

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (OLD) - EXAMINATION – SUMMER 2018

Subject Code: 142102

Date: 24/05/2018

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) Draw and discuss process flow sheet of Al extraction with important parameters involved in the process. **07**
(b) Describe advantages and limitations of Hydrometallurgical extraction processes. **07**
- Q.2** (a) Explain the microbial leaching and effect of bacteria on leaching rate and extent of recovery. **07**
(b) Explain importance of oxide free energy diagram in pyrometallurgy and its limitations. **07**
- OR**
- (b) Write a note on sulphide free energy diagram. **07**
- Q.3** (a) Discuss advantages & Limitations of pyrometallurgical extraction process. **07**
(b) Describe different types of smelting furnaces. **07**
- OR**
- Q.3** (a) Explain flash smelting process for copper extraction. **07**
(b) Discuss about Multiple Hearth roaster and its limitations. **07**
- Q.4** (a) Explain the ion-exchange processes. **07**
(b) Explain the Electrowinning and its applications. **07**
- OR**
- Q.4** (a) Explain the role of oxygen in leaching operation with the help of respective Example. **07**
(b) Describe the fused salt electrolysis process. **07**
- Q.5** (a) Draw and explain the process flow sheet of Zinc extraction. **07**
(b) Explain theory of absolute reaction rate. **07**
- OR**
- Q.5** (a) What is Order of reactions and Molecularity? Differentiate between Order and Molecularity. **07**
(b) Discuss collision theory of reaction kinetics. **07**
