

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**
