

Time: 3 hours

Total Marks 75

Question No. 1. Multiple choice questions

1×20=20 Marks

- 1 Which of the following is a variable area meter?
 - A Venturimeter
 - B Pitot tube
 - C Orifice meter
 - D Rotameter

- 2 Fanning equation helps to calculate
 - A Friction losses
 - B Enlargement losses
 - C Contraction losses
 - D Losses due to fittings

- 3 Which of the following factor is attributed to surface property?
 - A Toughness
 - B Moisture content
 - C Hardness
 - D Bulkiness

- 4 According to Rittinger's Law, the energy required for size reduction is directly proportional to _____
 - A Surface area
 - B Crack length
 - C Crushing strength
 - D Stress at atomic bond

- 5 Liver extract is obtained by use of _____ evaporator.
 - A Climbing film evaporator
 - B Basket type evaporator
 - C Wiped film evaporator
 - D Forced circulation evaporator

- 6 In horizontal tube evaporator steam is circulated _____.
 - A Inside the evaporating tubes
 - B Outside the evaporating tubes
 - C Condensate inlet
 - D Product outlet

- 7 The equation for rate of heat transfer by convection process is _____.
 - A Rate = driving force/resistance
 - B Rate = resistance/driving force
 - C $q = hcA (t_1 - t_2)$
 - D $q = bAT^4$

- 8 Which of the following is not the application of heat transfer?
A Drying
B Distillation
C Evaporation
D Mixing
- 9 Fixed oils can be extracted using _____ distillation.
A Molecular still
B Vacuum still
C Water still
D Fractional distillation
- 10 What does a lower HETP value indicate?
A Higher separation efficiency
B Lower energy consumption
C Greater temperature control
D Reduced pressure drop
- 11 What is the term for the point at which the drying rate is maximum and constant moisture is being removed?
A Equilibrium moisture content
B Critical moisture point
C Saturation point
D Drying equilibrium
- 12 Attrition is major disadvantage with one of the following
A Fluidized bed dryer
B Drum dryer
C Freeze dryer
D Tray dryer
- 13 A typical hallow cylinder joining angle in v-cone blender is between _____ Degree
A 10 to 20
B 30 to 50
C 70 to 90
D 100 to 120
- 14 In which mixing mechanism do particles move primarily due to the bulk movement of the fluid?
A Convective Mixing
B Diffusive Mixing
C Mechanical Mixing
D Laminar Mixing

- 15 Which factor is crucial for the selection of the appropriate filter medium in a filtration process?
- A Particle shape
 - B Temperature
 - C color
 - D Particle size distribution
- 16 Which of the following characteristics of the filter cake can impact the efficiency of the filtration process?
- A Thickness
 - B Color
 - C Temperature
 - D pH
- 17 How is the separation achieved in a perforated basket centrifuge?
- A Sedimentation
 - B Filtration
 - C Decantation
 - D Precipitation
- 18 What is a common disadvantage of super centrifuges?
- A Low energy consumption
 - B Limited scalability
 - C Inability to separate particles based on density
 - D High cost
- 19 Containers made for storage of injections are made from one of the following type of glasses.
- A Borosilicate
 - B General purpose
 - C Lime soda
 - D Neutral
- 20 A severe type of corrosion at highly localized areas of metal surface is
- A Galvanic Corrosion
 - B Pitting Corrosion
 - C Stress Corrosion
 - D Erosion

Question No. 2: Answer any TWO

10×2= 20M

- A. Differentiate between Dry and Wet corrosion. Write a note on Lead and its alloys **10**
- B. Illustrate with diagram principle, construction and working of spray dryer **10**
- C. State and explain laws governing size reduction **10**

Question No. 3: Answer any SEVEN

5×7= 35M

- A. Discuss in detail construction and working of Differential manometer. **5**
- B. Elaborate on the principle, construction and working of horizontal tube evaporator. **5**
- C. Give briefly the principle, construction and working of double pipe heat exchanger. **5**
- D. Describe the mechanism of fractional distillation with vapor liquid equilibrium diagram. **5**
- E. Explain Principles, Construction, Working, uses, Merits and Demerits of twin shell blender. **5**
- F. Describe in detail mechanism of liquids mixing. **5**
- G. Explain Principle, Construction, Working, uses, Merits and Demerits of rotary drum filter. **5**
- H. Describe principle, construction, working, uses, merits and demerits of Perforated basket centrifuge **5**
- I. Discuss factors affecting Corrosion **5**
