

Time: 3 hours

Total Marks 75

Question No. 1. Multiple choice questions

1×20=20 Marks

- 1 Reynolds's number of liquid 1, 2 and 3 is 500, 1500 and 3000 respectively. Which of the flows will be laminar?
  - A Liquid 1 and 2
  - B Liquid 1, 2 and 3
  - C Liquid 1 only
  - D liquid 3 only
  
- 2 \_\_\_\_\_ is also known as Insertion meter
  - A Venturimeter
  - B Pitot tube
  - C Orifice meter
  - D Rotameter
  
- 3 In \_\_\_\_\_ mill size reduction is done by crushing due to heavy weight of stones and shearing force
  - A End runner mill
  - B Edge runner mill
  - C Ball mill
  - D Cutter mill
  
- 4 What is the percent volume of balls filled in the ball mill for it's effective operation?
  - A 60–70%
  - B 30–50%
  - C <30%
  - D >50%
  
- 5 What effect is observed on the process of evaporation when large amount of solute is added in the solvent?
  - A Elevation in boiling point of the liquid
  - B Depression in freezing point of liquid
  - C Presence of solute in the solvent does not affect the process of evaporation in any way
  - D Vapour pressure of the liquid is increased
  
- 6 In which evaporator the feed is moving against the gravity?
  - A Evaporating pan
  - B Climbing film evaporator
  - C Horizontal tube evaporator
  - D Falling film evaporator
  
- 7 Which of the following plates of Flat Plate heat exchanger acts as fixed or unmovable plate?
  - A Pressure plate
  - B Frame Plate
  - C Carrying beam
  - D Guiding bar

- 8 Heat transfer through conduction process is carried out by \_\_\_\_\_.
- A Kinetic energy
  - B Potential energy
  - C Pressure energy
  - D Vibrational energy
- 9 What is the expected product obtained through the process of distillation?
- A Condensed vapours
  - B Liquid residue
  - C Dried solid
  - D Concentrated liquid
- 10 Separation of Vitamin A and E is carried out by \_\_\_\_\_ process.
- A Filtration
  - B Centrifugation
  - C Distillation
  - D Clarification
- 11 Which factor is crucial for the successful drying of materials in a vacuum drying process?
- A High humidity
  - B Low pressure
  - C Rapid air circulation
  - D Ambient temperature
- 12 In which step of the freeze dryer, most of the water is removed during drying?
- A Primary drying
  - B Pre-freezing
  - C Packaging
  - D Secondary drying
- 13 Which type of mixing is most affected by the molecular voids of the substances being mixed?
- A Convective Mixing
  - B Diffusive Mixing
  - C Mechanical Mixing
  - D Inertial Mixing
- 14 Which mixing equipment is suitable for gentle blending of fragile materials?
- A Agitated vessel
  - B Drum mixer
  - C Planetary mixer
  - D High-shear mixer
- 15 How does a positive pressure affect the filtration rate?
- A Increases
  - B Decreases
  - C No effect
  - D Depends on particle size

- 16 What role does filter aid play in the filtration process?  
A Hindering filtration  
B Assisting in particle removal  
C Reducing filter surface area  
D Increasing clogging
- 17 What is the significance of the rotational speed in a perforated basket centrifuge?  
A Determines the temperature  
B Affects separation efficiency  
C Controls pressure  
D Alters the material composition
- 18 Which type of centrifuge is more suitable for continuous large-scale industrial processes?  
A Super centrifuge  
B Semi-continuous centrifuge  
C Regular centrifuge  
D Ultra-centrifuge
- 19 \_\_\_\_\_ glass container is used for the storage of light sensitive Pharmaceuticals  
A Airtight  
B Amber colored  
C Wide mouth  
D Well closed
- 20 The ability of a metal surface to withstand repeated cycles of corrosion is known as:  
A Cavitation erosion  
B Corrosion fatigue  
C Erosion  
D Stress of corrosion cracking

**Question No. 2: Answer any TWO**

**10×2= 20M**

- A. What is corrosion? Explain different theories of corrosion. **10**
- B. Explain in brief principle, construction and working of freeze dryer **10**
- C. Enlist different mechanisms of the size reduction with an example of equipment.  
Describe the principle, construction, and working of an Air Separator. **10**

**Question No. 3: Answer any SEVEN**

**5×7= 35M**

- A. Compare and contrast orifice and venturi meter. **5**
- B. Describe the factors affecting the process of evaporation. **5**
- C. Sketch out shell and tube exchanger and give its principle, construction and working **5**
- D. Write in detail about principle, construction and working of simple distillation. **5**
- E. Explain Principle, Construction, and Working, uses, Merits and Demerits of Sigma blade mixer. **5**
- F. Describe Principle, Construction, Working, uses of ribbon blender. **5**
- G. Give Principle, Construction, Working, uses of filter leaf. **5**
- H. Define Centrifugation and give its applications. **5**
- I. Elaborate on Ferrous & its alloys. **5**

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