+8]
6. (a) Discuss the principle involved in the extraction of Titanium and elaborate the process employed with the help of flow sheet.
(b) Briefly explain purification of titanium. [9+7]
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. [16]
8. Give the details of occurrence of ores and location of their industries with production capacities for the following metals in India.
 - (a) Nickel
 - (b) Gold.
 - (c) Tungsten. [5+5+6]

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1. (a) Explain the continuous production of Blister copper.
(b) Differentiate between flash smelting and flash roasting process which are used for copper extraction. [8+8]
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. [8+8]
3. (a) Explain in detail about production of lead from sulphide ore.
(b) Explain various processes used in refining of lead bullion with flow sheet. [8+8]
4. With the help of a neat sketch of the Hall - Heroult process describe its operation in detail and give the complete cell data. [16]
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. [8+8]
6. (a) Differentiate between KROLL's process & Hunter process for Titanium production.
(b) Draw a neat flow sheet & explain the production of titanium from its ores. [8+8]
7. (a) Explain in detail the production of uranium in India.
(b) Explain chemical beneficiation of Uranium ores. [8+8]
8. Give the details of occurrence of ores and location of their industries with production capacities for the following metals in India.
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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. [8+8]
3. (a) Explain in detail about production of lead from sulphide ore.
(b) Explain various processes used in refining of lead bullion with flow sheet.[8+8]
4. Explain in detail about the extraction of aluminium by Deville - Pechiney process or CO₂ process. [16]
5. (a) Discuss the electrolytic refining of Magnesium and Titanium.
(b) What are the problems arise during eletrowinning of Magnesium extraction. [8+8]
6. (a) Explain the KROLL's process for the production of Titanium
(b) Explain the Iodide refining process. [9+7]
7. (a) Explain in detail the production of uranium in India.
(b) Explain chemical beneficiation of Uranium ores. [8+8]
8. Write short notes on.
(a) Electrolyte refining of Nickel.
(b) Solvent Extraction process.
(c) Review of non-ferrous metal industries in India. [5+5+6]

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1. (a) Name four non - ferrous metals which are commercially important . Give their important ores.
(b) What is smelting? Why smelting of roasted copper ore is done?
(c) Explain the Hydrometallurgical extraction of copper. [5+5+6]
2. Explain how the zinc is recovered from Lead Slags. Explain about the production of zinc in India. [16]
3. (a) What are the important ores of lead? Explain about the treatment of lead ore for the production of metal. [6]
(b) Explain the following steps in the production of lead
 - i. Treatment of Base bullion.
 - ii. Drossing. [5+5]
4. Explain in detail about the extraction of aluminium by Deville - Pechiney process or CO₂ process. [16]
5. (a) Discuss the electrolytic refining of Magnesium and Titanium.
(b) What are the problems arise during electrowinning of Magnesium extraction. [8+8]
6. (a) Discuss the principle involved in the extraction of Titanium and elaborate the process employed with the help of flow sheet.
(b) Briefly explain purification of titanium. [9+7]
7. (a) Discuss the purification of Uranium crude salt.
(b) Explain the production of reactor grade UO₂ and Uranium. [8+8]
8. Give the details of occurrence of ores and location of their industries with production capacities for the following metals in India.
 - (a) Nickel
 - (b) Gold.
 - (c) Tungsten. [5+5+6]
