

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER 2013****Subject Code: 130505****Date: 03-12-2013****Subject Name: Chemical Process Industries-1****Time: 02.30 pm - 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) What do you understand by unit operation and unit process? **04**
(b) Differentiate between batch process and continuous process. **04**
(c) Explain hardness of water. **03**
(d) List out major engineering problems in sulfur production by oxidation-reduction of H_2S . **03**
- Q.2** (a) With neat flow diagram and reactions, discuss manufacturing process of ammonia. **07**
(b) Explain demineralization and desalting of water. **07**
OR
(b) Discuss major engineering problems associated with production of H_2SO_4 by contact process. **07**
- Q.3** (a) Explain electric furnace process (direct conversion at plant site) for phosphoric acid production. **07**
(b) Compare sulfate pulp and sulfite pulp in chemical pulping process. **07**
OR
- Q.3** (a) Write about paper making process with schematic drawing. **07**
(b) Discuss in detail about NPK fertilizer and its application. **07**
- Q.4** (a) Discuss modified Solvay process for manufacturing of sodium carbonate. **07**
(b) List out types of Portland cement and discuss about the economics of cement industry in India. **07**
OR
- Q.4** (a) Explain electrolytic process of manufacturing of chlorine and caustic soda using membrane cell. **07**
(b) Discuss basic criteria for developing high performance chemical propellant system. **07**
- Q.5** (a) Describe Linde's process of Oxygen and Nitrogen production. Also state the properties and uses of above gases. **07**
(b) Write short notes on: i) industrial diamonds and ii) type of explosives. **07**
OR
- Q.5** (a) Explain the manufacturing process of pure CO_2 . **07**
(b) Discuss commercial classification of glasses in detail. **07**
