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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER-III • EXAMINATION – WINTER • 2014

Subject Code: 2132103 Date: 23-12-2014 **Subject Name: Mineral Processing** Time: 02.30 pm - 05.00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. (a) List out ores/minerals of metals like Fe, Cu, Al, Pb, Zn, Ag, Ti with their 07 **Q.1** chemical composition. (b) What are the advantages of mineral processing .Draw a simplified flow sheet 07 for the various stages involved in ore processing? **Q.2** List different types of crushers. Draw a simplified diagram of Blake Jaw 07 Crusher showing different parts. Also mention factors affect its operation. (b) Give physical and chemical characteristics and sources of following 07 minerals: 1) Iron 2) Copper 3) Aluminum 4) Zinc (b) Describe the working principle of wilfly table with suitable diagram. 07 What is screening? Classify different types of industrial screening. Explain 0.3 **07** sieve analyzer. (b) Explain Jigging Operation? Draw a diagram of Jig showing different parts and 07 explain its operation. OR Define terminology in Mineral processing like 1) tenor of ore, 2) Locking and 0.3 07 unlocking of ore,3) concentrate, 4)middling and5) tailing, 6)Cominnution. (b) Define crushing and grinding. Explain Ball mill operation along with its 07 different zones. (a) Short note on Heavy media Separation. 07 0.4 Differentiate between Magnetic and Electrostatic separation. 07 OR Draw a figure of roll crusher and derive a relation between friction co-efficient **Q.4 07** and angle of nip. **(b)** What is classification? Give different types of classifier and explain air 07 classifier. **Q.5** (a) Write short note on Sedimentation and Thickening. **07 (b)** Draw Simplified beneficiation Flow Sheets of sulphide ore of copper. 07 OR (a) Draw Simplified beneficiation Flow Sheets of Bituminous coal. **07 Q.5** (b) Define Flotation process? List different types of flotation processes. How do 07 different flotation reagents like collector Frother, Activator and Depressant affect flotation process? \*\*\*\*\*

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