Time:3Hours   Total Marks 75

Question No, 1. Multiple choice questions   **1×20=20 Marks**

1. Three liquids show flows named as 1, 2 and 3 and their Reynold's number is 250, 1800 and 5000 respectively. Which of the flow/s will be laminar?
    A. Liquid 1 only   B. liquid 3 only
    C. Liquid 1, 2 and 3   A. Liquid 1 and 2

2. What is the percent volume of balls filled in the ball mill for its effective operation?
    A. 30–50%   B. <30%
    C. 60–70%   D. >50%

3. Which of the following is a method to increase the efficiency of an evaporator?
    A. Increasing the heat transfer surface area   B. Decreasing the flow rate
    C. Increasing the residence time   D. Decreasing the temperature difference

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

5. Which of the following mill works on the principle of compression communition?
    A. Ball mill   B. End runner mill
    C. Cutter mill   D. Edge runner mill

6. Which is the best suited feed method in multiple effect evapoartor?
    A. Mixed feed method   B. Parallel feed method
    C. Backward feed method   D. Forward feed method

7. In double pipe heat exchanger the inner pipe is preffered for the circulation of _____.
    A. Non-condensed gases   B. Hot fluid
    C. Steam   D. Cold fluid

8. In distillation process, feed liquid is also called as _____.
    A. Vaporate   B. Distillate
    C. Distilland   D. Condensate

9. Following are the objectives of heat transfer process except_____.
    A. Mixing   B. Temperature Control
    C. Insulation   D. Heat enhancement

10. Which distillation unit has wall as an evaporating surface?
    A. Extractive distillation   B. Molecular distillation
    C. Fractional distillation   D. Azeotropic distillation

11. Which drying method involves the use of heated air to evaporate moisture from a substance?
    A. Freeze drying   B. Fluidized bed drying
    C. Drum drying   D. Sublimation drying

12. Which type of mixing impeller is commonly used for low-viscosity fluids?
    A. Anchor impeller   B. Ribbon impeller
    C. Paddle impeller   D. Propeller impeller

13. What is the purpose of the drying curve in the drying process?
    A. To monitor the temperature during drying   B. To determine the drying time required
    C. To calculate the drying rate   D. To determine the final moisture content of the substance

14. Which of the following is **not** a primary objective of mixing processes?
   - A. Enhancing heat transfer
   - B. Blending different ingredients
   - C. Achieving uniformity of composition
   - D. Maximizing reaction rates
15. The efficiency of filtration increases if,
   - A. Solid content is more
   - B. Filter aid is added to the slurry
   - C. The compressibility of solids is high
   - D. Size distribution of solids is wide in slurry
16. Which one of the following is **not** a mechanism of filtration?
   - A. Entanglement
   - B. Impact
   - C. Impingement
   - D. Straining
17. Which type of corrosion occurs due to concentration difference in a component
   - A. Uniform
   - B. Stress
   - C. Galvanic
   - D. Inter-granular
18. What is the main principle behind centrifugation?
   - A. Evaporation
   - B. Differential settling
   - C. Magnetic separation
   - D. Gravity separation
19. Birma Bright is an alloy of _____
   - A. Aluminium
   - B. Copper
   - C. Ferrous
   - D. Nickel
20. Which is responsible to control the separation efficiency in centrifugation?
   - A. Time
   - B. Time
   - C. Speed
   - D. Sample volume

Question No. 2: Answer any <u>TWO</u> of the following   10×2= 20Marks

A. What is corrosion? Explain in brief different types of corrosion?
B. Explain the diffusion theory of drying and give the principle, construction and working of drum dryer
C. Enlist the different laws governing the process of size reduction. Explain with illustration Bag Filter with its application.

Question No. 3: Answer any <u>SEVEN</u> of the following   5×7= 35Marks

A. State Bernoulli's theorem. Distinguish between Venturimeter and Rotameter.
B. Describe briefly climbing film evaporator
C. Explain construction and working, advantages and disadvantages of perforated basket centrifuge
D. Define Fouriers law of heat transfer and describe the principle, construction and working of concentric tube heat exchanger
E. Explain construction and working, advantages and disadvantages of ribbon blender
F. Explain stainless steel & its alloys
G. Describe liquid mixing mechanisms
H. Describe factors influencing on filtration
I. Elaborate on the process of simple distillation

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