University of Mumbai
Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev 2012
Examination: Fourth Year Semester VIII
Course Code: MEE8027 and Course Name: Process Equipment Design

Time: 1 hour   Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Full form of P&ID
Option A:	Piping & instrumentation diagram
Option B:	Piping & indicator diagram
Option C:	Process & indicator diagram
Option D:	Process & instrumentation diagram
Q2.	Minimum corrosion allowance specified by most of the design codes and standards is
Option A:	1.0mm
Option B:	2.0 mm
Option C:	3.0 mm
Option D:	4.0mm
Q3.	There are _____non-mandatory appendices in ASME section VIII division 1
Option A:	26
Option B:	36
Option C:	16
Option D:	46
Q4.	Vessels likely to be subjected to vacuum should be designed for a full negative pressure of_____ unless fitted with an effective, and reliable, vacuum breaker.
Option A:	1 bar
Option B:	1.5 bar
Option C:	0.5 bar
Option D:	2.0 bar
Q5.	Pressure vessels are provided
Option A:	Without nozzles
Option B:	With nozzles only
Option C:	Without openings
Option D:	Either with nozzles or openings
Q6.	Starting-up and shutting-down operations of pressure vessel can be considered as
Option A:	Repetitive
Option B:	Non repetitive
Option C:	Neither repetitive nor non-repetitive
Option D:	Cyclic operation
Q7.	ASME code section VIII covers
Option A:	Design, MoC, Fabrication, Inspection and Testing

Option B:	Design, MoC, Fabrication
Option C:	Inspection and Testing
Option D:	Fabrication, Inspection and Testing
Q8.	Find the wrong answer. Classification of pressure vessels based on technological processes is
Option A:	Reaction vessel
Option B:	Separation vessel
Option C:	Internal pressure vessel
Option D:	Storage container vessel
Q9.	Find the wrong answer. Typical components of a pressure vessel are
Option A:	Cylindrical or spherical shell
Option B:	Formed heads
Option C:	Nozzles
Option D:	Valves
Q10.	A pressure vessel is constructed of SA 516-Gr70 material and has an inside diameter of 2m. The internal design pressure is 22 bar. The corrosion allowance is 3.5 mm and the joint efficiency is 0.85. What is the required thickness of vessel if the allowable stress is 2200 bar.
Option A:	16 mm
Option B:	18 mm
Option C:	14 mm
Option D:	12 mm
Q11.	Skirt supports are used for
Option A:	Tall and vertical column
Option B:	Horizontal vessel
Option C:	Both tall and horizontal vessels
Option D:	Neither tall nor horizontal vessels
Q12.	Anchor bolt pitch should not be less than
Option A:	600mm
Option B:	700 mm
Option C:	800 mm
Option D:	1000 mm
Q13.	A vessel supported on two saddles can be considered as
Option A:	Simply supported beam
Option B:	Fixed vessel
Option C:	Floating vessel
Option D:	Large vessel
Q14.	External floating roof tanks are not used for storing
Option A:	Naphtha
Option B:	Kerosene
Option C:	Diesel

Option D:	Gasoline
Q15.	Wind girder is used for
Option A:	Open large tanks
Option B:	Closed large tanks
Option C:	Open small tanks
Option D:	Closed small tanks
Q16.	API 620 code is
Option A:	Bit more technologically advanced than API650
Option B:	Less technologically advanced than API 650
Option C:	Same as API 650
Option D:	Altogether different code compared to API 650
Q17.	The equation for determining the minimum wall thickness of a storage tank required to resist the hydro-static pressure at a liquid depth H is (σ_t = allowable stress N/mm^2 , J = Joint efficiency)
Option A:	$t = (\rho HgD)/(2000\sigma_t J)$
Option B:	$t = (\rho HgDJ)/(2000\sigma_t)$
Option C:	$t = (\rho HgD)/(2\sigma_t J)$
Option D:	$t = (\rho HgDJ)/(2\sigma_t)$
Q18.	Pick-up the wrong answer. The principal component of an Shell-and-Tube Heat Exchanger is
Option A:	Shell
Option B:	Shell cover
Option C:	Tubes
Option D:	Tie-rods
Q19.	In case of condensing shell and tube heat exchanger
Option A:	Single phase is existed in both the shell and tube sides
Option B:	Condensing takes place in one side and single phase is existed in the other side
Option C:	Vaporizing takes place in one side and single phase is existed in the other side
Option D:	Condensing takes place in one side and vaporizing takes place in the other side
Q20.	Pick-up the wrong answer. Which data needed from the process licensor before design the shell and tube heat exchanger dealing with gases, if the gas density is furnished?
Option A:	Flow rate of cold fluid
Option B:	Flow rate of hot fluid
Option C:	Inlet temperature the hot fluid
Option D:	Operating pressures of both the streams
Q21.	Shell thickness of the shell and tube heat exchanger is calculated from the following equation based on the maximum allowable stress (F) and joint efficiency (J). Where C is the corrosion allowance.
Option A:	$[(PD_s)/(FJ-0.6P)]+C$
Option B:	$[(PD_s)/(FJ-0.6P)]$

Option C:	$[(PD_s)/FJ]+C$
Option D:	$[(PD_sJ)/(F-0.6P)]+C$
Q22.	Pick-up wrong answer. Efficient agitation
Option A:	Depends on nature of the liquid
Option B:	Depends on operating conditions
Option C:	Is independent of intensity of circulation
Option D:	Depends on shear
Q23.	Baffles can be eliminated, if viscosities are
Option A:	>600 poise
Option B:	<600 poise
Option C:	>700 poise
Option D:	>800 poise
Q24.	Pick-up the right answer. With coils in the tank, the baffles should be placed
Option A:	Inside the coil
Option B:	Outside the coil
Option C:	In front of the coil
Option D:	Back side of the coil
Q25.	A propeller operating at 375rpm speed in a vessel of 1200mm diameter with following data. Internal pressure in vessel: 0.45 N/mm^2. Specific gravity of liquid in vessel: 1.1. Diameter of agitator D_a: 375mm. Power number: N_p= 0.8. Power required to operate the propeller at 375 rpm is
Option A:	1.6kW
Option B:	2.6kW
Option C:	3.6kW
Option D:	0.6kW

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	A
Q3.	A
Q4	A
Q5	D
Q6	A
Q7	A
Q8.	C
Q9.	D
Q10.	A
Q11.	A
Q12.	A
Q13.	A
Q14.	D
Q15.	A
Q16.	A
Q17.	A
Q18.	D
Q19.	B
Q20.	D
Q21.	A
Q22.	C
Q23.	A
Q24.	A
Q25.	A