

ENGINEERING SCIENCE

1. Ozone - layer is getting depleted because of
 - (A) excessive use of automobiles
 - (B) excessive formation of industrial units
 - (C) excessive use of man-made compounds containing both fluorine and chlorine
 - (D) excessive deforestation
2. Which of the following is an end product formed from both the aerobic and anaerobic decomposition of organic matter?
 - (A) NO_2
 - (B) CH_4
 - (C) H_2S
 - (D) CO_2
3. Which of the following is not true with respect to the effects of acids on waste water treatment systems?
 - (A) Destroy microbes
 - (B) Upset anaerobic digester
 - (C) Corrode structures
 - (D) Interferes with settling
4. The natural ageing of a lake by biological enrichment is known as
 - (A) Eutrophication
 - (B) Biomagnification
 - (C) Bioremediation
 - (D) Biofortification
5. Which is the least preferred strategy of Integrated Solid Waste Management according to their Environmental benefits?
 - (A) Landfills
 - (B) Composting
 - (C) Waste to Energy
 - (D) Recycling

6. Sludge bulking can be controlled by
- (A) Coagulation
 - (B) Chlorination
 - (C) Aeration
 - (D) Denitrification
7. The Ecological pyramid that is always upright
- (A) Pyramid of biomass
 - (B) Pyramid of number
 - (C) Pyramid of energy
 - (D) None of the above
8. Orthotolidine test is used for the determination of
- (A) Dissolved oxygen
 - (B) Free Residual chlorine
 - (C) Biochemical oxygen demand
 - (D) Dose of coagulant
9. The means of access for the inspection and cleaning of sewer line is called
- (A) Manhole
 - (B) Inlet
 - (C) Catch basin
 - (D) Joint
10. If the total hardness of water is greater than its total alkalinity, the carbonate hardness will be equal to
- (A) the sum of total alkalinity and total hardness
 - (B) total hardness
 - (C) total alkalinity
 - (D) non carbonate hardness
11. The function of a rapid gravity filter in water treatment is to remove
- (A) Dissolved organic matter
 - (B) Dissolved solids and gases
 - (C) Dissolved inorganic solids
 - (D) Colloidal solids and bacteria

12. Treatment of sewage in a facultative stabilisation pond is accomplished by
- (A) Algae only
 - (B) Aerobic bacteria
 - (C) Dual action of aerobic and anaerobic bacteria
 - (D) Coagulation – Flocculation
13. Which of the following is a unit process?
- (A) Sedimentation
 - (B) Chlorination
 - (C) Filtration
 - (D) Screening
14. The amount of coagulant needed for water treatment does not depend on
- (A) Turbidity of water
 - (B) Temperature
 - (C) pH
 - (D) Dissolved solids concentration
15. Which of the following is installed in the house drainage to preserve the water seal of traps?
- (A) Vent pipe
 - (B) Waste pipe
 - (C) Anti-siphonage pipe
 - (D) Soil pipe
16. The most common cause of acidity in water is the presence of
- (A) Carbon dioxide
 - (B) Hydrogen
 - (C) Oxygen
 - (D) Nitrogen
17. The most commonly used compound for the dichlorination of water is
- (A) Bleaching powder
 - (B) Chloramine
 - (C) Sulphur dioxide
 - (D) Carbon dioxide

18. Which of the following pump is generally used to pump highly viscous fluid?
- (A) Centrifugal pump
 - (B) Reciprocating pump
 - (C) Air lift pump
 - (D) Screw pump
19. Kinematic similarity is said to exist between the model and the prototype, if both of them
- (A) have identical velocities
 - (B) are equal in size and shape
 - (C) are identical in shape, but differ only in size
 - (D) have identical forces
20. Which of the following hydraulic units works based on Pascal's law?
- (A) Air lift pump
 - (B) Jet pump
 - (C) Hydraulic press
 - (D) Hydraulic coupling
21. The cavitation in a hydraulic machine is mainly due to
- (A) high velocity
 - (B) low velocity
 - (C) low pressure
 - (D) high pressure
22. If the net positive suction head (NPSH) requirement for the pump is not satisfied, then
- (A) no flow will take place
 - (B) cavitation will occur
 - (C) efficiency will be low
 - (D) excessive power will be consumed
23. The specific speed of a hydraulic turbine depends upon
- (A) speed and power developed
 - (B) discharge and power developed
 - (C) speed and head of water
 - (D) speed, power developed and head of water

24. The point of intersection between an imaginary line drawn vertically through the centre of buoyancy of a floating vessel and a corresponding line through the new centre of buoyancy when the vessel is tilted is called
- (A) Centre of pressure
 - (B) Metacentre
 - (C) Centre of buoyancy
 - (D) Centre of gravity
25. The region of disturbed flow downstream of a solid body moving through a fluid, caused by the flow of the fluid around the body is known as
- (A) Wake
 - (B) Drag
 - (C) Lift
 - (D) Boundary layer
26. The ratio of inertia force to gravity force is called
- (A) Reynold's number
 - (B) Prandtl number
 - (C) Froude's number
 - (D) Mach number
27. The force that opposes the adhesion of a liquid layer to a solid surface is
- (A) Coefficient of viscosity
 - (B) Drag
 - (C) Surface tension
 - (D) Viscosity
28. The flow in which the fluids flow in parallel layers such that there is no disruption or intermixing of the layers and at a given point, the velocity of each fluid particle passing by remains constant with time is known as
- (A) Uniform flow
 - (B) Streamline flow
 - (C) Steady flow
 - (D) Turbulent flow

29. The layer of trapped matter at the surface of a slow sand filter in which a dense population of microorganisms develops is known as
- (A) Schmutzdecke zone
 - (B) Heterotrophic zone
 - (C) Electrolytic zone
 - (D) Autotrophic zone
30. Which of the following occurs in atmosphere when environmental lapse rate (ELR) is greater than adiabatic lapse rate (ALR)?
- (A) Neutral condition
 - (B) Stable condition
 - (C) Unstable condition
 - (D) Inversion
31. Which of the following is not a part of photochemical smog?
- (A) SPM
 - (B) PAN
 - (C) O₃
 - (D) NO₂
32. Flocculation of iron from water by the addition of lime is an example of
- (A) Chemical coagulation
 - (B) Chemical precipitation
 - (C) Ion exchange
 - (D) Adsorption
33. Sedimentation of discrete particles takes place in
- (A) Zone settling
 - (B) Compression settling
 - (C) Hindered settling
 - (D) Discrete settling
34. The test used for finding the optimum coagulant dose in water treatment is
- (A) Chromatography
 - (B) Jar test
 - (C) Kjeldahl test
 - (D) Dilatancy test
35. Which of the following has minimum detention period?

- (A) Grit chamber
 - (B) Sedimentation tank
 - (C) Oxidation ditch
 - (D) Oxidation pond
36. Which of the following processes is not involved in the treatment of sludge?
- (A) Dewatering
 - (B) Drying
 - (C) Flocculation
 - (D) Conditioning
37. Which of the following is a disadvantage of Hydro Power?
- (A) They cause deforestation and affect wildlife
 - (B) They cause harmful emissions
 - (C) They are an unstable source of energy
 - (D) They are not suitable for long-distance electricity transmission
38. Which of the following is the cleanest fossil fuel?
- (A) Diesel
 - (B) Natural Gas
 - (C) Petroleum
 - (D) Coal
39. What is the main potential water pollutant from a geothermal reservoir?
- (A) Carbon
 - (B) Silicon
 - (C) Sulphur
 - (D) Nitrogen
40. What is the goal of sustainability in any process?
- (A) To maintain the process finitely
 - (B) To eventually eliminate the process
 - (C) To maintain the process indefinitely
 - (D) To support damaging the environment
41. Which of the following leads the energy production in low-carbon sources?

- (A) Photovoltaics
 - (B) Wind energy
 - (C) Solar thermal power systems
 - (D) Nuclear energy
42. Which of the following is generally used to measure direct solar radiation?
- (A) Pyranometer
 - (B) Actinometer
 - (C) Pyrheliometer
 - (D) IC tester
43. What is the major drawback of steam-methane reforming technique to produce hydrogen?
- (A) Capital intensive
 - (B) Releases greenhouse gases into atmosphere
 - (C) A niche technology
 - (D) Poor efficiency
44. Which of the following winds are prevailing winds that blow from west to east?
- (A) Polar easterlies
 - (B) Westerlies
 - (C) Monsoonal winds
 - (D) Katabatic winds
45. Which of the following is used in wind turbines to boost the rotating speed of the rotor shaft to a level adequate for effective energy generation?
- (A) Gearbox
 - (B) Main shaft
 - (C) Generator
 - (D) Rotor blades
46. Which of the following is the most basic and extensively utilized form of biomass conversion?
- (A) Anaerobic digestion
 - (B) Gasification
 - (C) Pyrolysis
 - (D) Direct combustion
47. Which of the following is a by-product of biomass gasification?

- (A) Ash
 - (B) Tar
 - (C) Char
 - (D) All of the above
48. Which of the following is an example of direct solar water heating system?
- (A) Pressurised antifreeze system
 - (B) Pumped systems to circulate transfer fluid
 - (C) Convection heat storage system
 - (D) Drain back system
49. Which of the following principles is used to concentrate sunlight in solar cookers?
- (A) Rarefaction
 - (B) Evaporation
 - (C) Specular reflection
 - (D) Radiation
50. Which of the following is a product of pyrolysis of biomass?
- (A) Producer gas
 - (B) Steel
 - (C) Agricultural residue
 - (D) Sodium
51. Second law of thermodynamics is concerned with the
- (A) amount of energy transferred
 - (B) direction of energy transfer
 - (C) irreversible processes only
 - (D) non-cyclic processes only
52. Equilibrium constant of a reaction varies with the
- (A) Initial concentration of the reactant
 - (B) Pressure
 - (C) Temperature
 - (D) None of the above
53. Solid and liquid phases of a substance are in equilibrium at the

- (A) Critical temperature
(B) Melting point
(C) Freezing point
(D) Both Melting point and Freezing point
54. Arrhenius equation shows the variation of with temperature.
- (A) Reaction rate
(B) Rate constant
(C) Energy of activation
(D) Frequency factor
55. A plug-flow reactor is characterised by
- (A) High capacity
(B) Presence of axial mixing
(C) Presence of lateral mixing
(D) Constant composition and temperature of reaction mixture
56. Catalytic action in a catalytic chemical reaction follows from the ability of catalyst to change the
- (A) Activation energy
(B) Equilibrium constant
(C) Heat of reaction
(D) None of the above
57. is called 'blue gas'
- (A) Coke oven gas
(B) Water gas
(C) Natural gas
(D) Producer gas
58. In flue gas analysis by Orsat's apparatus, oxygen is absorbed by
- (A) Potassium hydroxide
(B) Cuprous chloride
(C) Alkaline pyragallol solution
(D) None of the above
59. Which of the following is not endothermic?

- (A) Cracking
 - (B) Reforming
 - (C) Gasification
 - (D) Partial oxidation
60. Slow and progressive deformation of a material with time under constant stress is called
- (A) Creep
 - (B) Erosion
 - (C) Resilience
 - (D) None of the above
61. Which of the following is an alloy of nickel and copper?
- (A) Hastelloy
 - (B) Duriron
 - (C) Monel
 - (D) Inconel
62. The ability of a material to absorb energy in the elastic range is a measure of its
- (A) Toughness
 - (B) Resilience
 - (C) Malleability
 - (D) Brittleness
63. Tempering of steel is done to make it
- (A) Brittle
 - (B) Hard
 - (C) Rollable
 - (D) Soft
64. Brittle materials are
- (A) weak in tension but strong in compression
 - (B) strong in tension but weak in compression
 - (C) weak in tension as well as in compression
 - (D) strong in tension as well as in compression

65. Where does the maximum tensile strength occur in a thick cylindrical vessel subjected to internal pressure?
- (A) At the inner surface
 - (B) At the mid thickness of the cylindrical vessel
 - (C) At the outer surface
 - (D) None of the above
66. remains constant during the adiabatic cooling of moist air.
- (A) Wet bulb temperature
 - (B) Dry bulb temperature
 - (C) Relative humidity
 - (D) Specific humidity
67. Fog is an example of a colloidal system of
- (A) Solid dispersed in gas
 - (B) Solid dispersed in liquid
 - (C) Liquid dispersed in gas
 - (D) Gas dispersed in liquid
68. The most detrimental impurity in high pressure boiler feed water is
- (A) Suspended salt
 - (B) Dissolved salt
 - (C) Silica
 - (D) Turbidity
69. Friction factor for fluid flow in pipe does not depend upon the
- (A) pipe length
 - (B) pipe roughness
 - (C) fluid density and viscosity
 - (D) mass flow rate of fluid
70. 'Pneumoconiosis' is a disease caused by the inhalation of dust.
- (A) Coal
 - (B) Uranium ore
 - (C) Iron ore
 - (D) Lime

71. For absorbers, high pressure drop results in
- (A) increased efficiency
 - (B) decreased efficiency
 - (C) high operating cost
 - (D) better gas liquid contact
72. The most convenient way of expressing solution concentration is in terms of
- (A) Mole fraction
 - (B) Normality
 - (C) Molality
 - (D) Molarity
73. The velocity distribution in the turbulent boundary layer follows the law.
- (A) Parabolic
 - (B) Hyperbolic
 - (C) Straight line
 - (D) Logarithmic
74. Number of gram moles of solute dissolved in 1 kg of solvent is called its
- (A) Normality
 - (B) Molality
 - (C) Molarity
 - (D) Viscosity
75. Isotonic solutions must have the same
- (A) Viscosity
 - (B) Molar concentration
 - (C) Normality
 - (D) Critical temperature
76. The moment of the resultant of two concurrent forces to a centre in their plane is equal to
- (A) The algebraic sum of the moments of the components to the same centre
 - (B) The algebraic sum of the moments of the components to a different centre
 - (C) The difference in component moments with respect to a different centre
 - (D) The difference between the component's moments at the same centre

77. Which of the following is correct for a screw being rotated?
- (A) The couple moment depends on the axis of rotation
 - (B) The couple moment depends directly on the radius vector of forces
 - (C) The couple moment depends only on the distance vector between the forces
 - (D) The couple moment's direction is given by the left-hand rule
78. In triangle distributed loading, the loading at any distance can be easily found by using which of the following trigonometry functions?
- (A) Tangent
 - (B) Sine
 - (C) Cosine
 - (D) Sine inverse
79. The forces do not cause the rotation if the rotation considered is about the axis of the body or the centroid axis of the body.
- (A) non-concurrent
 - (B) concurrent
 - (C) parallel
 - (D) non-parallel
80. The free body diagram used to explain the theory of dry friction is having distribution of both the normal forces and frictional surface.
- (A) Uneven
 - (B) Even
 - (C) Uniform
 - (D) Equal
81. Which function does iron oxide perform in cement?
- (A) Increases strength
 - (B) Makes cement sound
 - (C) Increases setting time
 - (D) Acts as flux
82. Which of the following bricks types use the least amount of clay?
- (A) Hollow bricks
 - (B) Coping bricks
 - (C) Perforated bricks
 - (D) Channel bricks

83. Flat iron bars are used generally for
- (A) R.C.C
 - (B) Grill work
 - (C) Roofing
 - (D) Truss
84. Which of the following is not a pozzolanic material?
- (A) Fly ash
 - (B) Silica fume
 - (C) Cinder
 - (D) Slag
85. PVC is widely used to make pipes because
- (A) they are cost effective
 - (B) they does not react to chemicals
 - (C) they are easily available
 - (D) they are easy to transport
86. An arrangement composed of soil particles having a parallel orientation is
- (A) Dispersed
 - (B) Coarse grained skeleton
 - (C) Honey comb
 - (D) Single grained
87. Darcy's law is valid only for conditions in the soil
- (A) Laminar flow
 - (B) Turbulent flow
 - (C) Hydraulic flow
 - (D) All of the above
88. The foundation that is used when the soil mass is sufficiently erratic is
- (A) Strap footing
 - (B) Combined footing
 - (C) Mat footing
 - (D) Rectangular combined footing

89. The piles that are used for protecting structures from ships and floating object is
- (A) Anchor piles
 - (B) Compaction piles
 - (C) Fender piles
 - (D) Batter piles
90. Earth embankments or slopes are commonly required for which of the following purposes?
- (A) Railways
 - (B) Earth dams
 - (C) Road ways
 - (D) All of the above
91. Which of the following type of irrigation method can be used for both flat lands and relatively steep lands?
- (A) Free Flooding
 - (B) Basin Flooding
 - (C) Furrow Method
 - (D) Drip Irrigation Method
92. A series of regular sinuous curves in the channel of a river or other watercourse is called
- (A) Cut-off
 - (B) Meander
 - (C) Bends
 - (D) Straight reach
93. The central core of the zoned embankment type earth dam
- (A) checks the seepage
 - (B) prevents piping
 - (C) gives stability to the central impervious fill
 - (D) distributes the load over a large area
94. Deep vertical movement of water in the ground is called
- (A) infiltration
 - (B) seepage
 - (C) runoff
 - (D) percolation

95. The presence of excess salts in the soil requires
- (A) high water storage efficiency
 - (B) low water storage efficiency
 - (C) high water application efficiency
 - (D) high water use efficiency
96. In which of the following rocks does stratification occur?
- (A) Igneous rocks
 - (B) Metamorphic rocks
 - (C) Sedimentary rocks
 - (D) Fossil rocks
97. The undulations or bends developed in rocks is called
- (A) Faults
 - (B) Joints
 - (C) Non conformity
 - (D) Folds
98. Disruption of beds due to faulting results in their
- (A) Settling
 - (B) Displacement
 - (C) Inclination
 - (D) Change in their composition
99. The point of origin of an earthquake below the earth's surface is called
- (A) Isocentre
 - (B) Isopoint
 - (C) Focus
 - (D) Epicentre
100. Reservoirs involving large sluice gates are
- (A) Flood control reservoirs
 - (B) Storage and conservation reservoirs
 - (C) Distribution reservoirs
 - (D) Drought control reservoirs

101. Which air pollutant is released during the pulping of wood in a pulp and paper mill?
- (A) Hydrogen sulphide
 - (B) Fumes
 - (C) Nitrogen dioxide
 - (D) Carbon monoxide
102. Which of the following is not a sink for air pollutants?
- (A) The ocean fauna
 - (B) The soil
 - (C) The flora
 - (D) The fauna
103. Which of the following is not a dry method of removal of particulates from the atmosphere?
- (A) Diffusion
 - (B) Flotation
 - (C) Impact on the ground
 - (D) Sedimentation
104. How can fly ash emissions be reduced from thermal plants?
- (A) Equipment changes
 - (B) Raw material changes
 - (C) Process changes
 - (D) Emission treatment
105. Which of the following is not a mechanism of separation employed in packed filtration?
- (A) Direct interception
 - (B) Gravity settling
 - (C) Inertial impact
 - (D) Diffusion
106. Which of the following factors controls the air pollutant plume behaviour?
- (A) Atmospheric instability only
 - (B) Wind turbulence only
 - (C) Wind turbulence and degree of atmospheric instability
 - (D) Turbulence, instability of atmosphere and stack diameter

107. Which of the following is not a factor upon which the emissions patterns from stacks depends?
- (A) Wind profile
 - (B) Temperature of the wind
 - (C) Wind turbulence
 - (D) Distribution of temperature
108. Which method is preferred for the analysis of sulphur dioxide from stack emissions?
- (A) Spectrophotometry
 - (B) Conductometry
 - (C) Colourimetry
 - (D) Electrochemical method
109. Which of the following is an effect of long-term arsenic poisoning?
- (A) Nervous system damage
 - (B) Brain damage
 - (C) Digestive system damage
 - (D) Pancreas damage
110. Particulates corrode the surface of metals in the presence of
- (A) Carbon dioxide and moisture
 - (B) Oxygen and moisture
 - (C) Carbon monoxide and moisture
 - (D) Sulphur dioxide and moisture
111. The immediate health effect of exposure to aromatic hydrocarbons is
- (A) Irritation of eyes
 - (B) Irritation of mucus membrane
 - (C) Irritation of the throat
 - (D) Irritation of nose
112. Which one of the following is **not** a working principle of wet scrubbers?
- (A) Inertial impaction
 - (B) Diffusion
 - (C) Adsorption
 - (D) Interception

113. Which type of membrane is used in the reverse osmosis process?
- (A) Highly permeable membrane
 - (B) Permeable membrane
 - (C) Semi-permeable membrane
 - (D) Non-permeable membrane
114. Which process is responsible for the accumulation of mercury in the food web?
- (A) Oxidation of mercury metal
 - (B) Chlorination of mercury metal
 - (C) Mercury retained in its metallic form
 - (D) Methylation of mercury metal
115. Which of the following is a major cause of ocean acidification?
- (A) Absorption of carbon dioxide by the oceans
 - (B) Absorption of nitrogen dioxide by the oceans
 - (C) Absorption of ozone by the oceans
 - (D) Condensation of water vapour into the oceans
116. Which of the following metal is suitable under all conditions of concentration and temperature in caustic soda?
- (A) Aluminium
 - (B) Nickel
 - (C) Titanium
 - (D) Carbon steel
117. Which of the following factors is least significant while selecting a point for streamflow measurement?
- (A) Width of stream
 - (B) Depth of stream
 - (C) Presence of curve
 - (D) Scouring effect on riverbank
118. The maximum amount of water that can be retained by the soil against gravity is known as
- (A) Potential evapotranspiration
 - (B) Actual evapotranspiration
 - (C) Field capacity
 - (D) Permanent wilting point

119. What is the rotating element generally employed in a vertical-axis current meter?
- (A) Impeller
 - (B) Propeller
 - (C) Torsion spring
 - (D) Conical cup assembly
120. Identify the dilution technique of stream flow measurement in which tracer is injected continuously at a given section at a constant rate
- (A) Sudden injection
 - (B) Plateau gauging
 - (C) Integration method
 - (D) Gulp method
121. Which of the following is not a structural method of flood control?
- (A) Flood ways
 - (B) Flood embankments
 - (C) Flood plain zoning
 - (D) Channel improvement
122. A saturated formation in a soil has a porosity of 23%. Which of the following is true about the formation?
- (A) High water holding capacity
 - (B) Moderate water holding capacity
 - (C) Very low water holding capacity
 - (D) Insufficient data
123. When water is pumped from a well in a homogeneous and isotropic unconfined aquifer, what does the shape of the water table resemble?
- (A) Cylinder
 - (B) Hemisphere
 - (C) Cone
 - (D) Helix
124. Which of the following is not a method used for the estimation of groundwater recharge?
- (A) Specific yield method
 - (B) Induced recharge method
 - (C) Groundwater level fluctuation method
 - (D) Rainfall infiltration factor method

125. Which of the following is the fundamental method of representing GIS entities?
- (A) Mapping Method
 - (B) Drawing Method
 - (C) GIS Method
 - (D) Raster Method
126. What is the relation between the Coefficient of thermal expansion of concrete and the coefficient of thermal expansion in aggregates?
- (A) Equal
 - (B) More than
 - (C) Directly proportional
 - (D) Inversely proportional
127. Which among the following is an assumption of Hagen-Poiseuille equation?
- (A) Fluid is uniform
 - (B) Fluid is laminar
 - (C) Fluid is turbulent
 - (D) Fluid is compressible
128. A tank containing water up to a depth of 500 mm is moving vertically upward with a constant acceleration of 2.45 m/s^2 . Find the force exerted by a fluid of specific gravity 0.65 on the side of the tank with a width of 1m
- (A) 996.1 N
 - (B) 1992.2 N
 - (C) 498.06 N
 - (D) 124.5 N
129. Another popular name of Trapezoidal weir is
- (A) Euler's weir
 - (B) Hagen Poiseuille's weir
 - (C) Reynold's weir
 - (D) Cipolletti weir
130. When the energy is at minimum for flow discharge, it is called
- (A) Normal depth
 - (B) Roughness
 - (C) Critical depth
 - (D) Hydraulic radius

131. Find the discharge through totally drowned orifice of width 3.3 m if the difference of water levels on both side of the orifice be 50 cm. The height of water from top and bottom of the orifice are 2.25 m and 2.67 m respectively.
- (A) $2.8 \text{ m}^3/\text{s}$
 - (B) $2.7 \text{ m}^3/\text{s}$
 - (C) $2.6 \text{ m}^3/\text{s}$
 - (D) $2.5 \text{ m}^3/\text{s}$
132. Any failure in the hydrosphere within oxygen cycle can lead to the formation of
- (A) Hyperoxic zones
 - (B) Hypoxic zones
 - (C) Hydrolic zones
 - (D) Hydroxic zones
133. A permanent structure constructed at a coastal area to protect against tides, currents, waves, and storm surges is known as
- (A) Pier heads
 - (B) Dolphins
 - (C) Breakwater
 - (D) Fenders
134. Which of the following cycles of the environment does not have a gaseous state?
- (A) Oxygen
 - (B) Nitrogen
 - (C) Carbon
 - (D) Phosphorous
135. An analogous process for organic nitrogen compounds to desulphurisation in the sulphur cycle is
- (A) Transnitrification
 - (B) Denitrification
 - (C) Deamination
 - (D) Assimilation
136. Which one of the following is not an in-situ conservation method?
- (A) Zoo
 - (B) National Parks
 - (C) Biosphere Reserves
 - (D) Sanctuaries

137. Which of the following is an example of slow-onset disaster?
- (A) Earthquake
 - (B) Tsunami
 - (C) Cyclone
 - (D) Drought
138. The maximum frictional force which comes into play when a body just begins to slide over another surface is called
- (A) Limiting friction
 - (B) Sliding friction
 - (C) Rolling friction
 - (D) Kinematic friction
139. Binomial Distribution is a
- (A) Continuous distribution
 - (B) Discrete distribution
 - (C) Irregular distribution
 - (D) Not a Probability distribution
140. How many grams of C_2H_6 are required to produce 88 grams of CO_2 when it is burned in the excess of oxygen?
- (A) 15
 - (B) 30
 - (C) 45
 - (D) 60
141. "Any compound should have the same reduced volume at the same reduced pressure and reduced temperature." This statement is known as
- (A) Law of corresponding states
 - (B) Law of critical state
 - (C) Law of reduced state
 - (D) None of the above
142. What is the distillation method of obtaining fresh water from saline waters?
- (A) Solvent extraction
 - (B) Reverse osmosis
 - (C) Vapor recompression
 - (D) Hydrocarbon hydrates

143. Which of the following temperature measuring devices is widely used to measure the temperature in furnaces?
- (A) Resistance thermometer
 - (B) Radiation pyrometer
 - (C) Iron-constantan thermocouple
 - (D) Bimetallic thermometer
144. Polarimeter is used for the analysis of
- (A) sugars and chemicals having symmetrical structures
 - (B) any liquid solution
 - (C) any solid
 - (D) any gaseous mixture
145. The Lewis number of a mixture is one when mass diffusivity is equal to
- (A) momentum diffusivity
 - (B) thermal diffusivity
 - (C) thermal conductivity
 - (D) $\frac{1}{\text{thermal diffusivity}}$
146. For identical feed composition and flow rate, N plug flow reactors in series with a total volume V gives the same conversion as a single
- (A) Plug flow reactor of volume V
 - (B) CSTR of volume V
 - (C) Plug flow reactor of volume V/N
 - (D) plug flow reactor of volume NV
147. If a solid-gas non-catalytic reaction occurs at very high temperature, the rate controlling step is
- (A) film diffusion
 - (B) chemical reaction
 - (C) ash layer diffusion
 - (D) pore diffusion

148. As the temperature of a hot glowing object increases the wavelength at the maximum of the blackbody radiation curve
- (A) increases
 - (B) decreases
 - (C) remains the same
 - (D) increases linearly
149. The vertical distance between the total energy grade line and hydraulic grade line represents the
- (A) velocity head
 - (B) pressure head
 - (C) elevation head
 - (D) piezometric head
150. Heavy water is used in nuclear reactors to
- (A) cool the reactor
 - (B) facilitate the release of neutrons
 - (C) control fission
 - (D) slow down the speed of neutrons

FOR REFERENCE ONLY

ANSWER KEY

Subject Name: 607 ENGINEERING SCIENCE

SI No.	Key	SI No.	Key	SI No.	Key	SI No.	Key	SI No.	Key
1	C	31	A	61	C	91	A	121	C
2	D	32	B	62	B	92	B	122	A
3	D	33	D	63	D	93	A	123	C
4	A	34	B	64	D	94	D	124	B
5	A	35	A	65	A	95	A	125	D
6	B	36	C	66	B	96	C	126	C
7	C	37	A	67	C	97	D	127	B
8	B	38	B	68	C	98	B	128	A
9	A	39	C	69	A	99	C	129	D
10	C	40	C	70	A	100	A	130	C
11	D	41	A	71	C	101	A	131	A
12	C	42	C	72	D	102	D	132	B
13	B	43	B	73	D	103	B	133	C
14	D	44	B	74	B	104	C	134	D
15	C	45	A	75	D	105	B	135	C
16	A	46	D	76	A	106	C	136	A
17	C	47	D	77	C	107	B	137	D
18	D	48	C	78	A	108	D	138	A
19	A	49	C	79	B	109	A	139	B
20	C	50	A	80	A	110	D	140	B
21	C	51	B	81	D	111	B	141	A
22	B	52	C	82	C	112	C	142	C
23	D	53	D	83	B	113	C	143	B
24	B	54	B	84	C	114	D	144	A
25	A	55	C	85	B	115	A	145	B
26	C	56	A	86	A	116	B	146	D
27	C	57	B	87	A	117	B	147	C
28	B	58	C	88	C	118	C	148	B
29	A	59	D	89	B	119	D	149	A
30	C	60	A	90	D	120	B	150	D