A

Reg. No. :

Question Paper Code: R2905

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Second Semester

Chemical Engineering

R21UCH205 - INTRODUCTION TO CHEMICAL ENGINEERING

(Regulation R2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. In air conditioning process, what has to be done first to the moist air? CO1-U

   (a) Heating (b) Cooling

   (c) Heating & Cooling (d) None of mentioned

2. The type of check sheet used to monitor the input parameters that can affect the occurrence of defects in a process is called a CO1- U

   (a) Process distribution check sheet (b) Defective item check sheet

   (c) Defect location check sheet (d) Defect factor check sheet

3. "The velocity of entrance and exit through a nozzle remains the same." Is this ever possible? CO1- U

   (a) Only if the flow is compressible (b) Only if the flow is laminar

   (c) Only if the flow is rotational (d) Never possible

4. For a fully-developed pipe flow, how does the pressure vary with the length of the pipe? CO1- U

   (a) Linearly (b) Parabolic (c) Exponential (d) Constant

5. Radiation heat transfer is characterized by CO1- U

   (a) Movement of discrete packets of energy as electro-magnetic waves

   (b) Due to bulk fluid motion, there is a transport of energy

   (c) There is the circulation of fluid by buoyancy effects

   (d) Thermal energy transfer as vibrational energy in the lattice structure of the material

6. What are the basic methods of distillation? CO1- U

(a) Fractional distillation and simple distillation

(b) Fractional distillation, destructive distillation and simple distillation

(c) Steam distillation, simple distillation and gas distillation

(d) Steam distillation and destructive distillation

7. What is R in the equation $k = Ae^{-Ea/RT?}$ CO1- U

(a) R =8.314 J K^{-1} mol^{-1} (b) R=3.184 J K^{-1} mol^{-1}

(c) R = 4.318 J K^{-1} mol^{-1} (d) R =1.438 J K^{1} mol^{-1}

8. The mass of water vapour per unit mass of bone dry air is called CO1- U

(a) Relative saturation (b) Relative Humidity

(c) Humidity (d) None of the mentioned

9. Which of the following does NOT constitute 90% of dry weight of any food? CO1 -U

(a) Carbohydrates (b) Fibers (c) Proteins (d) Fats

10. Forbidden Energy gap (EG) of a semiconductor in electronic devices depends on which of the following factors? CO1 -U

(a) Interatomic distance (b) Material constant

(c) Electron affinity (d) Recombination and Generation

PART – B (5 x 2= 10Marks)

11. What is the use of chemical technology? CO1 -U

12. Discuss briefly about the velocity profile. CO1- U

13. What is heat transfer? CO1- U

14. Why are reactors important? CO1- U

15. Explain briefly about the Scope of Chemical Engineering with its computer applications. CO1 -U

PART – C (5 x 16= 80Marks)

16. (a) With neat sketch briefly explain about the Representation of a Chemical Process in terms of Flow sheet. CO1 -U (16)

Or

(b) Draw a schematic diagram of a Process Flow & explain it briefly. CO1- U (16)

17.	(a)	Discuss briefly about the velocity profile.	CO1 -U	(16)
		Or		
	(b)	Explain with a neat sketch the Boundary layers.	CO1 -U	(16)
18.	(a)	Write a short note on (a) Conduction(6) (b) Convection(6) (c) Radiation.(4)	CO1- U	(16)
		Or		
	(b)	Explain briefly about theHeat Transfer Equipment's.	CO1- U	(16)
19.	(a)	Explain about the Chemical Kinetics.	CO1- U	(16)
		Or		
	(b)	Describe briefly about the Flow Meter	CO1- U	(16)
20.	(a)	Explain briefly about the Scope of Chemical Engineering with its computer applications.	CO2 -App	(16)
		Or		
	(b)	Discuss in detail about role of chemical engineer in Biochemical Engineering.	CO2 -App	(16)