

93/2015

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. A chemical reaction will occur spontaneously at constant pressure and temperature, if the free energy is :  
(A) Zero (B) +VE  
(C) -VE (D) None of these
2. Entropy is a measure of the \_\_\_\_\_ of a system.  
(A) Temperature changes only (B) Disorder  
(C) Orderly behavior (D) None of these
3. Fundamental principle of refrigeration is based on the \_\_\_\_\_ law of thermodynamics.  
(A) Second (B) Zeroth  
(C) First (D) Third
4. Heating of water under atmospheric pressure is an \_\_\_\_\_ process.  
(A) Isochoric (B) Adiabatic  
(C) Isobaric (D) Isothermal
5. Molten soap mass is transported by a \_\_\_\_\_ pump.  
(A) Diaphragm (B) Reciprocating  
(C) Gear (D) Centrifugal
6. Most commonly used joint in the underground pipe line is the :  
(A) Sleeve joint (B) Flanged joint  
(C) Coupling (D) Expansion joint
7. The fluid property due to which, mercury does not wet the glass :  
(A) Cohesion (B) Surface tension  
(C) Viscosity (D) Adhesion

A

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[P.T.O.]

8. Check valves are used :
- (A) At high pressure (B) For unidirectional flow  
(C) In bends (D) For controlling water flow
9. The ratio of inertial forces to elastic forces is called the \_\_\_\_\_ number.
- (A) Reynolds (B) Euler  
(C) Mach (D) Weber
10. Which of the following has the minimum absorptivity?
- (A) Aluminium foils (B) Coal dust  
(C) Refractory bricks (D) Iron plates
11. Mode of heat transfer involved in the cooling of air cooled internal combustion engine is :
- (A) Conduction (B) Forced convection  
(C) Radiation (D) Natural convection
12. Which of the following has maximum thermal conductivity?
- (A) Coal (B) Iron  
(C) Nitrogen (D) Tar
13. Open pan evaporators are preferred to be used, when the solution to be concentrated is :
- (A) Scaling (B) Salty  
(C) Highly viscous (D) Corrosive
14. Which of the following is most suitable for cold viscous feed?
- (A) Forward feed (B) Backward feed  
(C) Mixed feed (D) Parallel feed
15. Heat transfer occurs by natural convection because change in temperature causes difference in :
- (A) Viscosity (B) Density  
(C) Thermal conductivity (D) Heat capacity

16. Separation of two or more components of a liquid solution cannot be achieved by :
- (A) Absorption (B) Fractional crystallization  
(C) Liquid extraction (D) Evaporation
17. Which of the following provides maximum contact surface for a liquid-vapour system?
- (A) Bubble-cap plate column (B) Wetted wall column  
(C) Packed tower (D) Sieve-plate column
18. Which is the separation technique used for desalination of sea water?
- (A) Reverse osmosis (B) Adsorption  
(C) Absorption (D) Thermal diffusion
19. Rate of adsorption increases as the :
- (A) Size of adsorbent increases (B) Pressure decreases  
(C) Temperature decreases (D) Temperature increases
20. The number of gram moles of solute per kilogram of solvent is called :
- (A) Normality (B) Molarity  
(C) Molecular weight (D) Molality
21. Separation of a mixture of two gases by absorption in the liquid solvent depends upon the difference in their :
- (A) Viscosity (B) Density  
(C) Relative volatility (D) Solubility
22. Use of packed towers for distillation is generally limited to the :
- (A) Small sizes (B) Multicomponent distillation  
(C) High pressure operation (D) Vacuum distillation
23. Calcium Ammonium Nitrate (CAN) is :
- (A) A complex fertilizer (B) A mixed fertilizer  
(C) An explosive (D) A straight fertilizer

24. Ammonia synthesis gas is produced from natural gas by :
- (A) Partial oxidation (B) Thermal cracking  
(C) Hydrogenation (D) Steam reforming
25. Catalyst used in Haber's process for ammonia production is :
- (A) Nickel (B) Reduced iron oxide  
(C) Vanadium Pentoxide (D) Silica gel
26. Triple superphosphate is made by reacting phosphate rock with \_\_\_\_\_ acid.
- (A) Sulphuric (B) Phosphoric  
(C) Nitric (D) Hydrochloric
27. Urea is produced from carbon dioxide and :
- (A) Nitric Oxide (B) Ammonium Nitrate  
(C) Ammonia (D) Nitric acid
28. A solution with reasonably permanent pH is called a/an \_\_\_\_\_ solution.
- (A) Colloidal (B) Buffer  
(C) Non-ideal (D) Ideal
29. Isotonic solutions must have the same :
- (A) Normality (B) Viscosity  
(C) Critical temperature (D) Molar concentration
30. With increase in temperature, the surface tension of water :
- (A) Decreases (B) Increases linearly  
(C) Increases (D) Remains constant
31. Poly Vinyl Chloride (PVC) is a \_\_\_\_\_ material.
- (A) Thermoplastic (B) Thermosetting  
(C) Fibrous (D) Chemically active

32. Out of the following, the joint produced by \_\_\_\_\_ has the lower strength.
- (A) Soldering (B) Welding  
(C) Brazing (D) Rivetting
33. Heating of an ore below its melting point in presence of excess of air is called :
- (A) Calcination (B) Smelting  
(C) Roasting (D) Sublimation
34. Psychrometer determines the :
- (A) Humidity of gases (B) Moisture content of the solids  
(C) Water of crystallization (D) Hygroscopic nature of solids
35. What is the absorptivity of a black body?
- (A) 1 (B) 0  
(C) 0.95 (D) 0.78
36. Which of the following has the highest flash point of all?
- (A) Diesel (B) Kerosene  
(C) Petrol (D) Furnace oil
37. Octane number of gasoline is a measure of its :
- (A) Knocking tendency (B) Ignition delay  
(C) Ignition temperature (D) Smoke point
38. Flash point of an oil is determined by the :
- (A) Ramsbottom apparatus (B) Pensky Martens apparatus  
(C) Redwood viscometer (D) Conradson apparatus
39. Glycerin is a by-product of the \_\_\_\_\_ industry.
- (A) Paint (B) Oil hydrogenation  
(C) Soap (D) Detergent
40. CaO is called:
- (A) Slaked lime (B) Quick lime  
(C) Calcite (D) Limestone

41. A device used to remove condensate from steam heated equipment is :
- (A) Coils (B) Kettles  
(C) Condensers (D) Traps
42. Centistokes is unit of :
- (A) Absolute viscosity (B) Kinematic viscosity  
(C) Pressure (D) Surface tension
43. Joule- Thomson co-efficient for an ideal gas is :
- (A) 1 (B) -1  
(C) 0 (D)  $\infty$
44. Which is an example of reciprocating pump?
- (A) Gear pump (B) Screw pump  
(C) Lobe pump (D) Diaphragm pump
45. Manometers are used to measure :
- (A) Flow rate (B) Viscosity  
(C) Pressure difference (D) Atmospheric pressure
46. Which of the following enzymes helps breaking down of starch into maltose?
- (A) Amylase (B) Zymase  
(C) Invertase (D) Pepsin
47. In a dry cell, the cathode used is :
- (A) Iron (B) Zinc  
(C) Aluminium (D) Graphite
48. The activation energy of a reaction can be lowered by :
- (A) Raising temperature (B) Lowering temperature  
(C) Removing products (D) Adding a catalyst
49. Sodium salts of fatty acids are known as :
- (A) Vegetable oils (B) Gasoline  
(C) Soaps (D) Detergents

50. Alkyl halides on treatment with aqueous KOH gives :
- (A) Acids (B) Alcohols  
(C) Aldehydes (D) Alkanes
51. Chloroform is used as :
- (A) Fertilizer (B) Fuel  
(C) Detergent (D) Anaesthetic
52. Formalin is an aqueous solution of :
- (A) Formyl Chloride (B) Formamide  
(C) Formaldehyde (D) Formic acid
53. Which of the following has highest solubility in water?
- (A) Acetic acid (B) Propionic acid  
(C) Benzoic acid (D) n-butyric acid
54. Aniline is purified by :
- (A) Simple distillation (B) Steam distillation  
(C) Vacuum distillation (D) Extraction with a solvent
55. The oxidation number of Sulphur in  $\text{SO}_2$  is :
- (A) +2 (B) +4  
(C) -2 (D) -4
56. The most radioactive element is :
- (A) Uranium (B) Radium  
(C) Polonium (D) Thorium
57. The basic principle used in hydrogen bomb is :
- (A) Nuclear fission (B) Nuclear disintegration  
(C) Nuclear fusion (D) Neutron splitting
58. The process of vulcanization makes rubber :
- (A) Soluble in water (B) Soft  
(C) Less elastic (D) Hard