

**III B.Tech II Semester Regular Examinations, Apr/May 2006**  
**NON FERROUS EXTRACTIVE METALLURGY**  
**(Metallurgy & Material Technology)**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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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. (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. [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 CO<sub>2</sub> 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. 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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(b) What is smelting? Why smelting of roasted copper ore is done?  
(c) Explain the Hydrometallurgical extraction of copper. [5+5+6]
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) 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) 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. [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) 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. (a) Explain the principle of carbonyl process for refining Nickel.  
(b) Write down flow sheet for the production of Tungsten from its ore minerals & explain. [8+8]

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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. [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) 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) 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. (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. [8+8]

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(b) What is smelting? Why smelting of roasted copper ore is done?  
(c) Explain the Hydrometallurgical extraction of copper. [5+5+6]
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. [8+8]
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 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+5+6]
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) 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. (a) Differentiate between amalgamation and cyanidation process as applied to gold extraction.  
(b) Explain Chemistry of Cyanidation. [10+6]

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