

Seat No.: \_\_\_\_\_

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# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III • EXAMINATION – WINTER • 2014

**Subject Code: 130505**

**Date: 20-12-2014**

**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)** Differentiate between batch Vs continuous process and unit operation Vs unit processes with example. **07**

**(b)** Discuss sodium cation exchange process for water conditioning with reactions. **07**

**Q.2 (a)** Describe Frasch process for elemental sulfur mining with neat flow diagram **07**

**(b)** Discuss with process flow diagram production of ammonia and major engineering problems involved in it. **07**

**OR**

**(b)** Write short note on NPK fertilizer and its application. **07**

**Q.3 (a)** Discuss principle of membrane cell process with a diagram, chemical reactions and advantages over other conventional processes. **07**

**(b)** Discuss modified Solvay process for manufacturing of sodium carbonate. **07**

**OR**

**Q.3 (a)** List out various methods for production of Hydrogen. Discuss any one in details. **07**

**(b)** Explain Furnace process for manufacturing of Carbon-black with neat flow sheet. **07**

**Q.4 (a)** Discuss major engineering problems involved in production in sulfuric acid by contact process. **07**

**(b)** Discuss Wet process for the production of phosphoric acid. Give comparison of wet process and electric furnace process. **07**

**OR**

**Q.4 (a)** Give Comparison between sulfate pulp and sulfite process in chemical pulping process. **07**

**(b)** Discuss process of paper making from pulp with flow diagram and also discuss bleaching of pulp. **07**

**Q.5 (a)** Discuss commercial classification of glasses in detail. **07**

**(b)** Explain the manufacturing process of Portland cement with a neat flow sheet **07**

**OR**

**Q.5 (a)** Write short note on :i) Deaeration of boiler feed water ii) Concentration of nitric acid **07**

**(b)** Write short notes on: i) type of explosives and ii) rare gases of atmosphere **07**

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