

COLLEGEDUNIA

CHEMICAL-PGAT

1. Ideal gas law is best obeyed by gases at
 - a. Low pressure, high temperature
 - b. High pressure, low temperature
 - c. Low pressure, low temperature
 - d. High pressure
2. Second law of thermodynamics is concerned with
 - a. Amount of energy transferred
 - b. Direction of energy transferred
 - c. Irreversible processes only
 - d. Non-cyclic processes only
3. Degrees of freedom at triple point will be
 - a. 0
 - b. 1
 - c. 2
 - d. 3
4. Pick out the extensive property out of the following
 - a. Surface tension
 - b. Free energy
 - c. Specific heat
 - d. Refractive index
5. Screen efficiency is
 - a. Recovery/ rejection
 - b. Recovery
 - c. Rejection
 - d. None of these
6. The loss due to sudden contraction is proportional to
 - a. Velocity
 - b. Velocity head
 - c. Turbulence
 - d. None of these
7. Newton's law of viscosity relates
 - a. Shear stress and velocity
 - b. Velocity gradient and pressure intensity
 - c. Shear stress and rate of angular deformation
 - d. Pressure gradient and rate of angular deformation
8. Pressure drop in fluidized bed reactor is _____ that in a similar packed bed reactor
 - a. Less than
 - b. More than
 - c. Same as
 - d. None of these
9. Unit of mass velocity is
 - a. Kg/m.hr
 - b. Kg/m².hr
 - c. Kg/hr
 - d. Kg/m²

COLLEGEDUNIA

10. Cavitation occurs in a centrifugal pump when the suction pressure is
- a. Equal to the developed head
 - b. Greater than the vapor pressure of the liquid at that temperature
 - c. Equal to the vapor pressure
 - d. Less than the vapor pressure of the liquid at that temperature
11. CaCO_3 contains ____ percent of Ca by weight
- a. 40
 - b. 48
 - c. 96
 - d. 12
12. A limiting reactant is the one which decides the ____ in a chemical reaction
- a. Equilibrium constant
 - b. Conversion
 - c. Rate constant
 - d. None of these
13. Fugacity and pressure are numerically equal when the gas is
- a. In standard state
 - b. In ideal state
 - c. At low temperature
 - d. At high pressure
14. Number of gm moles of solute dissolved in 1 litre of a solution is called its
- a. Equivalent weight
 - b. Molarity
 - c. Molality
 - d. normality
15. Number of gm moles of solute dissolved in 1Kg of solvent is called its
- a. Molality
 - b. Molarity
 - c. Normality
 - d. Formality
16. With the increase in temperature, the heat capacity of a substance
- a. Increases
 - b. Decreases
 - c. Remains unchanged
 - d. Depends on the substance
17. The velocity profile for turbulent flow through a closed conduit is
- a. Logarithmic
 - b. Parabolic
 - c. Hyperbolic
 - d. linear
18. In a fluidized bed reactor
- a. Temperature gradients are very high
 - b. Temperature is more or less uniform
 - c. Hot spots are formed
 - d. Segregation of the solids occurs
19. A vapor whose partial pressure is less than its equilibrium vapor pressure is called a ____ vapor
- a. Saturated
 - b. Supersaturated
 - c. Superheated
 - d. Sub-cooled

COLLEGEDUNIA

20. For sizing of fine materials, the most suitable equipment is a
- a. Trammel
 - b. Grizzly
 - c. Shaking screen
 - d. Vibrating screen
21. Which is most suitable for transportation of sticky material
- a. Apron conveyor
 - b. Belt conveyor
 - c. Screw conveyor
 - d. Pneumatic conveyor
22. Ball mill is used for
- a. Crushing
 - b. Coarse grinding
 - c. Fine grinding
 - d. attrition
23. As particle size is reduced
- a. Screening becomes progressively more difficult
 - b. Screening becomes progressively easier
 - c. Capacity and effectiveness of the screen is increased
 - d. Capacity and effectiveness of the screen is decreased
24. Viscosity of gases ____ with increase in temperature
- a. Increases very rapidly
 - b. Increases slowly
 - c. Decreases slowly
 - d. Remains unaffected
25. Heat transfer co-efficient for liquid increases with
- a. Decrease in temperature
 - b. Increase in temperature
 - c. Decrease in Reynolds number
 - d. Increase in pressure
26. Dropwise condensation occurs on ____ surfaces
- a. Clean and dirt free
 - b. Smooth and clean
 - c. Contaminated and cooling
 - d. polished
27. The number of Kg vaporized per Kg of steam fed to the evaporator is defined as
- a. Capacity
 - b. Rate of evaporation
 - c. Economy
 - d. Rate of vaporization
28. Multiple effect evaporators are used to
- a. Increase the steam economy & decrease the capacity
 - b. Increase the steam economy & the capacity
 - c. Decrease the steam economy & the capacity
 - d. Decrease the steam economy & increase the capacity

COLLEGEDUNIA

29. Baffles are provided in heat exchangers to increase the
- a. Fouling factor
 - b. Heat transfer area
 - c. Heat transfer coefficient
 - d. Heat transfer rate
30. Finned tube heat exchangers
- a. Give larger area per tube
 - b. Use metal fins of low thermal conductivity
 - c. Facilitate very large temperature drop through tube wall
 - d. Are used for smaller heat load
31. As the reflux ratio in a continuous counter current extraction is increased, the number of stages
- a. Increase
 - b. Decrease
 - c. Remains unchanged
 - d. Can either increase or decrease depending on the system
32. Flooding results in
- a. High tray efficiency
 - b. Low tray efficiency
 - c. High gas velocity
 - d. Good contact between the fluids
33. Very tall packed towers are divided into series of beds to
- a. Reduce the overall pressure drop
 - b. Avoid channeling
 - c. Reduce liquid hold-up
 - d. Avoid flooding
34. Reactions with high activation energy are
- a. Highly temperature sensitive
 - b. Temperature insensitive
 - c. Always irreversible
 - d. Always reversible
35. With decrease in temperature, the equilibrium conversion of a reversible endothermic reaction
- a. Decreases
 - b. Increases
 - c. Remains unaffected
 - d. Increases linearly with temperature
36. Which of the following is a characteristic of an ideal PFR
- a. Axial dispersion
 - b. Flat velocity profile
 - c. Uniform mixing
 - d. Radial dispersion

COLLEGEDUNIA

37. A batch reactor is

- a. Suitable for gas phase reactions on a commercial scale
- b. Suitable for liquid phase reactions involving small production rate
- c. Least expensive to operate for a given rate
- d. Most suitable for very large production rate

38. Which of the following is the most suitable for very high pressure gas-phase reactions

- a. Batch reactor
- b. Tubular flow reactor
- c. Stirred tank reactor
- d. Fluidized bed reactor

39. Catalyst carriers

- a. Have very high selectivity
- b. Increase the activity of a catalyst
- c. Provide large surface area with a small amount of active material
- d. Inhibit catalyst poisoning

40. The rate constant of a chemical reaction decreases by decreasing the

- a. Pressure
- b. Concentration of reactants
- c. Temperature
- d. Duration of reaction

41. Which of the following relationship is not correct in case of a chemical process plant

- a. $\text{Manufacturing cost} = \text{direct production cost} + \text{fixed charges} + \text{plant over head cost}$
- b. $\text{General expenses} = \text{administrative expenses} + \text{distribution \& marketing expenses}$
- c. $\text{Total product cost} = \text{manufacturing cost} + \text{general expenses}$
- d. $\text{Total product cost} = \text{direct production cost} + \text{plant overhead cost}$

42. Effluent treatment cost in a chemical plant is categorized as _____ cost

- a. Fixed
- b. Overhead
- c. Utilities
- d. Capital

43. Utilities cost in the operation of a chemical process plant comes under the

- a. Overhead cost
- b. Fixed charges
- c. Direct population cost
- d. General expenses

44. In financial accounting of a chemical plant, which of the following relationship is invalid

- a. $\text{Assets} = \text{equities}$
- b. $\text{Assets} = \text{liabilities} + \text{net worth}$
- c. $\text{Total income} = \text{cost} + \text{profits}$
- d. $\text{Assets} = \text{capital}$

COLLEGEDUNIA

45. Response of a linear control system for a change in set point is called
- Frequency response
 - Transient response
 - Servo problem
 - Regulator problem
46. Thermal wells are used in temperature measurement to
- Guard against corrosive and oxidizing action on thermocouple materials
 - Reduce measuring lag
 - Increase the fidelity
 - Increase the sensitivity
47. Which of the following controllers has the least maximum deviation
- P controller
 - P-I controller
 - P-I-D controller
 - P-D controller
48. Which of the following flow-metering instruments is an area-meter
- Venturimeter
 - Rotameter
 - Pitot tube
 - Hot wire anemometer
49. Use of I-control along with P-control facilitates
- Elimination of offset
 - Reduction of offset
 - Reduction of stability time
 - None of these
50. The fluid used in hydraulic controller is
- Water
 - Steam
 - Air
 - Oil
51. Gypsum is chemically
- Calcium chloride
 - Potassium sulphate
 - Sodium sulphate
 - Calcium sulphate
52. Free alkali in a toilet soap is _____ that in a laundry soap.
- Less than
 - Same
 - More than
 - None
53. Which oil is preferred for paint manufacture
- Drying oil
 - Non-drying oil
 - Semi-drying oil
 - Saturated oil
54. High temperature carbonization produces
- Inferior coke compared to low temperature carbonization
 - Less of gases compared to liquid products
 - Larger quantity of tar compared to low temperature carbonization
 - None of these

COLLEGEDUNIA

55. Most commonly used rubber vulcanizing agent is
- a. Sulphur
 - b. Bromine
 - c. Platinum
 - d. Alumina
56. In Urea production, undesired product is _____
- a. Biuret
 - b. Ammonia
 - c. Ammonium carbamate
 - d. Water
57. Catalyst used in catalytic reforming is
- a. Platinum on alumina
 - b. Nickel
 - c. Iron
 - d. Aluminium chloride
58. The catalyst used in shift converter is
- a. Nickel
 - b. Vanadium
 - c. Silica Gel
 - d. Alumina
59. Catalyst used in catalytic cracking is
- a. Silica-alumina
 - b. Silica gel
 - c. Vanadium pentoxide
 - d. Nickel
60. The main aim of cracking is to produce
- a. Gasoline
 - b. Lube Oil
 - c. Petrolatum
 - d. Coke

COLLEGEDUNIA

PGAT(MTECH)-2014 (CHEMICAL ENGINEERING)

Q.NO

1) a	21) c	41) c
2) b	22) c	42) b
3) a	23) a	43) c
4) b	24) b	44) a
5) d	25) b	45) c
6) b	26) c	46) a
7) c	27) c	47) d
8) b	28) a	48) b
9) b	29) c	49) a
10) d	30) a	50) d
11) a	31) b	51) d
12) b	32) b	52) a
13) b	33) b	53) a
14) b	34) a	54) d
15) a	35) a	55) a
16) a	36) b	56) a
17) a	37) b	57) a
18) b	38) b	58) a
19) c	39) c	59) a
20) d	40) c	60) a