Enrolment No	
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GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III (New) EXAMINATION – WINTER 2015

Subject Code:2132103 Subject Name: Mineral Processing Time: 2:30pm to 5:00pm Instructions:

Date:29/12/2015

Total Marks: 70

- 1. Attempt all questions.
 - 2. Make suitable assumptions wherever necessary.
 - 3. Figures to the right indicate full marks.

			MARKS
Q.1		Short Questions	14
-	1	Define ore and Mineral.	
	2	Define Primary and Secondary Metals	
	3	Explain recovery in brief.	
	4	What is classification?	
	5	What is tenor of ore?	
	6	Write down ore /minerals of Aluninium and copper with	
		chemical composition.	
	7	Define terminology Concentrate and Tailing.	
	8	Write down ore /minerals of lead and Zinc with chemical composition	
	9	Define Locking of Minerals.	
	10	Define unlocking of Minerals and Gangue.	
	11	Define mesh number.	
	12	Define collector and frothers in flotation cell.	
	13	Write ores of Iron and list out physical and chemical	
		properties of ores.	
	14	Give classification of crushers.	
Q.2	(a)	Derive a relation between critical speed of ball mill and its	03
		diameter. The ball diameter could be neglected.	
	(b)	Expalin briefly sieve shaker.	04
	(c)	Explain principle and working of Jaw Crusher with neat	07
		diagram.	
		OR	. –
	(c)	Discuss various zones of ball mill with neat diagram. What	07
		do you understand by "open circuit" and "closed circuit"	
0.1	(\cdot)	grinding.	03
Q.3	(a) (b)	Explain Comminution in brief.	03
	(\mathbf{D})	Explain Heavy media separation in oriel.	04
	(C)		07
03	(a)	UN Draw the flow chart showing principle steps in mineral	03
Q.J	(<i>a</i>)	processing.	05
	(b)	Explain why floatation is used for fine particles only. Draw	04
		a flotation circuit consisting of rougher cells, cleaner cells	
		and scavenger cells for sulphide ores.	
	(c)	Write short note on jigging machine.	07
Q.4	(a)	Give detailed classification of screening.	03

	(b)	Explain Air classifier.	04
	(c)	Explain the mechanism of magnetic separator with neat	07
		diagram.	
		OR	
Q.4	(a)	Explain the term liberation and its importance in mineral processing.	03
	(b)	What is free settling ratio in classification? Derive the equation for it as per Newton's law.	04
	(c)	What are the objectives of size reduction? Discuss various factors affecting size reduction.	07
Q.5	(a)	Write short note on Sedimentation.	03
	(b)	Draw Beneficiation flow sheets of magnetite ore.	04
	(c)	Explain in brief about electrostatic separation.	07
		OR	
Q.5	(a)	Write short note on Thickening.	03
	(b)	Draw Beneficiation flow sheets of sulphide ores of copper.	04
	(c)	Draw Roll crusher and derive a relation between friction coefficient and angle of nip.	07
