Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2152107 Date:22/11/2016

Subject Name:Extraction of Non Ferrous Metals

Time:10:30 AM to 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		**Short Questions**	**14**
	1	List out ores/minerals of Al with chemical their composition.	1
	2	Why carbothermic reduction is not possible for Al extraction?	1
	3	What is red mud?	1
	4	List out ores/minerals for Pb and Zn with chemical their composition.	1
	5	What is anode slime?	1
	6	Note down ores of gold and silver with their chemical composition.	1
	7	What is anode effect in electrolysis of Al ?	1
	8	List out ores/minerals for Ni with chemical their composition.	1
	9	What is the Main purpose of roasting in the extraction of cu?	1
	10	What is Blister copper?	1
	11	Give the advantages of WORCRA process	1
	12	List out ores/minerals for Cu with chemical their composition	1
	13	Give the ores of Tin with their chemical formula	1
	14	Give the ores of Magnesium with their chemical formula	1
Q.2	**(a)**	Write Bayer process for alumina production with the flow sheet.	**03**
	(b)	List out Non-ferrous metallurgical industry in India.	**04**
	(c)	Explain Mitsubishi process for Copper production in brief.	**07**
		OR	
	(c)	Explain WORCA process for extraction of copper.	**07**
Q.3	**(a)**	Discuss briefly about the ALCOA process for Aluminium production.	**03**
	(b)	Discuss Hydrometallurgical process for production of primary copper .	**04**
	(c)	Explain Hall-Heroults process of Al extraction.	**07**
		OR	
Q.3	**(a)**	Draw flow sheet of precious metal recovery from anode slime in copper extraction process.	**03**
	(b)	Write brief on ALCAN process.	**04**
	(c)	Explain the pyro metallurgical process of nickel extraction from its sulphide ore.	**07**
Q.4	**(a)**	Note down applications of Tin.	**03**
	(b)	Draw flow sheet and explain briefly the refining of tin.	**04**
	(c)	Explain the Smelting process for production of zinc.	**07**
		OR	
Q.4	**(a)**	What is the Main purpose of smelting in the extraction of cu?	**03**
	(b)	Explain the carbonyl process for refining of nickel.	**04**
	(c)	Explain the process for lead extraction from its ore with help of process flow sheet.	**07**
Q.5	**(a)**	Note down properties and application of Magnesium.	**03**
	(b)	How recovery of gold ,silver and platinum from secondary sources is done?	**04**
	(c)	Explain the cyanidation process for gold extraction.	**07**

OR

Q.5	**(a)**	What are modern developments in lead production?	**03**
	(b)	Discuss the parke's process for silver recovery from lead.	**04**
	(c)	Discuss briefly about Pidgeon process	**07**

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