

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER 2013****Subject Code: 132103****Date: 26-11-2013****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) What are the advantages of mineral processing .Draw a simplified flowsheet for the various stages involved in ore processing **07**

(b) What are the important exploitable characteristics used in separation of minerals. Also mention the techniques employed for each characteristic **07**

Q.2 (a) List different types of crushers. Draw a simplified diagram of Blake Jaw Crusher showing different parts. Which factors affect its operation. **07**

(b) List out different types of grinding operations with brief note. What are the Process requirements in wet and dry grinding. **07**

OR

(b) What is screening ? Which factors affect the screening efficiency ? Classify different types of industrial screening **07**

Q.3 (a) What is comminution and its objective ? Give different stages of size reduction with size ranges. **07**

(b) List out factors affecting the comminution operation. Also discuss the factors affecting the operation of grinding mills in brief. **07**

OR

Q.3 (a) What is classification . Draw a chart showing different types of classifiers and explain Hydrocyclone. **07**

(b) Derive equation showing 'Terminal Velocity' dependence on small spherical particle size and densities of particle and fluid under free settling conditions. **07**

Q.4 (a) Explain Jigging operation ? Draw a diagram of Harz Jig showing different parts and explain its operation. **07**

(b) Explain in brief 'Dense Media Separation' . Describe different media employed for the operation with examples. **07**

OR

Q.4 (a) What is Thickening (Sedimentation) process ? Draw a simplified diagram showing common features of a conventional thickener (Dorr Thickener) **07**

(b) Define Flotation process ? List different types of flotation processes. How do different flotation reagents like collector Frother, Activator and Depressant affect flotation process ? **07**

- Q.5 (a)** What is magnetic separation ? List out different minerals responding to magnetic separation. **07**
- (b)** Draw schematic diagram of Dry-Drum magnetic separator and explain its operation **07**
- OR**
- Q.5 (a)** What is Electrical Separation? Explain High Tension Separator in brief ? **07**
- (b)** Write short notes (Any Two) **07**
i) Pressure filters ii) Filtration iii) Dorr rake classifier iv) Bauxite ore processing
