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:2022
Name of Course:Piping Design and Engineering	Course Code:CHE223009
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 contains 2 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)	Describe the evolution of piping systems from early industrial applications to modern chemical plant designs.	(6)	CO3
Question No. 2			
2a)	Describe the general selection criteria for materials under high-temperature and low-temperature service conditions.	(6)	CO3
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)	CO3
3c)	What is the purpose of a Piping and Instrumentation Diagram (P&ID) in process plants? Discuss with examples.	(8)	CO3
	OR		
3d)	What are piping isometric drawings? Discuss their features and advantages in fabrication and erection.	(8)	CO3
Question No. 4			
4a)	Identify and briefly describe four different types of storage tanks mentioned in the sources	(8)	CO3
	OR		
4b)	Outline the critical initial three steps for pipe rack piping design, beginning with the creation of the line-routing diagram.	(8)	CO4
4c)	Describe the primary guidelines for positioning various lines within a pipe rack tier structure.	(8)	CO4
	OR		
4d)	Define a pipe rack and explain its fundamental purpose in an industrial setting.	(8)	CO4

Question No. 5

5a)	Define Primary Supports and Secondary Supports. Provide a definition and list two specific examples for components belonging to each classification.	(8)	CO3, CO4

OR

5b)	Compare and contrast Welded Type Supports and Clamped Type Supports. Discuss their connection method, explain their relative susceptibility to corrosion, and describe the adjustment capability of clamped supports during installation.	(8)	CO5
5c)	Describe the structure and function of Hanger Type Supports. Outline four critical installation guidelines for hanger supports?	(8)	CO3, CO4

OR

5d)	Discuss the critical limitations for using Pipe Saddles and Reinforcement Pads & why their use is restricted in corrosive environments.	(8)	CO4

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