

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– III (NEW) • EXAMINATION – SUMMER 2015

Subject Code: 2130505**Date: 29/05/2015****Subject Name: Chemical Process Industries - I****Time: 02.30pm-05.00pm****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) With the help of neat sketch, describe ion exchange process of deionization of water. **07**
- (b) State the types of paper products. With a neat schematic diagram, describe the commercial method for paper making. **07**
- Q.2** (a) Describe the process for ammonia production with a neat process flow diagram. Also discuss the various process design modifications and the development of catalysts used in the process. **07**
- (b) State the uses of sulfuric acid. With respect to equilibrium – temperature relation for SO₂ conversion to SO₃, discuss the major engineering problems associated with contact sulfuric acid process. **07**
- OR**
- (b) With a neat process flow diagram, describe the manufacture of sodium bicarbonate by Solvay process. **07**
- Q.3** (a) Discuss the relative merits and demerits of various processes of manufacturing caustic soda in detail. **07**
- (b) Write a short note on ‘industrial diamonds’. **07**
- OR**
- Q.3** (a) State the uses of carbon dioxide. With a neat flowchart, briefly describe the manufacture of carbon dioxide from fuel oil or natural gas. **07**
- (b) State the sources and uses of hydrogen. Briefly discuss the production of hydrogen by steam – hydrocarbon reforming process. **07**
- Q.4** (a) Write a short note on calcium and magnesium compounds. **07**
- (b) What are the different types of products produced by ceramic industries? Discuss about each type briefly. **07**
- OR**
- Q.4** (a) What do you understand by ‘Portland Cement’? State its types and properties of each. **07**
- (b) Stating the types of glasses, briefly discuss the manufacture of flat glass with a neat flow chart. **07**
- Q.5** (a) What do you understand by ‘pulp’? Describe Kraft process of making pulp. **07**
- (b) Stating the major engineering problems, discuss the manufacture of urea by ammonium carbamate decomposition. **07**
- OR**
- Q.5** (a) What do you mean by ‘explosive’? State the characteristics of good explosives. Discuss about its types with suitable examples. **07**
- (b) What do you understand by desalination? Describe any one desalination process in detail. **07**
