

University of Mumbai
Online Examination 2020

Program: BE Chemical Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester: V

Course Code: CHC 503

Course Name: Heat Transfer Operations (HTO)

Time: 1 hour

Max. Marks: 50

1. Fourier's law of heat conduction gives the heat flow for
 - (A) Irregular surfaces
 - (B) Non uniform temperature surfaces
 - (C) One dimensional cases only
 - (D) Two dimensional cases only

2. Heat transfer in liquid and gases takes place by
 - (A) Conduction
 - (B) Convection
 - (C) Radiation
 - (D) Conduction and convection

3. Cork is a good insulator because it has
 - (A) Free electrons
 - (B) Atoms colliding frequency
 - (C) Low density
 - (D) Porous body

4. Which of the following has maximum value of thermal conductivity?
 - (A) Aluminum
 - (B) Steel
 - (C) Brass
 - (D) Copper

5. Thermal diffusivity is –
- (A) A dimensionless parameter
 - (B) Function of temperature
 - (C) Used as mathematical model
 - (D) A physical property of the material
6. The Grashoff number in natural convection plays same role as
- (A) Prandtl number (Pr) in forced convection
 - (B) Reynolds number (Re) in forced convection
 - (C) Nusselt number (Nu) in forced convection
 - (D) Stanton number (St) in forced convection
7. What is the effect of change in outer radius of the hollow cylinder on the thermal resistance of convection?
- (A) The thermal resistance of convection increases with increase in outer radius of the hollow cylinder
 - (B) The thermal resistance of convection decreases with increase in outer radius of the hollow cylinder
 - (C) The thermal resistance of convection remains same with change in outer radius of the hollow cylinder
 - (D) Unpredictable
8. Consider a plane wall of area A, having a layer of insulation on it. What will happen to the thermal resistance for convection of wall if the thickness of the insulation is increased?
- (A) The thermal resistance for convection increases with increase in thickness of insulation
 - (B) The thermal resistance for convection decreases with increase in thickness of insulation
 - (C) The thermal resistance for convection remains same with increase in thickness of insulation
 - (D) Unpredictable
9. Dittus-Boelter equation used for the determination of heat transfer co-efficient is valid
- (A) For fluids in laminar flow
 - (B) For fluids in turbulent flow
 - (C) When Grashoff number is very important
 - (D) For liquid metals
10. The home air conditioner uses -----cooled condenser for liquefaction of a refrigerant.

- (A) Freon
- (B) Ammonia
- (C) Air
- (D) Nitrogen

11. If the mass flow rate of condensate is 3.78kg/h, Latent heat of condensation 2225KJ/kg, Find the rate of heat transfer.

- (A) 2336 W
- (B) 2850 W
- (C) 2300 W
- (D) 2500 W

12. 100 tubes of O.D 12.5 mm, 1m long at 373K are cooled to 370K. If 'h' is 13000 W/m²K, find 'Q'

- (A) 160000 W
- (B) 172590 W
- (C) 153075 W
- (D) 157035 W

13. Reverse of boiling is

- (A) Condensation
- (B) Solidification
- (C) Sublimation
- (D) Freezing

14. During the process of boiling energy conversion takes place is

- (A) Kinetic energy to thermal energy
- (B) Potential to kinetic energy
- (C) Thermal energy to kinetic energy
- (D) Kinetic energy to potential energy

15. In pool boiling, as soon as the temperature of heating surface reaches the boiling point of the liquid, heat transfer takes place

- (A) By conduction
- (B) By natural convection
- (C) By forced convection
- (D) By radiation

16. At 1 atm pressure, the boiling point of water is _____

- (A) 100 °C
- (B) 0°C
- (C) -100°C
- (D) 1 °C

17. To calculate the temperature difference in a Shell and tube heat exchanger, we use

- (A) LMTD
- (B) Mean temperature difference
- (C) Median of the temperature difference
- (D) Square mean of the temperature difference

18. Which of the following has the maximum Heat transfer rate for a Double Pipe Heat Exchanger?

- (A) Cross Flow
- (B) Parallel Flow
- (C) Counter-flow
- (D) Split Flow

19. To which side given below should we add fins?

- (A) Gas side
- (B) Liquid side
- (C) Solid side
- (D) Any possible side

20. The interchange factor is also known as

- (A) Equivalent emissivity
- (B) Irradiation
- (C) Radiosity
- (D) Shape factor

21. For the same type of shapes, the value of the radiation shape factor will be higher when

- (A) Surfaces are closer
- (B) Surfaces are larger and held closer
- (C) Surfaces are moved further apart
- (D) Surfaces are smaller and held closer

22. With an increase in wavelength, the monochromatic emissive power of a black body
- (A) Increases
 - (B) Decreases
 - (C) Decreases, reaches a minimum and then increases
 - (D) Increases, reaches a maximum and then decreases
23. Heat sensitive materials can be concentrated in an evaporator employing _____ .
- (A) Vacuum
 - (B) High pressure
 - (C) High residence time
 - (D) High temperature
24. Which of the following accessories is provided in the vapour line of an evaporator for removing the entrained liquid?
- (A) Bleed point
 - (B) Vent
 - (C) Catchall
 - (D) Baffle
25. Multiple effect evaporation is generally recommended, when the _____ .
- (A) Large scale evaporation of liquor is needed
 - (B) Corrosive liquids are to be concentrated
 - (C) Fuel is cheaply available
 - (D) Evaporation on small scale is to be done
-

University of Mumbai
Online Examination 2020

Program: BE Chemical Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester: V

Course Code: CHC 503

Course Name: Heat Transfer Operations (HTO)

Time: 1 hour

Max. Marks: 50

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