

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:3132103****Date:08/09/2021****Subject Name:Mineral Processing****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Draw a simplified flow sheet for the various processes involved in mineral processing.	03
	(b) Write in brief about the scope of mineral processing in the field of extractive metallurgy.	04
	(c) List out ores and minerals for Al, Pb, Sn, Cu, Fe, Mg and Zn with their chemical composition.	07
Q.2	(a) Explain locking and unlocking of minerals and gangue.	03
	(b) Explain the term liberation and its significance in mineral processing.	04
	(c) Discuss separation in vertical and streaming currents in detail.	07
OR		
	(c) Give classification of crushers. Explain blake jaw crusher with neat diagram.	07
Q.3	(a) What is classification? Explain in brief.	03
	(b) Differentiate between primary and secondary crushers.	04
	(c) What is mesh number? Explain in brief about sieve analysis.	07
OR		
Q.3	(a) Give detailed classification of screening.	03
	(b) Give different types of classifier and explain in brief about air classifier.	04
	(c) Discuss jigging operation with a neat diagram.	07
Q.4	(a) Write a short note on different grinding media.	03
	(b) What are the purpose of collector, frother, activator and depressant in flotation process?	04
	(c) Explain heavy media separation in brief.	07
OR		
Q.4	(a) Explain various factors affecting size reduction.	03
	(b) Explain why floatation is used for fine particles only. Draw a flotation circuit consisting of rougher cells, cleaner cells and scavenger cells for sulphide ores.	04
	(c) Explain magnetic separator in detail.	07
Q.5	(a) What is thickening process? Explain in brief.	03
	(b) Derive the equation for free settling ratio as per Newton's law.	04
	(c) Draw simplified beneficiation flow sheets of Bituminous coal.	07
OR		
Q.5	(a) Explain the concept of free settling and hindered settling.	03
	(b) Explain the importance of dewatering in mineral processing.	04
	(c) Draw simplified beneficiation flow sheets of Zinc and Iron ore with reference to Indian ore deposits.	07
