University of Mumbai

Program: Chemical Engineering

Curriculum Scheme: R- 2019 ('C' Scheme)

Examination: T.E. Semester: VI

Course Code: CHDO6021

Course Name: Piping Engineering (DLOC)

Time: 2:30 hour DATE: 31/5/2022 QP CODE:93727 Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which valve is used when a straight line of fluid and minimum restriction is required?
Option A:	Gate valve
Option B:	Lift check valve
Option C:	Butterfly valve
Option D:	Plug valve
2	What is the ASME Code followed for design of Piping Systems in process piping (Refineries & Chemical Industries)?
Option A:	B 31.1
Option B:	B 31.3
Option C:	B 31.5
Option D:	B 31.9
3.	Minor losses do not make any serious effect in
Option A:	Short pipes
Option B:	Long pipes
Option C:	Both the short as well as long pipes
Option D:	Cannot say
4.	P&ID stands for?
Option A:	Process & Information diagram
Option B:	Process & Instrumentation diagram
Option C:	Piping & Information drawings
Option D:	Piping & Instrumentation diagram
5.	In design process, which process is followed after selecting the material?
Option A:	Selecting factor of safety
Option B:	Synthesis
Option C:	Analysis of forces
Option D:	Determining mode of failure
6.	How to calculate schedule no
Option A:	1000*P/S
Option B:	P*S/1000
Option C:	S*1000/P

Option D:	1000/P*S
7.	What is the function of valves?
Option A:	Isolation
Option B:	Regulation
Option C:	Non Return
Option D:	All of above
8.	From which size onwards NB of pipe equal to OD of pipe?
Option A:	14 inch
Option B:	6 Inch
Option C:	4 Inch
Option D:	8 Inch
9.	In process tag XX-YZZ A/B, XX is
Option A:	Instrument classification
Option B:	Equipment classification
Option C:	Valve classification
Option D:	Pipe classification
10.	Which among the following is not a type of Non-destructive testing?
Option A:	Compression test
Option B:	Visual testing
Option C:	Ultrasonic testing
Option D:	Eddy current testing

Q2. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Explain with figure IRON –CARBIDE phase diagram.
B	Name various types of valves with their application (explain any three types).Explain with neat diagram the construction, working and application of Globe Valve.
C	What is NDT? Explain any four methods .Write down its advantages and applications.

Q3 **(20 Marks)**	**Solve any Four out of Six** **5 marks each** .
A	Explain the responsibilities of piping engineer
B	Classify the piping materials and describe them.
C	Explain the manufacturing process each of seamless and welded pipe.
D	Write short notes on ASME B 31.3
E	What are different methods of protecting above ground and underground Piping from corrosion?
F	How to minimize Head Losses in pipe? Explain in detail

Q4. **(20 Marks)**	**Solve any Two Questions out of Three**	**10 marks each**
A	For Miter bend following data are given .Explain pipe thickness is sufficient for miter bend Outer diameter of Pipe = 800 mm Design temperature = 100 ^{0}C Allowable Stress S = 950Kg/cm^2 Internal design Pressure P = 14.5 Kg/cm^2 Joint Efficiency E = 0.8 Weld Factor Y = 0.4 Corrosion allowance C = 1.6 mm Mill tolerance = 12.5% Angle of Miter Cut φ = 22.5 Effective radius of Miter Bend R = 800 mm	
B	Discuss the important factors in the selection of material of construction of pipes. Explain with examples.	
C	Determine the thickness of CI pipe to carry 30 m^3/min of compressed air at a pressure of 0.7 N/mm^2. The velocity of the air in pipe is limited to 8 m/s. Assume permissible tensile stress of a pipe as 15 N/mm^2.	