

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– III EXAMINATION – SUMMER 2026

Subject Code:3132103

Date:17-06-2026

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) Define Ore, Mineral and Gangue.	03
	(b) List out Physical and chemical characteristics of Aluminum and Copper ores.	04
	(c) List out ores/minerals of metals like Fe, Cu, Al, Pb, Zn, Sn and Mg with their chemical composition.	07
Q.2	(a) Explain Locking and unlocking of Minerals and Gangue.	03
	(b) Derive a relation between critical speed of ball mill and its diameter.	04
	(c) Give classification of Crushers. Explain black Jaw Crusher .	07
	OR	
	(c) A material is crushed in a black jaw crusher and the average size of particle reduced from 7cm to 1.25cm with consumption of energy at the rate of 6hp hr/tonne. What will be the consumption of energy needed to crush the same material of average size 8cm to an average size of 2.5 cm? a) Assuming Rittinger's law applies b) Assuming Kick's law applies	07
Q.3	(a) Which are different sources of metals.	03
	(b) Draw basic flow diagram of mineral processing ..	04
	(c) Short note Froth Floatation.	07
	OR	
Q.3	(a) Classify different types of industrial screening.	03
	(b) List out different factors influencing grinding process.	04
	(c) Brief note on sieve Analyzer.	07
Q.4	(a) Discuss air classifier in brief.	03
	(b) Discuss about Thickening	04
	(c) Explain about magnetic separator.	07
	OR	
Q.4	(a) What do you understand by 'open circuit' and 'closed circuit' grinding.	03
	(b) Explain Heavy media separation in brief.	04
	(c) Short note on Jigging Operation.	07
Q.5	(a) Derive the equation for free settling as per Newton's law	03
	(b) Draw Simplified beneficiation Flow Sheets of copper ore	04
	(c) Discuss about electrostatic separators	07
	OR	
Q.5	(a) Explain importance of liberation in mineral processing.	03
	(b) Draw Simplified beneficiation Flow Sheets of Iron ore..	04
	(c) What is high tension separation? Explain briefly	07
