

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-III Examination-Dec.-2011

Subject code: 132103**Date: 13/12/2011****Subject Name: Mineral Processing****Time: 2.30 pm -5.00 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) What is Ore and Mineral ? Give the physical and chemical characteristics and source of following minerals like Al, Fe, Cu, Zn, Pb. **07**
- (b) Define Liberation and Comminution. What do you understand by 'open circuit' and 'closed circuit' grinding **07**
- Q.2** (a) Give classification of Crushers. Draw a neat diagram of Jaw crusher indicating the forces acting on a "nipped particle". **07**
- (b) Write short note on operation of Jigging machine. **07**
- OR
- (b) Draw a figure of roll crusher and derive a relation between friction co-efficient and angle of nip. **07**
- Q.3** (a) Explain why flotation process is used for fine particles only? Draw a flotation circuit consisting of rougher cells, cleaner cells and scavenger cells. **07**
- (b) Explain Heavy media separation in brief. **07**
- OR
- Q.3** (a) Derive a relation between critical speed of ball mill and its diameter. The ball diameter could be neglected. **07**
- (b) Explain motion of charge in tumbling mill and derive the equation of critical speed. **07**
- Q.4** (a) What are the purpose of collectors, frothers, activators and depressants in flotation process? **07**
- (b) Explain how you represent sieve analysis data. What is average size of particle? **07**
- OR
- Q.4** (a) What is magnetic separation? Which are the materials usually separable by magnetic separation? **07**
- (b) What is free settling ratio in classification? Derive the equation for it as per newton's law. **07**
- Q.5** (a) Short note on differential flotation. **07**
- (b) What is classification? Give different types of classifier and explain air classifier. **07**
- OR
- Q.5** (a) Explain the term recovery, ratio of concentration, enrichment ratio. How they are calculated. Derive relevant formula. **07**
- (b) Short note on high tension separation **07**
