

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III(New) EXAMINATION – SUMMER 2016

Subject Code:2132103**Date:04/06/2016****Subject Name:Mineral Processing****Time:10:30 AM to 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.

		MARKS
Q.1	Short Questions	14
	1 Define Primary and Secondary Metals.	
	2 Define Ore and Mineral.	
	3 List different types of crushers.	
	4 What is screening ?	
	5 Define Concentrate and Tailing.	
	6 Write different ores/minerals of Iron with chemical composition.	
	7 What is Tenor of ore?	
	8 Define the term liberation.	
	9 What is classification?	
	10 Define washing and sorting.	
	11 What is comminution?	
	12 What is Thickening process?	
	13 What is free settling ratio?	
	14 Give physical and chemical characteristics of Copper.	
Q.2	(a) Explain Locking and unlocking of Minerals and Gangue	03
	(b) Explain motion of charge in Tumbling mill and derive the equation of critical speed.	04
	(c) Draw a simplified diagram of Blake Jaw Crusher showing different parts. Which factors affect its operation.	07
	OR	
	(c) Explain Mineral Processing? Draw a simplified flow sheet for the various processes involved in it.	07
Q.3	(a) Why in ball mill different size of ball are used?	03
	(b) What do you understand by 'open circuit' and 'closed circuit' grinding.	04
	(c) Explain Heavy media separation in brief.	07
	OR	
Q.3	(a) Which factors affect the screening efficiency ? Classify different types of industrial screening	03
	(b) What are the purpose of collector, frother, activator and depressant in flotation process?	04
	(c) Explain about sieve analysis.	07
Q.4	(a) Draw a flotation circuit consisting of rougher cells, cleaner cells and scavenger cells.	03
	(b) Explain importance of liberation in mineral processing.	04
	(c) Short note Froth Floatation.	07

OR

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| Q.4 | (a) Derive the equation for free settling as per newton's law. | 03 |
| | (b) Discuss about electrostatic separators. | 04 |
| | (c) Write short note on operation of Jigging machine. | 07 |
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Q.5 |
(a) Derive a relation between critical speed of ball mill and its diameter. The ball diameter could be neglected. |
03 |
| | (b) Draw a simplified diagram showing common features of a conventional thickener. | 04 |
| | (c) What is high tension separation? Explain briefly. | 07 |
| | OR | |
| Q.5 | (a) Explain air classifier. | 03 |
| | (b) Explain benefits and limitations of flotation and Thickening. | 04 |
| | (c) What is magnetic separation? Which are the materials usually separable by magnetic separation. | 07 |
