

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023****Subject Code:3132103****Date:26-07-2023****Subject Name:Mineral Processing****Time:02:30 PM TO 05:00 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) Discuss the scenario of mineral resources in India.	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 Fe, Cu, Pb, Zn, Al, Mg and Ti along with their chemical composition.	07
Q.2	(a) Explain liberation and its significance in mineral processing.	03
	(b) Discuss the laws of comminution.	04
	(c) Give classification of crushers. Explain blake jaw crusher with neat diagram.	07
OR		
	(c) Define mesh number. Explain in brief about sieve analysis and its importance.	07
Q.3	(a) Write a detailed classification of screening.	03
	(b) Classify the various zones created in ball mill during grinding operation.	04
	(c) Explain in detail about classifiers and its types.	07
OR		
Q.3	(a) Explain the term classification and its significance in mineral processing.	03
	(b) Explain gravity concentration method in brief.	04
	(c) Discuss separation in vertical and streaming currents.	07
Q.4	(a) Explain various factors affecting size reduction.	03
	(b) What are the purpose of collector, frother, activator and depressant in flotation process?	04
	(c) Explain sedimentation and dewatering techniques.	07
OR		
Q.4	(a) Write a short note on screen efficiency.	03
	(b) Discuss wet and dry separators in detail.	04
	(c) Explain why floatation is used for fine particles only. Draw a flow sheet for floatation of sulphide ores.	07
Q.5	(a) Explain filtration and drying in brief.	03
	(b) Derive the equation for free settling ratio as per Newton's law.	04
	(c) Draw simplified beneficiation flow sheets of Iron ore with reference to Indian ore deposits.	07

OR

- Q.5** (a) Explain the concept of free settling and hindered settling. **03**
(b) Explain electrostatic separator in brief. **04**
(c) Draw simplified beneficiation flow sheets of Copper ore with reference to Indian ore deposits. **07**
