Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3170515 **Date:11-12-2024**

Subject Name: Piping Design

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.**

			MARKS
Q.1	**(a)**	Explain classification of pipes with suitable examples.	**03**
	(b)	Explain for pipes: equivalent length, codes, standards, schedule number	**04**
	(c)	Discuss various pipe fittings and its application in the industry.	**07**
Q.2	**(a)**	What is operating pressure and operating temperature for Piping Systems	**03**
	(b)	List types of pumps and application of each.	**04**
	(c)	Explain properties of piping material and their selection criteria.	**07**
		OR	
	(c)	Explain various types of valves and their industrial application.	**07**
Q.3	**(a)**	Discuss types of piping supports and its importance.	**03**
	(b)	What is NPSH for centrifugal pump?	**04**
	(c)	What is longitudinal and hoop stress? Explain Design equation of longitudinal and hoop stress and Derive relation between hoop stress & longitudinal stress.	**07**
		OR	
Q.3	**(a)**	Explain expansion joints and their applications.	**03**
	(b)	How to measure flow in the pipe line? Explain in brief.	**04**
	(c)	Derive equation for thickness required by jacketed steel pipe using external pressure.	**07**
Q.4	**(a)**	Explain types of gaskets and their selection criteria.	**03**
	(b)	Explain the applicability of various ASME piping codes. Also list technical organizations for codes.	**04**
	(c)	Discuss the Lockhart and Martinelli correlations and its applications	**07**
		OR	
Q.4	**(a)**	What is (1) water hammer (2) steam separators (3) and steam traps?	**03**
	(b)	Discuss the types of loads.	**04**
	(c)	Draw P and I diagram for Reactors and Shell and tube heat exchanger with explanation.	**07**
Q.5	**(a)**	Explain the importance of computer software in process piping engineering	**03**
	(b)	Discuss the steps for determination of optimum pipe size	**04**
	(c)	Discuss various characteristics curves for centrifugal Pumps	**07**
		OR	
Q.5	**(a)**	What is (1) Cavitation (2) Pump priming?	**03**
	(b)	List the types of flow sheets and its industrial use.	**04**
	(c)	Explain "methods of pipe Fabrication" with diagram.	**07**

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