

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-IV EXAMINATION – SUMMER 2016**

**Subject Code:142102****Date:03/06/2016****Subject Name:Principles Of Extractive Metallurgy****Time:10:30 AM to 01:00 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 Extractive Metallurgy? Draw basic flow diagram for diff. extractive Metallurgy processes. **07**
- (b) Define pyro metallurgy. Briefly explain Calcination, pelletizing, sintering. **07**
- Q.2** (a) What is roasting? Explain fluidized bed roasting process in brief. **07**
- (b) Mention the advantages and limitations of Hydrometallurgical extraction processes. **07**
- OR**
- (b) Draw process flow sheet of Aluminium extraction. Label all important process parameters. **07**
- Q.3** (a) Draw process flow sheet of Cu extraction with important parameters involved in the process. **07**
- (b) Explain Ion Exchange and Solvent Extraction processes. **07**
- OR**
- Q.3** (a) Justify the importance of Ellingham diagram for oxide system in extractive metallurgy using pyro metallurgical route. **07**
- (b) Discuss collision theory of reaction kinetics. **07**
- Q.4** (a) Draw flow diagram for extraction of Zinc from its sulphide ore. **07**
- (b) Define Leaching. Explain the Pressure leaching process. **07**
- OR**
- Q.4** (a) Differentiate between electro-winning and electro-refining. **07**
- (b) Draw flow sheet of extraction of iron and steel. **07**
- Q.5** (a) Define Smelting. Differentiate between Matte smelting and Reduction smelting. **07**
- (b) Explain in brief Converting and Fire Refining processes during copper extraction process. **07**
- OR**
- Q.5** (a) What do you mean by reaction rate? Discuss various factors affecting rate of a reaction. **07**
- (b) Differentiate between homogenous and heterogeneous reaction. **07**

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