Chemical Engineering & Chemistry

1. The condition of stable equilibrium for a floating body is:

   (a) The metacentre M coincides with the centre of gravity G

   (b) The metacentre M is below the centre of gravity G

   (c) The metacentre M is above the centre of gravity G

   (d) The centre of buoyancy B is above the centre of gravity G

2. For a submerged curved surface, the vertical component of the hydrostatic force is:

   (a) Mass of the liquid supported by the curved surface

   (b) Weight of the liquid supported by the curved surface

   (c) The force on the projected area of the curved surface on vertical plane

   (d) Centriod of the liquid displaced by the body

3. The least radius of gyration of a ship is $8\,m$ and metacentric height is $70\ cm$. Then the time period of oscillation of the ship is nearly:

   (a) $19.2\ s$

   (b) $17.4\ s$

   (c) $15.6\ s$

   (d) $13.8\ s$

4. The flow of water leaving the impeller in a centrifugal pump casing is:

   (a) Forced vortex flow

   (b) Free vortex flow

   (c) Centrifugal flow

   (d) Centripetal force

5. A mouthpiece is a short length of pipe fitted to a tank containing fluid. Which one of the following mouthpieces is having a maximum coefficient of discharge?

   (a) External mouthpiece

   (b) Convergent-divergent mouthpiece

   (c) Internal mouthpiece

   (d) Cylindrical mouthpiece

6. Hydraulic Gradient Line (HGL) is the sum of:

   (a) Pressure head and kinetic head

   (b) Kinetic head and datum head

   (c) Pressure head, kinetic head and datum head

   (d) Pressure head and datum head

7. Three pipes of length 800 m, 500 m and 400 m and a diameter of 500 mm, 400 mm and 300 mm respectively are connected in series. These pipes are to be replaced by a single pipe of length 1700 m, and then the diameter of the single pipe should be nearly:

(a) 324 mm

(b) 344 mm

(c) 372 mm

(d) 412 mm

8. A smooth plate of length 4 m and width 1.5 m is moving with a velocity of 4 m/s in stationary air. If the kinematic viscosity of air is $1.5 \times 10^{-5}\ m^2/s$, the thickness of the boundary layer at the trailing edge of the plate will be:

(a) 83.4 mm

(b) 86.3 mm

(c) 89.2 mm

(d) 92.1 mm

9. How many number of pumps are required to take out the water, from a deep well under a total head of 89 m, assuming that all pumps are identical and are running at 800 rpm, the specific speed of each pump is 25, while rated capacity of each pump is 0.16 m^3/s?

(a) 3

(b) 4

(c) 5

(d) 7

10. The thermal conductivity (k) of insulators:

(a) Increases with increase in temperature

(b) Always increases with increase in the density of the material

(c) Decreases with increase in temperature

(d) Decreases due to convection phenomenon in insulators

11. In a two component mixture at rest, the mass or molal flux of a component per unit area is proportional to the concentration gradient and is represented by: $J_1 = \frac{n_1}{A} = -D_{12}\frac{dC_1}{dx}$, and it is called as:

(a) Fourier law of heat flux

(b) Newton's law of viscosity

(c) Reynolds Colbwin law

(d) Fick's law

12. The inner surface of a plane brick wall is at $60^{\circ}C$ and the outer surface is at $35^{\circ}C$. The rate of heat transfer per m^2 of the surface area of the wall is $220\,mm$ thick, and thermal conductivity of the brick is $0.51\,W/m^{\circ}C$. The rate of heat transfer is:

(a) $22.57\,W/m^2$

(b) $35.86\,W/m^2$

(c) $43.67\,W/m^2$

(d) $57.95\,W/m^2$

13. Graetz number (G) described for the heat flow to the fluid flowing through a circular pipe is:

(a) $Pe\left(\frac{\pi\ D}{4}\right)$

(b) $\left(\frac{Nu}{Re \cdot Pr}\right)$

(c) $Pe\left(\frac{h^2}{K}\right)$

(d) $\left(\frac{\rho^2 \beta\ g\ \Delta t\ L^3}{\mu^2}\right)$

14. Consider the following statements:

1. Thermal conductivity decreases with increase in temperature
2. Thermal conductivity of pure metals increases with the increase in their impurity
3. Thermal conductivity of solid materials is weakly dependent on pressure
4. The ratio of the thermal and electrical conductivity for all metals is the same at the same temperature and directly proportional to absolute temperature

Which of the above statements are correct?

(a) 1, 2 and 3 only

(b) 1, 3 and 4 only

(c) 1, 2 and 4 only

(d) 2, 3 and 4 only

15. Two fluids A and B exchange heat in a counter current heat exchanger. Fluid A enters at $420^{\circ}C$ and has a mass flow rate of $1\ kg/s$. Fluid B enters at $20^{\circ}C$ and has a mass flow rate of $1\ kg/s$. Effectiveness of the heat exchanger is 75%. If the specific heat of fluid A is $1\ kJ/kg\ K$ and that of fluid B is $4\ kJ/kg\ K$, then the heat transfer rate (Q) is:

(a) $350\ kJ$

(b) $330\ kJ$

(c) $315\ kJ$

(d) $300\ kJ$

16. Two parallel rectangular surfaces $1cm \times 2cm$ are opposite to each other at a distance of $4\ m$. The surfaces are black and at $100^{\circ}C$ and $200^{\circ}C$. The heat exchange between the two surfaces by radiation is:

(a) $149.5\ W$

(b) $137.5\ W$

(c) $125.5\ W$

(d) $113.5\ W$

17. Mass transfer does ***not*** take place by:

(a) Dissolution

(b) Diffusion

(c) Convection

(d) Change of phase

18. For the turbulent flow, the Reynolds number (Re) is:

(a) > 1000 but < 2000

(b) Between 2000 to 4000

(c) < 2000

(d) > 4000

19. The brake efficiency η_{brake} of turbine is:

(a) $\frac{Internal\ \ output}{Ideal\ \ output} = \frac{h_1 - h_2}{h_1 - h_{2s}}$

(b) $\frac{Brake\ \ output}{Internal\ \ output} = \frac{kW \times 3600}{w_s(h_1 - h_2)}$

(c) $\frac{Brake\ \ output}{Ideal\ \ output} = \frac{kW \times 3600}{w_s(h_1 - h_{2s})}$

(d) $\frac{Energy\ \ utilized}{Energy\ \ supplied} = \frac{w_s\,(h_1 - h_4)}{w_f \times C.V}$

20. A nozzle is used to spray liquid water with a pressure line of $300kPa$ and the water temperature is $20^{\circ}C$. The high velocity generated by an ideal nozzle at exit flow for $v_f = 0.001002\, m^3/kg$ is:

(a) $25\, m/s$

(b) $20\, m/s$

(c) $15\, m/s$

(d) $10\, m/s$

21. In a steam power plant, $325{,}000\ kg$ of water per hour enters the boiler at a pressure of $10\ MPa$ and temperature $200^{\circ}C$. Steam leaves the boiler at $8\ MPa$ and $500^{\circ}C$, the power output of the turbine is $81{,}000\ kW$ and coal is used at the rate of $26{,}700\ kg/h$ with a higher heating value of $33{,}250\ kJ/kg$. The efficiency of the steam generator is:

(a) 82.2 %

(b) 85.3 %

(c) 89.4 %

(d) 93.1 %

22. A closed vessel contains $0.1\ m^3$ of saturated liquid and $0.9\ m^3$ of saturated vapour R - $134a$ in equilibrium at $30^{\circ}C$, and the values of $m_{liq} = 118.6\ kg$ and $m_{vap} = 33.7\ kg$ the vapour on a mass basis will be nearly:

(a) 22 %

(b) 28 %

(c) 34 %

(d) 39 %

23. When two bodies are in thermal equilibrium with a third body, then they are also in thermal equilibrium with each other, is:

(a) Kelvin Planks law

(b) Second law of thermodynamics

(c) First law of thermodynamics

(d) Zeroth law of thermodynamics

24. If a mixture of air and superheated water vapour (or unsaturated) is cooled at constant pressure, the partial pressure of each constituent remains constant until the water vapour reaches the saturated state. Further cooling causes condensation and this point is:

(a) Freezing point

(b) Critical point

(c) Condensation point

(d) Dew point

25. The ratio of the minimum exergy intake to perform the given task to the actual exergy intake to perform the same task, is:

(a) First law efficiency

(b) Second law efficiency

(c) Law of exergy efficiency

(d) Law of exergy balance

26. The triple point for carbon dioxide is $-56.5^{\circ}C$ $(216.5\ K)$ and pressure of $5\ atm$ $(3885.1\ mm$ of $Hg)$, it means that:

(a) When solid CO_2 exposed to $1\ atm$ pressure begins to change directly to vapour

(b) When CO_2 exposed to a $atmospheric$ pressure below 5 it exists only in solid and liquid phase

(c) Below $57.7^{\circ}C$ CO_2 exists only in liquid form

(d) Mass transfer at triple point is maximum

27. Consider the following statements:

1. Carnot cycle is ***not*** suitable for steam power plants
2. The heat addition process in the Rankine cycle is irreversible at constant temperature
3. Carnot cycle can be realized in practice
4. In Rankine cycle heat is added reversibly at constant pressure

Which of the above statements are correct for determining the thermodynamic difference between Rankine cycle and Carnot cycle?

(a) 2 and 3 only

(b) 2 and 4 only

(c) 1 and 3 only

(d) 1 and 4 only

28. Titanium on steel as the base metal is used for the production of a composite metal specifically used for the production of:

(a) Chemical process equipment

(b) For improved corrosion resistance

(c) To improve thermal properties

(d) Wear plates in chutes, conveyors and earth moving equipment

29. Brittle fracture by a cleavage occurs:

(a) By forming cracks in the direction perpendicular to the fracture plane

(b) By forming bulge by shearing along oblique plane

(c) By crushing into thousands of pieces

(d) As a result of the extensive slip on the active slip plane

30. A bearing material should ***not*** possess the properties of high:

(a) Fatigue strength

(b) Thermal conductivity

(c) Coefficient of friction

(d) Compressive strength

31. In which one of the following stages for the manufacturing of Lead the '*Parkes process*' is involved?

(a) Refining

(b) Smelting

(c) Roasting

(d) Ore dressing

32. A metal having lattice parameter 2.9 A°, density 7.87 g/cc, atomic weight 55.85 and Avogadro's number 6.0238×10^{23}. The number of atoms per unit cell is nearly:

(a) 5

(b) 3

(c) 2

(d) 1

33. An etchant used for etching the stainless steel is:

(a) Acid ammonium persulphate

(b) Ammonium hydrogen peroxide

(c) Dilute hydrochloric acid

(d) Mixed nitric and acetic acid

34. Corrosion fatigue is the combined action of corrosion and:

(a) Environment

(b) Viscosity

(c) Humidity

(d) Repeated loading

35. Highest percentage of magnesium is found in:

(a) Magnesite $MgCO_3$

(b) Sea water $MgCl_2 + MgSO_4$

(c) Dolomite $MgCa(CO_3)_2$

(d) Brucite $Mg(OH)_2$

36. Which one of the following group of elements shows the FCC structure?

(a) $Mg,\ Zn,\ Ti,\ Zr$ and Cd

(b) $Cr,\ V,\ Mn,\ Na$ and Fe

(c) $Zn,\ Be,\ Mn,\ Na$ and Mg

(d) $Cu,\ Al,\ Pb,\ Ni$ and Co

37. If 'No two electrons in an atom exist in the same state' it is known as:

(a) Pauli's exclusion principle

(b) Broglie wave principle

(c) Sommerfeld's – Wilson's atomic model

(d) Rutherford's atomic model

38. On 100 plane of lead with inter atomic distance of 3.499 $\dot{A}$, the number of atoms will be:

(a) $6.4 \times 10^{12}\ atoms/mm^2$

(b) $8.2 \times 10^{12}\ atoms/mm^2$

(c) $6.4 \times 10^{10}\ atoms/mm^2$

(d) $8.2 \times 10^{10}\ atoms/mm^2$

39. '$Gibbs\ phase\ rule$' for general systems is:

(a) $P + F = C + 2$

(b) $P - F = C + 2$

(c) $P - F = C - 2$

(d) $P + F = C - 2$

40. The crystal structure of a material is studied by:

(a) Mossbauer

(b) Optical microscope

(c) Metallurgical microscope

(d) Electron diffraction method and X-rays

41. When the molten iron solidifies from the liquid state at $1539^{\circ}C$, the transformation is accompanied by evolution of heat, the heat remains constant till complete solidification occurs. Then the iron is in the form of:

(a) α-(Alpha)

(b) γ-(Gamma)

(c) δ-(Delta)

(d) β-(Beta)

42. A supersaturated solution of carbon in α-(Alpha) iron, a metastable phase of steel is called as:

(a) Austenite

(b) Bainite

(c) Martensite

(d) Cementite

43. Which one of the following types of alloy materials will be used in high temperature creep resistant application?

(a) Low melting point alloy

(b) Low oxidation resistant alloys

(c) Interstitial alloys

(d) Precipitation hardened alloys

44. Light consisting of particles with definite amount of energy h_f incident on a metal plate, part of its energy $\emptyset_0$ is used up in liberating the electrons from the surface of the plate; the other part is $\left(\frac{1}{2}\ mv^2\right)$ in imparting a velocity v to the ejected electrons. This theory is:

(a) Planks Photoelectric Emission theory

(b) Einstein's Photoelectric Emission theory

(c) Millikan's Electromagnetic Emission theory

(d) Faradays Electromagnetic Emission theory

45. A sample of an ideal gas of volume is $0.452\ L$ at $87^{\circ}C$ and $0.620\ atm$. If the volume of sample of gas under standard temperature and pressure is $0.213\ L$, the number of moles in a sample will be:

(a) $0.0095\ mol$

(b) $0.0092\ mol$

(c) $0.0088\ mol$

(d) $0.0085\ mol$

46. A sample of PCl_5 weighing $2.69\ g$ is placed in 1.00-L flask and completely vaporized at a temperature of $250^{\circ}C$ and at a total pressure of $1.00\ atm$. Some of PCl_5 is dissociated according to the equation,

$$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$$

The final partial pressure of P_{PCl_5} is:

(a) $0.194\ atm.$

(b) $0.148\ atm.$

(c) $0.108\ atm.$

(d) $0.094\ atm.$

47. Which one of the following materials will be used in the manufacturing of graphite electrodes in arc furnace?

(a) Naphtha

(b) Needle coke

(c) Zinc

(d) Lead

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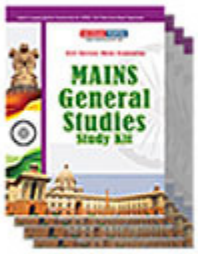

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48. A natural gas containing an appreciable amount of hydrogen sulfide and carbon dioxide is:

(a) Sour natural gas

(b) Dry natural gas

(c) Liquefied natural gas (LNG)

(d) Compressed natural gas (CNG)

49. The bright components of coals, because of their origin in wood, will be termed as:

(a) Attritus

(b) Fusain

(c) Anthraxylon

(d) Durain

50. Vitrinite found in lignite and subbituminous coal is:

(a) Xylinoid

(b) Vitrinoid

(c) Anthropoid

(d) Vitrite

51. An addition of a normal paraffin liquid to either a natural petroleum or coal synthetic crude oil results in the formation of a precipitate known as:

(a) Sulphur trioxide

(b) Propane

(c) Asphaltene

(d) Graphite

52. The low pressure process for the production of liquids from lower rank coals is called as:

(a) Occidental flash pyrolysis process

(b) Lurgi-Ruhrgas process

(c) Conson synthetic fuel process

(d) Co-steam process

53. Which one of the following when added to gasoline is reported to improve the quality of the fuel?

(a) Water

(b) n-Hexane

(c) n-Pentane

(d) n-Butane

54. Which one of the following materials will be extensively used as bombs, grenades, shells, torpedoes and depth charges?

(a) Nitroglycerine

(b) Tetryl

(c) Trinitrotoluene

(d) Ammonium nitrate

55. Which one of the following is the oxygen balanced explosive of either $NaNO_3$, NH_4NO_3 or explosive oils such as ethylene glycol dinitrate?

(a) Hexogen

(b) Dope

(c) Amatol

(d) Tetryl

56. The substances which have high detonation velocities but are relatively insensitive to shock can act as:

(a) Primary explosives

(b) Secondary explosives

(c) Tertiary explosives

(d) Detonators

57. The gasification of coal with oxygen and steam under pressure is called as:

(a) Hexogen process

(b) Lurgi process

(c) Deflagration process

(d) Foaming process

58. The catalyst used in etherification process for production of Methyl Tertiary Butyl Ether ($MTBE$) is a macroreticular ion exchange resin based on:

(a) Sulfonate polyvinyl benzene copolymer

(b) Sulfonate styrene divinyl benzene copolymer

(c) Sulfonate polystyrene polyvinyl benzene copolymer

(d) Sulfonate benzene copolymer

59. In feed purification, the process step involved in hydrogen production brings about removal of sulfur compounds by hydrogenation followed by reaction with:

(a) Sodium oxide

(b) Copper oxide

(c) Aluminium oxide

(d) Zinc oxide

60. Which one of the following plasticizers is added to reduce the freezing point of the dynamite and to increase its oxygen balance?

(a) Ethyleneglycol dinitrate

(b) Tetra-nitro-methyl aniline

(c) Methylene glycol tri nitrate

(d) Ammonium Nitrate

61. Which one of the following substances when mixed with about 8% collodion cotton forms blasting gelatin?

(a) Trinitrotoluene

(b) Nitroglycerine

(c) Plasticizers

(d) Ammonium Nitrate

62. Fire suppression system that uses gas as the extinguishing medium is of:

(a) Carbon dioxide and Halon

(b) Foam and Halon

(c) Carbon dioxide and Foam

(d) Halon and Dry chemical powder

63. RDX means:

(a) Rhoda-mine Deuterium Explosive

(b) Rapid Detonation Explosive

(c) Rapid Deuterium Explosive

(d) Research Department Explosive

64. Which one of the following materials is the potential problem in the transport of crude oil and storage of crude oil?

(a) Hydrogen sulfide

(b) Hydrocarbons

(c) Paraffins

(d) Benzene

65. When the linear speed of reaction of a substance (the propagation of the flame front) is in the range of $meters/sec$ the substance is classed as a low explosive and the process is called as:

(a) Fenton's reaction process

(b) Riveting process

(c) Deflagration

(d) Kinematic

66. Tetrazene is readily decomposed in boiling water and is used as an ignition agent for:

(a) Silver azide

(b) Lead azide

(c) Sodium azide

(d) Copper azide

67. The shattering power of an explosive is known as:

(a) Sand-bomb test

(b) Visbreaking

(c) Brisance

(d) Osmotic power

68. In fireworks, the yellow colour is readily obtained from:

(a) Strontium salts

(b) Barium as nitrate or chloride

(c) Sodium salts

(d) Cuprous chloride

69. The match head composition consists of a fuel with low kindling point, usually of, Phosphorous:

(a) Sesquisulfide

(b) Picrate

(c) Fulminate

(d) Sulphide

70. An industrial plant having 1000 workers, the number of disabling injuries per year is 5 and the average number of hours worked by worker per year is 2000. The frequency rate of an accident will be:

(a) 1.5

(b) 2.0

(c) 2.5

(d) 3.0

71. The number of workers in a factory is 2000, number of days lost in a year due to accident is 100 and an average number of hours worked by worker per year is 2000, and the standard number for total disability is 6000 days. If only one accident occurred during the day involving total disability of worker, the severity rate of accident is:

(a) 1625

(b) 1525

(c) 1475

(d) 1375

72. A radiation measuring instrument which measures the negatively charged ions, when a radiation is passed through a tube is:

(a) Geiger-Muller Counter

(b) Proportional Counter

(c) Scintillation Counter

(d) Crystal Dosimeters

73. If a lamp emits 60 W of radiant flux distributed uniformly in all directions. If luminous efficiency is 60 $lumen/W$, the luminous intensity will be:

(a) 264.4 $candela$

(b) 274.4 $candela$

(c) 286.6 $candela$

(d) 294.6 $candela$

74. A illumination of 100 $lumen/\ m^2$ is provided in a seminar hall of 40 $m\ \times 10m$. If a coefficient of utilization as 0.4, the depreciation factor as 0.8 and an efficiency of lamp as 14 $lumen/W$. The number of lamps of 500 W required are:

(a) 12

(b) 14

(c) 16

(d) 18

75. The maximum permissible oil temperature for hot spot temperature of transformer winding and oil should not exceed:

(a) $70^{\circ}C$

(b) $65^{\circ}C$

(c) $60^{\circ}C$

(d) $55^{\circ}C$

76. An amendment to Factory Act, 1987 for the Provision in Industrial Act, 1948 (India) included the clause of:

(a) Prohibition of employment of women and children near cotton openers

(b) Power to require specification of defective part or tests of stability

(c) Provisions about hazardous processes and responsibilities

(d) Lifting machines, chains, ropes and lifting tackles

77. Majority of the accidents in the industry are caused by:

(a) Human error

(b) Acts of nature

(c) Mechanical failures

(d) Riots

78. The important safety aspect in metal clad switchgear installation is:

(a) Insulation

(b) Earthing system

(c) Circuit breaker

(d) Safety valve

79. Which one of the following will be used for measuring the insulation resistance between windings, winding and earth?

(a) Megger

(b) Ohmmeter

(c) Conducto meter

(d) Transducer

80. Soda acid type, Gas Pressure actuated type and Constant Air Pressure type belong to:

(a) Water expelling fire extinguishers

(b) Dry powder and carbon dioxide extinguishers

(c) Halon extinguishers

(d) Foam extinguishers

81. The type of detector which reacts to radiant energy in the infrared or ultraviolet radiation in the spectrum of light is:

(a) Fusible glass bulb

(b) Ionization smoke detector

(c) Radiation detector

(d) Flame detector

82. Which one of the following safety goggles will be used to protect eyes and face from oil and paints splashes, dust and chip exposure for safety purpose?

(a) Leather mask goggles

(b) Chemical goggles

(c) Panorama goggles

(d) Welding goggles

83. Which one of the following aprons will be used for body to protect against the heat radiation?

(a) Leather apron

(b) PVC apron

(c) Barrier apron

(d) Asbestos apron

84. Which one of the following will be used as safety jackets while handling substances like Naphthalene and methyl alcohol?

(a) Neoprene

(b) PVC

(c) Viton

(d) Butyl rubber

85. The interior of the LNG storage tanks constructed by a cryogenic container are usually made up of:

(a) Aluminium and Nickel steel

(b) Nickel steel and Stainless steel

(c) Aluminium, Nickel steel and Stainless steel

(d) Aluminium, Nickel steel, Stainless steel and Zirconia

86. Which one of the following types of pressure vessels will be used as storage tanks for designing to withstand the pressure upto $15\ psi$?

(a) Moderate pressure vessel

(b) Low pressure vessel

(c) High pressure vessel

(d) Any pressure vessel

87. Which one of the following types of silicates will be used as a fire proofing material for transportation of LPG and petroleum product in fire proof vaults?

(a) Calcium silicate

(b) Boron silicate

(c) Sodium silicate

(d) Barium silicate

88. What does 'W' represent in code of $HAZCHEM\ CODE$ for $LPG\ 2WE$?

(a) Water or foam or dry agent

(b) Evacuation of population

(c) Chemical is violent (v) or explosively reactive

(d) Water emission

89. Which one of the following models will be used to estimate the average concentration of flammable toxic gases from steady height?

(a) Probit model

(b) Empirical model

(c) Plume model

(d) Britter-McQuaid Dispersion model

90. Which one of the following inductive approaches will be used to investigate the leakage of LPG from a road tanker from highway tunnel?

(a) Preliminary Hazard Analysis (PHA)

(b) Failure Mode and Effect Analysis (FMEA)

(c) Function Failure Analysis (FFA)

(d) Event Tree Analysis (ETA)

91. For toxic release and dispersion modelling, the Threshold Limits Value: $(TLVs)$ in ppm is:

(a) $\frac{TLV\ in\ mg/m^3 \times 24.45}{Gram\ \ molecular\ \ \ weig\,ht\ of\ \ substance}$

(b) $\frac{TLV\ in\ mg/m^3 \times Gram\ \ molecular\ \ \ weig\,ht\ of\ \ substance}{24.45}$

(c) $\frac{24.45}{TLV\ in\ mg/m^3 \times Gram\ \ molecular\ \ \ weig\,ht\ of\ \ substance}$

(d) $\frac{24.45 \times Gram\ \ molecular\ \ \ weig\,ht\ of\ \ subst\ ance}{TLV\ in\ mg/m^3}$

92. Toxicity of dispersed liquid or gas in an atmosphere is measured, based on:

1. Concentration of dispersion
2. Duration of exposure
3. Height of dispersion
4. Wind velocity

(a) 1 and 2 only

(b) 2 and 3 only

(c) 3 and 4 only

(d) 1 and 4 only

93. Which of the following are the safety rules in industrial LPG handling?

1. Cylinders must not be dropped from lorry and trailer
2. Cylinders must not be rolled on their sides but must always be carried or rolled on their foot rings
3. Cylinders must be handled in any way, if the seal is broken by placing the cap back on the mouth
4. Before cylinders are handled or transported the safety cap should be properly fixed

(a) 1, 2 and 3 only

(b) 1, 3 and 4 only

(c) 1, 2 and 4 only

(d) 2, 3 and 4 only

94. Which one of the following deals with physiological and anatomical aspects of man and his interaction with working environment in safety?

(a) Ergonomics

(b) Physiology

(c) Maintenance of plant

(d) Repair and maintenance

95. Which colour is the cautionary colour used as a specific warning against that equipment as elevators, boilers and scaffolding ladders as a safety caution in industries?

(a) Red

(b) Orange

(c) Blue

(d) Black

96. Which one of the following is ***not*** the quality of a safety man?

(a) Sincerity and honesty

(b) Enthusiasm

(c) Diplomatic

(d) Self confidence

97. An industrial safety can be defined as:

(a) The science and art of identifying, evaluating and controlling workplace hazards

(b) The behavioral psychology to promote safety at work place

(c) The method or technique or process which can minimize the event in an industrial concern

(d) The Measure of effectiveness of the use of resources to produce goods and services

98. Which of the following are applicable for conducting safety training?

1. Put the employees at ease
2. Ask the employee questions and correct the errors
3. Strengthen training with little reminders

(a) 1 and 2 only

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

99. When a person is unfit for $21\ days$ and overdue to injuries sustained, this type of accident under safety indices is:

(a) Fatal accident

(b) Serious accident

(c) Minor accident

(d) Lost time accident

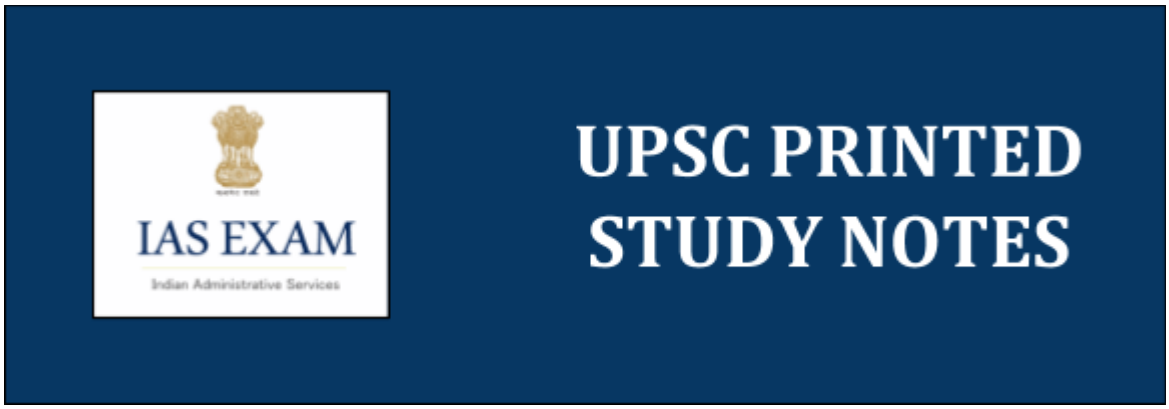
100. Which one of the following is a failure analysis where an undesired state of a system is analyzed?

(a) Job safety analysis

(b) HAZOP study

(c) Fault tree analysis

(d) Fault tree diagram



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