Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 152102 **Date: 29-11-2013**

Subject Name: Non-Ferrous Extractive Metallurgy

Time: 10.30 am - 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe Bayer process for alumina production with the flow sheet.	**07**
	(b)	Explain process flow sheet of Cu extraction with all the important paramete involved in the process.	**07**
Q.2	**(a)**	Write a note on Production plants, important ores and locations of their major deposits in India for Copper and Zinc.	**07**
	(b)	With the help of flow sheet explain the process of tin extraction from its concentrate. Why tin is produced by three stages process?	**07**
		OR	
	(b)	Name the important ores of tin. With the help of a flow sheet explain briefly the fire refining of tin.	**07**
Q.3	**(a)**	Write a note on Occurrence of gold. Describe the amalgamation process for gold extraction.	**07**
	(b)	Explain Hall-Heroults process of Al extraction.	**07**
		OR	
Q.3	**(a)**	Explain the three–layer process of Aluminum refining.	**07**
	(b)	Name important ores of Aluminum. Explain the ALCOA process for Aluminum production.	**07**
Q.4	**(a)**	With the help of line diagram, explain the Pidgeon process for extraction of magnesium mentioning the thermodynamic aspects.	**07**
	(b)	Explain the Flash smelting process for Copper production.	**07**
		OR	
Q.4	**(a)**	Describe the process flow sheet of precious metal recovery from anode slime in copper extraction process.	**07**
	(b)	Explain Mitsubishi process for Copper production in brief.	**07**
Q.5	**(a)**	Explain the pyrometallurgical process of nickel extraction from its sulphide ore. Draw the flow sheet with important parameters involved in the process.	**07**
	(b)	Explain the process for lead extraction from its ore with help of process flow sheet.	**07**
		OR	
Q.5	**(a)**	Give the ores of nickel with their chemical formula. Explain the carbonyl process for refining of nickel.	**07**
	(b)	Explain the Imperial Smelting process for production of zinc with necessary sketches.	**07**

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