Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– V • EXAMINATION – WINTER 2016

Subject Code: 152102 **Date: 24/11/2016**
Subject Name: Non-Ferrous Extractive Metallurgy
Time: 10:30AM – 01:00PM **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)**	Explain Bayer process for alumina production with the flow sheet.	**07**
	(b)	Define converting. Discuss the different stages of copper converting.	**07**
Q.2	**(a)**	Explain Mitsubishi process for Copper production.	**07**
	(b)	Explain why the carbothermic reduction process not used for extraction of aluminium on commercial scale? Explain briefly about Red mud and anode effect in Al extraction.	**07**
		OR	
	(b)	Define Ore and Minerals. Give detail of important Minerals/Ores for different non -+ferrous metals like Al, Cu, Ni, Pb, Zn,	**07**
Q.3	**(a)**	Explain Hall-Heroults process of Al extraction.	**07**
	(b)	Explain the process for lead extraction from its ore. Draw the flow sheet with important parameters involved in the process.	**07**
		OR	
Q.3	**(a)**	Mention the ores of tin. Draw and explain the process flow sheet for tin extraction.	**07**
	(b)	Explain the WORCRA process for Copper production.	**07**
Q.4	**(a)**	Explain the hydrometallurgical processes for Nickel production.	**07**
	(b)	Draw and explain the hydrometallurgical process flow sheet of zinc extraction with important parameters involved in the process.	**07**
		OR	
Q.4	**(a)**	Draw and explain the pyrometallurgical process flow sheet of zinc extraction with important parameters involved in the process.	**07**
	(b)	What do you mean by anode slime? Explain the process for recovery of precious metals from anode slime.	**07**
Q.5	**(a)**	Write a note on Occurrence of gold. Describe the amalgamation process for gold extraction.	**07**
	(b)	What are different methods for extraction of Silver? Explain any two in brief.	**07**
		OR	
Q.5	**(a)**	Give the ores of Magnesium. Explain the Pigeon process for magnesium extraction.	**07**
	(b)	With the help of a flow sheet explain briefly the fire refining of tin.	**07**

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