K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:V
Class:TY	Program:B.Tech
Branch Code:CHE	Pattern:2023
Name of Course:Piping Design and Engineering	Course Code:2307309
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1a)	Explain the purpose and key design characteristics of elbows, tees, and reducers used in piping systems, highlighting how each fitting influences flow direction and system performance.	(6)	CO1
Question No. 2			
2a)	Describe the main factors considered while selecting materials for piping systems operating under high-temperature and low-temperature conditions.	(6)	CO2
Question No. 3			
3a)	Apply standard piping and equipment symbols to draw a basic process flow diagram explain it details.	(8)	CO3
	OR		
3b)	Why are piping symbols important in engineering drawings? Explain with four suitable symbols.	(8)	CO2
3c)	What is the purpose of a Piping and Instrumentation Diagram (P&ID) in process plants? Discuss with examples.	(8)	CO2
	OR		
3d)	What are piping isometric drawings? Discuss their features and advantages in fabrication and erection.	(8)	CO2
Question No. 4			
4a)	Describe a pipe rack and explain its fundamental purpose in an industrial setting.	(8)	CO2, CO3
	OR		
4b)	Describe the primary guidelines for positioning various lines within a pipe rack tier structure.	(8)	CO3
4c)	Outline the critical initial three steps for pipe rack piping design, beginning with the creation of the line-routing diagram.	(8)	CO3
	OR		

4d)	Identify and briefly describe four different types of storage tanks mentioned in the sources	(8)	CO3

Question No. 5

5a)	Describe the detailed process of Heat Treatment (Stress Relieving) as a method for releasing stress in piping components.	(8)	CO3, CO4

OR

5b)	Explain the primary function of sliding supports & List the three essential components that constitute a slide support assembly.	(8)	CO3
5c)	Explain the fundamental difference between Constant Load Spring Support and Variable Load Spring Support, focusing on how the load changes (or remains constant) relative to pipe movement.	(8)	CO3

OR

5d)	Enlist four specific problems that can be observed if the piping system fails in its support requirements.	(8)	CO3

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