Seat No.:	Enrolment No

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER V • EXAMINATION - WINTER - 2012 Date: 12-01-2013 Subject code: 152102 **Subject Name: Non-Ferrous Extractive Metallurgy** 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. **Q.1** (a) **Explain** 'Converting Operation' for copper manufacturing **07** pyrometallurgical route from sulphide concentrate. Explain Hall Heroult process with suitable illustration and Describe factors **(b)** 07 affecting this process. **Q.2** Draw flow sheet of Bayer's process and describe factors affecting this **07** (a) process. **07 (b)** Write short notes (Any Two): i) Flash Smelting Process ii) Mitsubishi Process iii) Worcra Process **07 (b)** Describe Zinc extraction from its sulphide ore using pyro- metallurgical method. **07 Q.3** Draw flow sheet for Nickel production from its sulphide ore. (a) Describe Lead Bullion refining process. 07 **(b)** OR 0.3 **07** Describe cyanidation process used for extraction of Gold from its ore. (a) Describe lead production from its sulphide ore in the blast furnace. Explain **(b)** 07 the role of Iron scrap addition in the charge? **07 Q.4** (a) Draw flow sheet of Zinc extraction using hydro- metallurgical route. Draw flow sheet for pyro -metallurgical extraction of copper from copper **07 (b)** sulphide ore. OR Describe in brief the Imperial Smelting Process (ISP) for production of Zinc. 07 0.4 (a) List advantages of ISP over other processes. Draw flow sheet for pyro-metallurgical refining of impure Tin produced 07 **(b)** during smelting of Tin concentrate. **Q.5** Explain with diagram the selective reduction of Nickel from its oxide ore. **07** (a) Describe Carbonyl process for refining Nickel. Describe 'Pidgeon Process' for production of Magnesium. **07 (b)** Draw flow sheet of Tin extraction from its Cassiterite ore concentrate **Q.5** 07 (a) (SnO<sub>2</sub>)

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Draw flow sheet for extraction of Gold from Kolar Gold Ore.

**(b)** 

**07**