

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2130505****Date: 31/05/2017****Subject Name: Chemical Process Industries-1****Time: 10:30 AM to 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	Short Questions	14
	1 What do you understand by batch process?	
	2 State two drawbacks of using hard water.	
	3 What is brackish water?	
	4 State two uses of phosphoric acid.	
	5 State the main products of chlor – alkali industries.	
	6 Mention two uses of carbon dioxide.	
	7 Mention the major products of ceramic industries.	
	8 State two uses of hydrogen.	
	9 Give two industrial uses of carbon monoxide.	
	10 Differentiate between fire and explosion.	
	11 State two applications of acetylene.	
	12 What is pulp?	
	13 What do you understand by desalination?	
	14 State two uses of sodium bicarbonate.	
Q.2	(a) What do you understand by NPK fertilizer? Explain.	03
	(b) With a neat diagram, explain the principle of reverse osmosis.	04
	(c) With a neat process flow diagram, describe the manufacture of sulfuric acid by DCDA process.	07
	OR	
	(c) With a schematic diagram, explain the production of caustic soda using electrolysis of aqueous salt solutions by membrane process. State advantages and disadvantages of membrane process.	07
Q.3	(a) What are the requirements of drinking water?	03
	(b) Briefly describe the mining of sulfur by Frasch process.	04
	(c) Describe ion exchange process of deionization of water with a neat process diagram	07
	OR	
Q.3	(a) Discuss the major engineering problems in the manufacture of ammonia.	03
	(b) Briefly describe the production of sodium bicarbonate by Solvay process, with reactions.	04
	(c) With a neat process flow diagram, describe the production of urea by ammonium carbamate decomposition.	07
Q.4	(a) State two rare gases of atmosphere and discuss about their sources and uses.	03
	(b) Briefly discuss the equilibrium - temperature relation for the conversion of SO_2 to SO_3 .	04
	(c) With a neat flow chart, discuss the production of carbon black.	07

OR

- Q.4** (a) Write a short note on industrial diamonds. **03**
(b) Briefly discuss the production of oxygen and nitrogen by Linde process. **04**
(c) What do you understand by activated carbon? Briefly describe the production and uses of activated carbon. **07**
- Q.5** (a) State the types of glasses and their uses. **03**
(b) State four industrial chemical compounds of calcium and magnesium each and their uses. **04**
(c) Stating the types of Portland cement, describe the production of Portland cement. **07**

OR

- Q.5** (a) Discuss the requirements of a good propellant. **03**
(b) Compare Sulfate (Kraft) process with sulfite process used for the production of pulp. **04**
(c) Stating the raw materials used for paper products, describe the paper making process with a schematic diagram. **07**
