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Department of Cosmetic Technology

Bachelor of Cosmetic Technology,Semester VIII

Subject- (S8-T-3) Plant Design

Question Bank (Summer-2022)

1.The agitator required to_____

a. Provide air

b. Mixing objectives

c. Purify the product

d. Sterlize the media

2.Which of the following is not the component of agitation system?

a. Impeller

b. Baffles

c. Stirrer gland and bearing

d.Thermometer

3.Which of the following seal assembly has not been used in stirrer glands and bearings?

a. Stuffing box

b. Bush seal

c. Electric drive

d. Mechanical seal

4.which of the following is not the use of baffles?

a.Increase the effect of agitation

b.Improve aeration efficiency

c.Improve cooling capacity

d.Improve the fermenter capacity

5. Power consumption by agitation is –

a. a function of physical properties

b. a function of operating conditions

c.a function of vessel and impeller geometry

d. All of the above

6. Which of the following impellers will provide radial flow?

a. Paddles

b. Flat blade turbines

c. Disk Flat blade turbines

d. All of the above

7. Power number is ratio of-

a. Imposed force to internal force

b. Bouyant force to inertia force

c. Gravitation force to inertial force

d. Imposed force to gravitational force

8. Vortexing in stirrer tank reactors can be prevented by –

A. Installing baffles in the reactor

B,Shifting the impeller to an off center position

c. Both a and b

d. None of the above

9.The reason of using a flat disk in a turbine is-

a. to creat high conditions

b.to break up bubbles more efficiently than the impeller blades

c.to ensure that the bulk of the energy consumption occurs at the blades

d.None of the above

10. The ratio propeller agitator diameter /tank diameter is normally taken as _____

a. 0.15-0.30

b. 0.5-0.65

c. 0.75-0.85

d. 0.60-0.90

11. In the agitator ,the power required will be changed with the increase of diameter of agitator D as

a. D^2 b.D^5 c.D d.D^9

12. The stuffing box is used for---

a.Absorbing the contraction

b. Prevention of fluid leakage around moving parts

c. Reducing the resistance of fluid flow

d.None of the above

13. Baffles may be eliminated for -----

a. Low viscosity liquids(<200 POISE)

b . High viscosity liquids(<600 POISE)

c.Large diameter tank

d.None of the above

14.Baffle width normally taken as _____times the tank diameter.

a.0.1-0.12

b. 0.4-0.5

c. 0.45-0.6

d. 0.2-0.45

15. Speed of industrial paddle agitator ranges from _____rpm.

a.1 to 5 b. 20 to 100 c. 500 to 750 d. 1000 to 2000

16.. For turbine agitator , the impeller diameter is about_____-

a. 0.3 to 0.5 d

b. 0.1 to 0.2 d

c. 0.56 to 0.75 d

d. 0.95d

17. The approximate liquid depth in agitaton tank is equal to_____

a. 0.5 of tank diameter

b. 0.75 of tank diameter

c. tank diameter

d. 2 of tank diameter

18. Power required for agitation depends upon the _____

a.Height and properties of liquid

b. Agitator type and speed of agitation

c.Size of agitator and the tank

d. All of the above

19. the minimum baffles height should be ____

a. Equal to the impeller diameter

b. Twice the impeller diameter

c. Twice the tank diameter

d. None of the above

20. A propeller agitator is_____

a.Produce maximum axial flow

b. Is used for mixing high viscosity pastes

c. Runs at very slow speed

d. None of the above

21. Helical screw are generally used for solid-solid mixing. This statement is true or false.

a. True

b.False

22.When $N_{Re}<300, N_{Fr}$ is ineffective. This statement is_____

a.True

b. False

23.Are propeller and impellers different in function from each other ?

a. True

b. False

24. Mixing is sufficiently done away from the impeller?

a. True

b. False

25.How can swirling be prevented in agitated vessels?

a. By reducing the power provided

b. By the use of turbines

c. By the use of baffles

d. None of the above

26. An agitator is selected depending upon the _____-

a. volume of liquid

b. Height of tank

c. Power required

d. Fluid viscosity

27.Name the type of impeller used for agitation of low viscosity fluids, on high speeds?

a. propeller

b. Concave blade impeller

c. Straight blade impeller

d. Paddles

28. Power number is expressed as---

a. $P/N^2D_a\rho$

b. $P/N^3D_a^5\rho$

c. $P/N^2D_a{}^2\rho$

d. $P/N^3D_a^3\rho$

29. Reynolds number is expressed as_____

a. $\rho ND_a^2/\mu$

b. $N^2D_i\rho$

c. ρND_a^2

d. None of the above

30. Froud number is expressed as___

a. N^2D_a

b. N^2D_a/g

c. $N^2D_a g$

d.None of the above

31. Propeller agitator peripheral speed is generally between_____

a.600 and 800 meters

b.300 and 500 meters

c.200 and 300 meters

d.100 and 500

32.The power loss in glands varies from ____for smaller agitator shafts in the transmission and gland losses.

a. 0.3

b.06

c.05

d. 0.2

33. Write the formula for the continuous average rated torque on the agitator shaft.

a.$T_c = \frac{P}{2\pi \times N}$

b. $T_c = \frac{P}{2\pi}$

c. $T_c = \frac{P}{\pi \times N}$

d. None of the above

34 Write the formula for the critical speed for shafts.

a.$\delta = \frac{Wl^3}{3EI}$

b.$\delta = \frac{Wl}{2EI}$

c.$\delta = \frac{Wl^3}{EI}$

d. $\delta = \frac{Wl^2}{3EI}$

35. Cylindrical shell thickness for rotary dryer is generally _____ mm.

a) 2-3

b) 18-22

c) 6-8

d) 7-8

36. Power required for agitation depends upon the ……

a)Height and properties of the liquid

b) Agitator type and speed of agitation

c) Size of agitator and the tank

d) All of the above

37. Saddle support is use for _____-

a) Horizontal vessels

b) Vertical vessels

c) Inclined vessel

d) None of them

38. Reaction vessel are classified as_____

a)Batch reactor

b)Semi-batch reactor

c)Continuous reactor

d)All of the above

39.Leg support is also known as_____

a)Saddle support

b)Bracket support

c)Horizontal support

d)None of these

40.Storage of viscous liquid, non viscous liquid and gasses are classification of _____

a)Storage tank

b)Reaction vessel

c)Pressure vessel

d)None of these

41. The vapour lift ,floating is type of_____

a)Head of the tank

b)Roof of the tank

c)Bottom of the tank

d)None of these

42. Jackets and coils are the types of _____

a)Heat exchanger

b)Storage vessel

c)Reaction vessel

d)None of these

43. In safety measures MSDS stand for_____

a)Material Safety Data Sheet

b)Measure Safety Data Sheet

c)Minor Safety Data Sheet

c)Major Safety Data Sheet

44.Which of the following are the major hazards in the operation of plants in chemical industries.

a)Toxic and corrosive chemicals

b)Fires c)Explosions d)All of the above

45.Power is produced when the working fluid does some work on the ?

1. Shaft 2.. Fins 3. Blades 4.None of the above