

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2152107****Date: 03/06/2019****Subject Name: Extraction of Non Ferrous Metals****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

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|------------|-----|--|-----------|
| Q.1 | (a) | Draw flow sheet of extraction of Aluminum . | 03 |
| | (b) | Which reduction process is use for extraction of Al? Justify it. | 04 |
| | (c) | Explain Mitsubishi process for Copper production. | 07 |
| Q.2 | (a) | Write ores/ minerals of Cu, Mg, Al with their chemical composition. | 03 |
| | (b) | Which processes are used for treating low grade Al Ore? Explain any one. | 04 |
| | (c) | Explain Single step and multistep continuous processes for copper extraction. | 07 |
| OR | | | |
| | (c) | Discuss briefly Hall-Heroult's process . | 07 |
| Q.3 | (a) | Explain synthetically Cryolite's manufacturing. | 03 |
| | (b) | Discuss in brief Cu- Cu ₂ S phase diagram for Cu converting process. | 04 |
| | (c) | Explain Hydrometallurgical process for production of primary copper | 07 |
| OR | | | |
| Q.3 | (a) | Draw flow sheet of precious metal recovery from anode slime. | 03 |
| | (b) | Explain the Smelting process for production of zinc. | 04 |
| | (c) | Explain the pyro metallurgical process of nickel extraction from its sulphide ore. | 07 |
| Q.4 | (a) | Explain the carbonyl process for refining of nickel | 03 |
| | (b) | "Gold extraction cyanidation process is used" Justify it. | 04 |
| | (c) | How extraction of Tin is done? Explain it with flow diagram. | 07 |
| OR | | | |
| Q.4 | (a) | List out various applications of Tin. | 03 |
| | (b) | Explain parke's process in brief. | 04 |
| | (c) | Explain Pigeon process for extraction of Mg. | 07 |
| Q.5 | (a) | Differentiate between reverberatory furnace smelting and rotary furnace smelting process for tin extraction. | 03 |
| | (b) | List out ores/ minerals of Ag, Au, Pt, W with their chemical composition. | 04 |
| | (c) | Explain hydro metallurgical extraction of zinc with flow sheet. | 07 |
| OR | | | |
| Q.5 | (a) | Enlist properties and application of Magnesium. | 03 |
| | (b) | Discuss about refining of Tin | 04 |
| | (c) | Briefly explain Dow process. | 07 |
