University of Mumbai
Online Examination 2020

Program: BE Chemical Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: CHC701
Course Name: Process Equipment Design

Time: 1 hour Max. Marks: 50

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

Q1.	Design a U tube heat exchanger tube sheet thickness for the following data Design pressure = 21.5 N/mm2 , Outer diameter of tube = 18 mm, Material of Construction of tubesheet = Stainless steel, Permissible stress =100.6 N/mm2, Corrosion allowance = 3 mm, Gasket mean diameter = 380 mm
Option A:	125 mm
Option B:	100.2 mm
Option C:	109.8 mm
Option D:	122.8 mm
Q2.	Design a heat exchanger head thickness for the following data Shell diameter = 350 mm, Crown radius = 400 mm, Design pressure = 0.6 N/mm2 , Material of Construction = Carbon steel, Permissible stress = 95 N/mm2, corrosion allowance = 3 mm
Option A:	5.29 mm
Option B:	2.29 mm
Option C:	8.2 mm
Option D:	10.5 mm

Q3.	Which of the following methods of inspection uses high frequency of sound waves for the detection of flaws in the castings?
Option A:	Penetrant test
Option B:	Radiography
Option C:	Pressure test
Option D:	Ultrasonic inspection
Q4.	Which of the following non destructive testing is used to detect change in composition of any material?
Option A:	Liquid penetration test
Option B:	Ultrasonic test
Option C:	Eddy current test
Option D:	Radiography
Q5.	Penetrants may be applied to the surface of part by
Option A:	Spraying
Option B:	Dipping
Option C:	Pouring
Option D:	Spraying, Dipping and Pouring
Q6.	In which type of testing technique probe is essential
Option A:	Liquid penetration test
Option B:	Ultrasonic test
Option C:	Eddy current test
Option D:	Radiography

Q7.	Which among the following is the last step in radiography test method?
Option A:	observation and inspection
Option B:	circular magnetization
Option C:	demagnetization
Option D:	Imaging
Q8.	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
Q9.	In instrument tagging XYY CZZLL , YY indicates
Option A:	Type of instrument
Option B:	Variable to be measured
Option C:	Area of instrument in plant
Option D:	Unit number
Q10.	In instrument tagging XYY CZZLL , ZZ indicates
Option A:	Type of instrument
Option B:	Variable to be measured
Option C:	Area of instrument in plant
Option D:	Unit number

Q11.	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
Q12.	20. A vessel with internal diameter of 250mm is to be designed for internal pressure of 120 MN/m2. A steel having a yield point of 450 MN/m2 is used. Calculate the wall thickness required by Maximum principal stress theory with a factor of safety, 1.5.
Option A:	66 mm
Option B:	86 mm
Option C:	96 mm
Option D:	44 mm
Q13.	An accumulator is required to store 150 litre of water at a pressure 20 Mpa. Assuming the length of the stroke to be 3 m. determine the diameter of the ram
Option A:	252 mm
Option B:	292 mm
Option C:	333 mm
Option D:	189 mm
Q14.	Using above example calculate the internal diameter of the cylinder assuming the clearance of 40 mm
Option A:	332 mm

Option B:	272 mm
Option C:	413 mm
Option D:	269 mm
Q15.	Using above example calculate the thickness of the cylinder if the permissible stress of the cylinder (made of CI) is 60 N/mm2
Option A:	71 mm
Option B:	92 mm
Option C:	45 mm
Option D:	56 mm
Q16.	Barclows equation used for
Option A:	High pressure oil and gas pipes
Option B:	Steam pipes
Option C:	Liquid pipes
Option D:	Water pipes
Q17.	Stresses due to eccentricity are as a result of
Option A:	irregular load distribution
Option B:	regular load distribution
Option C:	axial load distribution
Option D:	weight of insulation, and attached equipment.
Q18.	For column diameters of less than _____ mm a single pipe nozzle or a shower with multiple pipe nozzles may be satisfactory.

Option A:	600
Option B:	300
Option C:	200
Option D:	100
Q19.	The vapour feed is generally located _____ the bottom tray
Option A:	upper
Option B:	Sidewise
Option C:	below
Option D:	anywhere
Q20.	The clearance between these baffles and the caps should be _____ the cap spacing.
Option A:	equal to
Option B:	double
Option C:	three times
Option D:	four times
Q21.	In a multiple effect evaporator, the pressure _____ as we move to subsequent effects.
Option A:	Decreases
Option B:	Increases
Option C:	Remains same
Option D:	Doubles

Q22.	Tubes for evaporators are not fabricated from _____
Option A:	Copper
Option B:	Stainless steel
Option C:	Bronze
Option D:	Carbon steel
Q23.	In short tube vertical evaporator tube bundle with surrounding shell is
Option A:	Evaporator drum
Option B:	Calendria
Option C:	Vapor release chamber
Option D:	Evaporator Body
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