

University of Mumbai
Online Examination 2020

Program: BE Chemical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: CHC603

Course Name: Heat Transfer Operations-II

Time: 1 hour

Max. Marks: 50

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

Q1.	What is the equivalent diameter of a square pitch shell and tube HE if pitch is 40 mm, the outer diameter of the tubes is 30mm?
Option A:	39.4 mm
Option B:	37.9 mm
Option C:	36.2 mm
Option D:	34.1 mm
Q2.	Which of the following is not a Plate – Type heat exchanger?
Option A:	Welded
Option B:	Gasketed
Option C:	Agitated
Option D:	Brazed
Q3.	Which one of the following best describes the function of a condenser?
Option A:	Condensed feed to a gas product
Option B:	Vapour feed to a liquid phase product
Option C:	Liquid feed to a solid phase product
Option D:	Liquid feed to a vapour phase product
Q4.	Kettle type reboilers have _____ residence time
Option A:	High
Option B:	Infinity
Option C:	Low
Option D:	Zero

Q5.	The hearth pressure in the heating zone of furnace should be
Option A:	Slightly negative pressure
Option B:	Slightly positive pressure
Option C:	High negative pressure
Option D:	High positive pressure
Q6.	In a shell and tube heat exchanger, in the inner side fluid enters at 15°C and leaves at 65°C. The shell has oil entering at 105°C and leaving at 85°C. What is the value of correction factor coefficients R?
Option A:	R = 0.4
Option B:	R = 0.3
Option C:	R = 0.4
Option D:	R = 0.3
Q7.	Why do we use counter-flow operation on gasketed type Heat Exchanger?
Option A:	It provides better ease of operation
Option B:	Applied pressure difference required is low
Option C:	A larger and uniform temperature difference is achieved
Option D:	It reduces corrosion
Q8.	In shell and tube condensers, the condensing vapour and coolant are
Option A:	separated by a tubular heat transfer surface
Option B:	separated by a plate heat transfer surface
Option C:	physical mixed and leave the condenser after condensation
Option D:	flowing through annulus and inside of pipe separately
Q9.	Which one of the following reboiler is best suited for high vaporization rate up to about 80% of the feed?
Option A:	Vertical thermosyphon reboiler
Option B:	Kettle Reboilers
Option C:	Horizontal thermosyphon reboiler
Option D:	Flash Reboilers
Q10.	If there is an opening on the furnace body, heat in the furnace escapes to the outside mainly as:
Option A:	radiation heat
Option B:	conduction heat
Option C:	convection heat
Option D:	none of the above
Q11.	What is the maximum baffle spacing for a Shell and Tube Heat Exchanger?
Option A:	ID of Shell
Option B:	ID of Tube
Option C:	ID of Shell/5
Option D:	ID of Shell/4

Q12.	What limitations does Gaskets pose on Gasketed type HE?
Option A:	Limits its use only to non-corrosive fluids, as the gaskets get corroded
Option B:	It leads to leakage and does not provide proper separation
Option C:	One directional flow is the only possibility
Option D:	Reduces necessary heat transfer area causing decreased Heat coefficient
Q13.	Which theory is widely used to determine the heat transfer coefficient for film condensation on surfaces?
Option A:	Reynold's theory
Option B:	Grashof's theory
Option C:	Nusselt's theory
Option D:	Prandtl's theory
Q14.	Which one of the following is best suited for operation of fouling as well as sensitive fluids?
Option A:	Vertical Thermosyphon reboiler
Option B:	Horizontal thermosyphon reboiler
Option C:	Forced circulation reboilers
Option D:	Kettle reboiler
Q15.	Flue gas outlet temperature from chimney of any furnace should be ideally about Degree celcius
Otion A:	50
Option B:	100
Option C:	150
Option D:	250
Q16.	Which one of the following fluid cannot be placed in the tube side?
Option A:	Fouling Fluid
Option B:	Cooling liquid
Option C:	Corrosive fluid
Option D:	Highly viscous
Q17.	Which one of the following heat exchanger is best suited for high turbulent flow, is very compact and can handle foul liquids?
Option A:	Gasketed Heat Exchanger
Option B:	Brazed Plate type Heat Exchanger
Option C:	Platular Heat Exchanger
Option D:	Lamella Heat Exchanger
Q18.	Dry steam at 373 K condenses on the outside surface of a horizontal pipe of 25 mm O. D. The pipe surface is maintained at 357K by circulating water through it. $h = 10864 \text{ W}/(\text{m}^2.\text{K})$ Determine the heat transfer per unit length of the pipe

Option A:	1086.4 W/(m ² .K)
Option B:	108.64 W/(m ² .K)
Option C:	10864 W/(m ² .K)
Option D:	108640 W/(m ² .K)
Q19.	The distillation procedure occurring by using a reboiler is known as _____
Option A:	Gas distillation
Option B:	Normal distillation
Option C:	Steam distillation
Option D:	Oil distillation
Q20.	Radiation losses from the surface of a furnace practically
Option A:	Increase with increase in furnace loading
Option B:	Decrease with increase in furnace loading
Option C:	Are independent of furnace loading
Option D:	Are dependent on furnace loading
Q21.	The scales form in heat exchangers after a period of operation and provide additional resistance to heat transfer with some heat transfer coefficient. The reciprocal of this scale heat transfer coefficient is called as
Option A:	scaling factor
Option B:	fouling factor
Option C:	forming factor
Option D:	resisting factor
Q22.	What are the compact heat exchangers?
Option A:	the heat exchangers having small surface area per unit volume
Option B:	the heat exchangers having large surface area per unit volume
Option C:	the heat exchangers having small surface area per unit weight
Option D:	the heat exchangers having large surface area per unit weigh
Q23.	If non-condensable gas is present in condensing vapours in condenser, the rate of condensation _____ .
Option A:	increases
Option B:	decreases
Option C:	remains constant
Option D:	does not affect
Q24.	Which one of the following reboiler is a thermosyphon reboiler?
Option A:	Vertical
Option B:	Slanted
Option C:	Kettle
Option D:	Internal

Q25.	Rate of heat release in a furnace which is the measure of heat intensity is defined as
Option A:	kcal/h/cubic meter combustion space
Option B:	kcal/cubic meter combustion space
Option C:	kcal/hr
Option D:	kcal/hr

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