Seat No.: _____ Enrolment No._____

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 SO_2 conversion to SO_3, 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**

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