

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III EXAMINATION – WINTER 2015

Subject Code:132103**Date:18/12/2015****Subject Name: MINERAL PROCESSING****Time: 2:30pm to 5:00pm****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 flow sheet for the various stages involved in ore processing **07**
 (b) Define the term classifier. Explain the working process of mechanical classifier with the help of a schematic diagram. **07**
- Q.2** (a) Explain the term "Liberation" and it's 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) Aluminum 4) Zinc
- Q.3** (a) Explain briefly about comminution and differential flotation. **07**
 (b) What is free settling ratio? Derive the equation for it as per Newton's law. **07**
- OR**
- Q.3** (a) Discuss the Physical and chemical characteristics of Hematite and Bauxite ores **07**
 (b) Explain the theory of ball mill operation along with its different zones. Draw required figure. Mention process affecting factors **07**
- Q.4** (a) What are the purpose of collectors, frothers, activators and depressants in flotation process? **07**
 (b) Explain Heavy Media separation process in brief. **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) Explain the terms: Free settling and Hindered Settling. Where are these terms used in mineral separation process? Explain with Example **07**
- 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
- OR**
- Q.5** (a) What is magnetic separation? List out different minerals responding to magnetic separation **07**
 (b) What is Jigging? Explain its principles & applications. **07**
