

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2132103****Date: 09/06/2017****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 Give physical and chemical characteristics of Iron	
	2 Give physical and chemical characteristics of Copper	
	3 Give physical and chemical characteristics of Aluminum	
	4 Give physical and chemical characteristics of Zinc	
	5 Define Mineral.	
	6 Define Ore.	
	7 List out ores and Minerals for Al, with their chemical composition	
	8 List out ores and Minerals for Fe, with their chemical composition.	
	9 List out ores and Minerals for Cu, with their chemical composition.	
	10 List out ores and Minerals for Zn, with their chemical composition.	
	11 List out ores and Minerals for Pb, with their chemical composition.	
	12 List out ores and Minerals for Mg with their chemical composition.	
	13 What is the purpose of collectors in flotation process?	
	14 What is the purpose of frothers in flotation process?	
Q.2	(a) What is Angle of Nip?	03
	(b) Explain washing, sorting, hand picking and recovery.	04
	(c) Define the term classifier. Explain the working process of mechanical classifier with the help of a schematic diagram.	07
OR		
	(c) Write a note on mineral resources of India.	07
Q.3	(a) Sizes of steel balls are 3.2, 3, 4.2, 4.3 in cm. Diameter of ball mill is 30.5 cm. Find out the critical speed of ball mill	03
	(b) Write a note on operation of Jigging Machine.	04
	(c) What different types of Crushing and Grinding equipments are used in mineral processing and why?	07
OR		
Q.3	(a) What is screening?	03
	(b) How is screening efficiency checked? Give types of screens	04
	(c) Discuss various zones of ball mill with neat diagram. What do you understand by open 'open circuit' and 'closed circuit' grinding	07
Q.4	(a) What is classification?	03
	(b) Give different types of classifier and explain in brief about air classifier.	04
	(c) Explain magnetic separator in brief.	07
OR		
Q.4	(a) What are the factors affecting comminution?	03
	(b) Write about the factors affecting grinding mills.	04
	(c) Explain briefly on electrostatic separator.	07
Q.5	(a) What is free settling ratio?	03

- (b) Derive the equation for free settling ratio as per Newton's law. **04**
- (c) Define mesh number and mention the importance of sieve analysis. **07**

OR

- Q.5**
- (a) What are the advantages of mineral processing **03**
 - (b) Draw a simplified flow sheet for the various stages involved in ore processing. **04**
 - (c) Discuss Heavy media separation in brief. **07**
