

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3152107****Date:27/01/2021****Subject Name:Non Ferrous Extractive Metallurgy****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) What is Extractive Metallurgy? List out basic types of Extraction processes.	03
	(b) Explain fluidized bed roasting with its mechanism.	04
	(c) List out Ores/ Minerals with their chemical compositions of metals Al, Cu, Pb, Ti, Sn Mg and Zn.	07
Q.2	(a) Explain Distillation with suitable example of metal.	03
	(b) Differentiate between Pelletizing and Sintering.	04
	(c) Compare merits and demerits of Pyro and Hydro metallurgy.	07
Q.3	(a) Differentiate between drying and Calcination.	03
	(b) Explain fused salt electrolysis.	04
	(c) Explain electrolytic refining of Aluminum.	07
Q.4	(a) What are limitations of Ellingham diagram?	03
	(b) Differentiate between Electrowinning and Electro refining.	04
	(c) Explain Bayer's process with flow sheet for extraction of Aluminum .	07
Q.5	(a) Explain autoclave in pressure leaching.	03
	(b) Explain the ion exchange process.	04
	(c) Discuss oxide free energy diagram in pyrometallurgy.	07
Q.6	(a) Discuss Kroll process.	03
	(b) Explain in brief about rate of reaction.	04
	(c) Derive and explain Arrhenius Equation.	07
Q.7	(a) Draw flow sheet of Pyro metallurgical extraction of zinc.	03
	(b) Draw flow sheet of blast furnace smelting and refining of lead bullion.	04
	(c) Explain Mitsubishi process for Copper production.	07
Q.8	(a) Explain the PIDGEON process of Magnesium extraction.	03
	(b) Discuss smelting of Tin Concentrate.	04
	(c) Explain Hydro metallurgy route of Ni extraction .	07
