

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:2130505****Date:08/09/2021****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Give the difference between batch and continuous process. **03**
(b) With a neat diagram, explain the principle of reverse osmosis. **04**
(c) With a neat process flow diagram, describe the manufacture of sodium bicarbonate by Solvay process. **07**

- Q.2** (a) Write a brief note on toxic chemical agents. **03**
(b) Describe in details: Unit operation and Unit process. **04**
(c) With a neat diagram, describe any one deionization process used in water treatment. **07**

OR

- (c) Describe the manufacture of sulfuric acid by DCDA process with a process flow diagram. **07**
- Q.3** (a) State the sources and uses of hydrogen **03**
(b) Write short note on rare gases of atmosphere. **04**
(c) Discuss major engineering problems associated with the production of Urea **07**

OR

- Q.3** (a) What are the requirements of drinking water? **03**
(b) Briefly describe the mining of sulfur by Frasch process **04**
(c) Explain manufacturing of pulp by using Kraft process. **07**
- Q.4** (a) State the uses and applications of ammonia **03**
(b) Write a short note on Explosives. **04**
(c) What are the different processes for manufacturing of soda ash? Discuss 'Dual Process' with a neat flow sheet. **07**

OR

- Q.4** (a) State the types of papers and their uses **03**
(b) Describe the production of Portland cement. **04**
(c) With a neat schematic diagram, describe the paper making process. **07**
- Q.5** (a) What are the characteristics required by a good propellant. **03**
(b) Write a short note on NPK fertilizer. **04**
(c) Discuss Linde's process for manufacture of Oxygen and Nitrogen. Also list the uses and properties of nitrogen and oxygen gases **07**

OR

- Q.5** (a) Write in brief on the scope of fertilizer industries in India. **03**
(b) Enlist methods & uses for production of carbon dioxide. **04**
(c) With a neat sketch of membrane cell, describe the manufacture of caustic soda and chlorine by membrane cell process. **07**