

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 130505****Date: 31-05-2013****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) Classify chemical reactors and discuss their design criteria. **07**
(b) Discuss municipal wastewater treatment with a neat flow diagram. **07**
- Q.2** (a) Explain ion exchange in detail. **07**
(b) Explain with a flow chart elemental sulfur mining by Frasch process. **07**
- OR**
- (b) Discuss all major engineering problems in sulfuric acid production. **07**
- Q.3** (a) Explain major engineering problems in Urea production. **07**
(b) State raw materials, chemical reactions and major engineering problems in wet process for phosphoric acid production. **07**
- OR**
- Q.3** (a) Explain major engineering problems in ammonia synthesis. **07**
(b) Explain Urea manufacture from ammonium carbamate with a neat flow chart. **07**
- Q.4** (a) Explain paper making process with a schematic diagram. **07**
(b) Write short note on setting and hardening of cement. **07**
- OR**
- Q.4** (a) State electrolysis reactions in diaphragm cell and mercury cell and explain electrolytic process for chlorine-caustic soda production. **07**
(b) Explain preparation of wood pulp by sulfate process **07**
- Q.5** (a) Discuss use of chemicals and their action in preparing black and white photographic emulsions. **07**
(b) Write short note on rare gases of atmosphere. **07**
- OR**
- Q.5** (a) Write short note on commercial glass. **07**
(b) Explain manufacture of amorphous carbon electrodes with a neat flowchart. **07**
