

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. - SEMESTER – III • EXAMINATION – WINTER 2012****Subject code: 130505****Date: 07-01-2013****Subject Name: Chemical Process Industries-I****Time: 10.30 am – 01.00 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 are the different processes for manufacturing of soda ash? Discuss 'Dual Process' with a neat flowsheet. **07**
- (b) Discuss the major engineering problems in urea production by ammonium carbamate decomposition process. **07**
- Q.2** (a) Discuss the difference between sulphate and sulphite process for manufacturing of paper. **07**
- (b) Write a short note on: Propellants. **07**
- OR**
- (b) Discuss Scope of Fertilizer Industries in India. **07**
- Q.3** (a) Discuss advantages and disadvantages of Mercury cell, Diaphragm cell and Membrane cell process for chlorine-caustic soda production. **07**
- (b) Describe the recovery of chemicals from black liquor with a neat flowsheet. **07**
- OR**
- Q.3** (a) Describe manufacturing of pure CO₂. List out uses of dry CO₂. **07**
- (b) Explain Furnace process for manufacturing of Carbon-black with neat flowsheet. **07**
- Q.4** (a) Explain the manufacturing process of Portland Cement with a neat flowsheet. **07**
- (b) Discuss manufacturing of glass in detail with neat diagram. **07**
- OR**
- Q.4** (a) Explain elemental sulfur mining by Frasch process with a neat diagram. **07**
- Q.4** (b) Describe manufacturing of sulfuric acid by DCDA process with a neat flowsheet. **07**
- Q.5** (a) Discuss manufacturing of phosphoric acid by wet process and give comparison of wet process and electric furnace process. **07**
- (b) Write a short note on: Explosives. **07**
- OR**
- Q.5** (a) Explain ion-exchange process with neat diagram for water softening. **07**
- (b) Write a note on Reverse Osmosis and list out its applications. **07**
