

- Q.24 Write short note on steam distillation.
  - Q.25 Explain relative volatility and reflux ratio.
  - Q.26 Explain second law of thermodynamics.
  - Q.27 Give advantage and drawbacks of double pipe heat exchanger.
  - Q.28 Give difference between crushing and grinding.
  - Q.29 Explain concept of Gibbs free energy.
  - Q.30 Explain importance of diffusion process.
  - Q.31 Explain size reduction law.
  - Q.32 Discuss working of cyclone separator.
  - Q.33 Draw a neat sketch of double pipe heat exchanger.
  - Q.34 Discuss role of diffusion in Mass transfer
  - Q.35 Explain Plate type heat exchanger

## **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain advantages of forced circulation evaporators and its applications.

Q.37 Explain :

  - Dry and wet bulb temperature
  - Total heat and specific heat of System

Q.38 Write a short note on :

  - Filter Press
  - Dew point

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# **4th Sem / Plastic Subject:- Fundamental of Chemical Engineering/ Unit Operation**

Time : 3Hrs. M.M. : 100

A

## **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Liquid-liquid mixture is separated with solvent extraction by adding \_\_\_\_\_ solvent.

  - Soluble
  - insoluble
  - Partially soluble
  - All of them

Q.2 According to Stefan Boltzmann law, the total radiation from a black body per second per unit area is directly proportional to the \_\_\_\_\_.

  - Absolute temperature
  - Square of the absolute temperature
  - Cube of the absolute temperature
  - Fourth power of the absolute temperature

Q.3 Give the name of size reduction machine.

  - Crusher
  - Grinder
  - Cutter
  - All of these

Q.4 Fick's Law related to \_\_\_\_\_.

  - Heat transfer
  - Thermodynamics
  - Mass transfer
  - None of these

- Q.5 LMTD in case of counter flow heat exchanger as compared to parallel flow heat exchanger is  
 a) Higher                    b) lower  
 c) same                    d) depends on area
- Q.6 Heat transfer in liquid and gases takes place by  
 a) Conduction            b) convection  
 c) radiation              d) All of these
- Q.7 The envelope which separates the thermodynamic system from surroundings is known as.  
 a) boundary              b) universe  
 c) state                    d) boundary
- Q.8 Enthalpy is the heat supplied to a system at constant \_\_\_\_\_.  
 a) volume                b) pressure  
 c) temperature            d) None of these
- Q.9 Thermal diffusivity of a substance is  
 a) Directly proportional to the thermal conductivity  
 b) Inversely proportional to specific heat  
 c) None  
 d) All of the above
- Q.10 The use of heat exchangers is made in  
 a) Radiators in automobile  
 b) Condensers and boilers in steam plants  
 c) Condensers and evaporators in refrigeration and air conditioning units  
 d) All of the above

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## SECTION-B

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 Constant pressure process is also known as \_\_\_\_\_.  
 Q.12 According to first law of thermodynamics, heat and mechanical work are \_\_\_\_\_.  
 Q.13 A Gas which obeys the law  $PV = RT$  at all temperature and pressure is known as \_\_\_\_\_.  
 Q.14 Steam is invisible when it is pure and dry. (T/F)  
 Q.15 Heat transfer equipment which consists of two concentric pipes is known as \_\_\_\_\_ heat exchanger.  
 Q.16 \_\_\_\_\_ is carried out by supplying heat to a solution to vaporize solvent.  
 Q.17 Expand LMTD.  
 Q.18 Heat can be transferred by \_\_\_\_\_ mode across vacuum  
 Q.19 A perfectly black body absorptivity is equal to \_\_\_\_\_.  
 Q.20 Name two filtration equipments.

## SECTION-C

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21 Explain working of drum dryer  
 Q.22 Discuss advantages and disadvantages of rotary dryer  
 Q.23 State Raoult's Law

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