Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 2132103 **Date: 5/12/2019**

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.**

			MARKS
Q.1	**(a)**	Discuss various sources of metals.	**03**
	(b)	Draw basic flow diagram of mineral processing	**04**
	(c)	Explain black Jaw Crusher With neat Diagram.	**07**
Q.2	**(a)**	Define Ore, Mineral and Concentrate.	**03**
	(b)	Explain locking and unlocking of Minerals and Gangue.	**04**
	(c)	List out ores/minerals of metals like Al, Fe, Cu, Mg, Pb, Sn and Zn with their chemical composition.	**07**
		OR	
	(c)	Define mesh number and explain in brief about sieve analysis	**07**
Q.3	**(a)**	Explain the term liberation and its importance in mineral processing.	**03**
	(b)	What are Physical and chemical characteristics of Iron and aluminum ores.	**04**
	(c)	Discuss Jigging Operation with a neat diagram.	**07**
		OR	
Q.3	**(a)**	Give detailed classification of screening.	**03**
	(b)	Discuss different grinding media.	**04**
	(c)	Explain motion of charge in Tumbling mill and derive the equation of critical speed.	**07**
Q.4	**(a)**	What is angle of nip? For roll crusher derive an expression relating angle of nip.	**03**
	(b)	Describe the working principle of wilfly table with suitable diagram.	**04**
	(c)	Short notes on Heavy media separation.	**07**
		OR	
Q.4	**(a)**	What do you understand by ‘open circuit’ and ‘closed circuit’ grinding?	**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)	Short note Froth Floatation.	**07**
Q.5	**(a)**	Draw Simplified beneficiation Flow Sheets of Iron ore.	**03**
	(b)	Draw Simplified beneficiation Flow Sheets of Bituminous coal.	**04**
	(c)	Short note on magnetic separator.	**07**
		OR	
Q.5	**(a)**	Explain briefly on Sedimentation	**03**
	(b)	Draw Simplified beneficiation Flow Sheets of copper ore.	**04**
	(c)	Explain in brief about electrostatic separation.	**07**

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