

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3170516****Date:06/06/2022****Subject Name:Process Auxiliaries and utilities****Time:02:30 PM TO 05:00 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.

		MARKS
<b>Q.1</b>	(a) Give your thoughts about pipe material, pipe size and pipe fitting in relation with the industries.	<b>03</b>
	(b) What is the roll of pipe drawing, pipe installation and pipe insulation in piping design?	<b>04</b>
	(c) Draw any chemical engineering process flow diagram and explain.	<b>07</b>
<b>Q.2</b>	(a) Write down about different types of valve along with its figure.	<b>03</b>
	(b) What are the selection criterions of valves for various systems?	<b>04</b>
	(c) Explain type of pumps along with its advantages and disadvantages.	<b>07</b>
	<b>OR</b>	
	(c) Briefly explain below terms	<b>07</b>
	1) NPSH requirement	
	2) Pump location	
	3) Pump piping	
	4) Pump piping support	
<b>Q.3</b>	(a) What is Reverse Osmosis and how does it work?	<b>03</b>
	(b) Demineralization : An overview	<b>04</b>
	(c) With respect to drawing air through the tower, explain types of cooling towers.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) How you can define waste water? Explain the treatment procedure of water waste?	<b>03</b>
	(b) Give your understanding about performance characteristics of vacuum pumps.	<b>04</b>
	(c) Short note :Process heating systems using steam	<b>07</b>
<b>Q.4</b>	(a) An overview: Air Compressors & Air Dryers	<b>03</b>
	(b) Different types of ejectors. Briefly explain	<b>04</b>
	(c) Short note : Non-steam heating system	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Point out the application compressors.	<b>03</b>
	(b) Give your understanding about pressure rating in pipes.	<b>04</b>
	(c) Write down applications of valves.	<b>07</b>
<b>Q.5</b>	(a) Point out the application vacuum pumps.	<b>03</b>
	(b) List out characteristics of typical domestic wastewater.	<b>04</b>
	(c) Write down the principles of basic refrigeration. What is a chiller?	<b>07</b>

**OR**

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|------------|------------|--|-----------|
| <b>Q.5</b> | <b>(a)</b> | How to calculate pipe schedule?          | <b>03</b> |
|            | <b>(b)</b> | What are the applications of a boiler?   | <b>04</b> |
|            | <b>(c)</b> | Application of refrigeration. Write down | <b>07</b> |

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