

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-III Examination May 2012****Subject code: 132103****Subject Name: Mineral Processing****Date: 08/05/2012****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) Draw a neat diagram of Jaw crusher indicating the forces acting on "Nipped Particle". **07**
- (b) Draw the flow chart showing principle steps in Mineral Processing. Explain the need of each step. **07**

- Q.2** (a) Explain the term "Liberation" and its significant in Mineral Processing. **07**
- (b) Explain motion of charge in Tumbling mill and derive the equation of critical speed. **07**

OR

- (b) Give physical and chemical characteristics and sources of following minerals: **07**
- 1) Iron 2) Copper 3) Aluminium 4) Zinc

- Q.3** (a) What is free settling ratio? Derive the equation for it as per Newton's law. **07**
- (b) Give application of Computer in Mineral Processing. **07**

OR

- Q.3** (a) The pulp density of Galena/water pulp is 2700 Kg/m³. The pulp density of this pulp needs to be increased by siphoning out some water to 2750 Kg/m³. If density of Galena is 7500 Kg/m³, how much water needs to be removed? **07**
- (b) Write a note on Magnetic Separation. **07**

- Q.4** (a) What is high tension separation? Explain briefly. **07**
- (b) 25 μ m Quartz has settling velocity of 0.056 cm/s and 3 min 30 secs to settle 12 cm. What will be the time taken by 5 μ m particle to settle in same fluid and height? **07**

OR

- Q.4** (a) What are the purpose of collector, frother, activator and depressant in flotation process? **07**
- Q.4** (b) Explain Heavy Media separation process in brief. **07**

- Q.5** **(a)** Explain Kick's law and Rittinger's law of Grinding. What is grindability? **07**
- (b)** What is classification? Explain Air classifier with diagram in brief. **07**

OR

- Q.5** **(a)** Explain how you represent sieve analysis data. What is average size of particles? **07**
- (b)** Draw line diagram of Mechanical classifier and explain its working. **07**
