Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – III • EXAMINATION – WINTER 2012

Subject code: 132103 Date: 03-01-2013

Subject Name: Mineral Processing

Time: 10.30 am – 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.**

Q.1	**(a)**	Define the term classifier. Explain the working process of mechanical classifier with the help of a schematic diagram.	**07**
	(b)	Define mineral processing. Justify its need in extractive metallurgy.	**07**
Q.2	**(a)**	What is Crushing? Draw Jaw Crusher and Explain its working.	**07**
	(b)	Explain following with proper examples: 1. Ore 2. Mineral 3. Flux	**07**
		OR	
	(b)	Discuss the principle of Electro static separation and explain the process description.	**07**
Q.3	**(a)**	Discuss the Physical and chemical characteristics of Galena and chalcopyrite ores.	**07**
	(b)	List different laboratory sizing techniques and describe in brief about them.	**07**
		OR	
Q.3	**(a)**	Discuss the Physical and chemical characteristics of Haematite and Bauxite ores.	**07**
	(b)	Explain the theory of ball mill operation along with its different zones. Draw required figure. Mention process affecting factors.	**07**
Q.4	**(a)**	Describe the working principle of wilfly table and draw suitable figure.	**07**
	(b)	Explain principle of froth flotation technique. Discuss different process variables.	**07**
		OR	
Q.4	**(a)**	Write a note on heavy media separation	**07**
	(b)	Explain actions of reagents, collectors and frothers in froth flotation operation.	**07**
Q.5	**(a)**	Explain the terms: Free settling and Hindered Settling. Where are these terms used in mineral separation process? Explain with Example.	**07**
	(b)	Define Angle of nip and derive the theory of angle of nip in roll crushing along with choke feeding system.	**07**
		OR	
Q.5	**(a)**	Explain the principle of magnetic separation and mention the process description.	**07**
	(b)	What is Jigging? Explain its principles & applications.	**07**

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