

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-IV • EXAMINATION – SUMMER 2015**

**Subject Code: 142102****Date: 01/06/2015****Subject Name: Principles of Extractive Metallurgy****Time: 10.30am-01.00pm****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) Discuss in brief about Ellingham diagrams for metal Oxides. **07**  
(b) List different pyrometallurgical processes and explain smelting in brief. **07**
- Q.2** (a) Write in detail about ion exchange process. **07**  
(b) Differentiate between electro winning and electro refining. **07**
- OR**
- (b) Explain theory of absolute reaction rate. **07**
- Q.3** (a) What is the importance of hydrometallurgy? Give its merits and demerits. **07**  
(b) Define Leaching. Explain the Pressure leaching process. **07**
- OR**
- Q.3** (a) Discuss collision theory of reaction kinetics. **07**  
(b) Describe in detail about bacteria leaching. **07**
- Q.4** (a) Draw flow sheet for Aluminum extraction. **07**  
(b) Short note on solvent extraction process. **07**
- OR**
- Q.4** (a) Draw the process flow sheet for Iron and steel Production. **07**  
(b) What is roasting? Discuss fluidized bed roaster with its principle. **07**
- Q.5** (a) Differentiate between homogenous and heterogeneous reaction. **07**  
(b) Draw flow sheet for copper extraction. **07**
- OR**
- Q.5** (a) Compare molecularity and order of a reaction. **07**  
(b) Explain the process of fused salt electrolysis with suitable example. **07**

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