

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 132103****Date: 18-12-2014****Subject Name: Mineral Processing****Time: 02.30 pm - 05.00 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 Ore and Mineral. List out important Ores for different metals like Iron, Aluminium, Copper, Zinc, Tin. **07**

(b) Explain scope of Mineral processing in extractive metallurgy. **07**

Q.2 (a) Define mesh number and mention the importance of sieve analysis. **07**

(b) Explain principle and working of Jaw Crusher. **07**

OR

(b) Draw Roll crusher and derive a relation between friction coefficient and angle of nip. **07**

Q.3 (a) Discuss various zones of ball mill with neat diagram. What do you understand by open 'open circuit' and 'closed circuit' grinding **07**

(b) Explain the mechanism of magnetic separator with neat diagram. **07**

OR

Q.3 (a) Write short note on operation of jigging machine. **07**

(b) Explain heavy media separation. **07**

Q.4 (a) Explain principle of Flotation cell. What are the purpose of collector, frother, activator and depressant in flotation process? Give one example of floatation cell reagents used for sulphide ore. **07**

(b) What are the objectives of size reduction? Discuss various factors affecting size reduction. **07**

OR

Q.4 (a) What is free settling ratio in classification? Derive the equation for it as per Newton's law. **07**

(b) Explain why flotation is used for fine particles only? Draw a flotation circuit consist of rougher cells, cleaner cell and scavenger cells. **07**

Q.5 (a) Short Note on Mechanical classifier. **07**

(b) Explain Sedimentation and Thickening. **07**

OR

Q.5 (a) Differentiate between Crushing and Grinding. Give detail classification of crushers. **07**

(b) Define terminology like locking and unlocking of Minerals and gangue, washing, sorting, hand picking, recovery, **07**
