

607- ENGINEERING SCIENCE
(FINAL)

1. Which of the following flow measuring instruments incurs the maximum head loss for a given flow rate?
 - (A) Flow nozzle
 - (B) Venturimeter
 - (C) Orificemeter
 - (D) All of the above incur the same head loss

2. The reason for providing surge tanks in high pressure water lines is to
 - (A) enable dismantling the pipelines easily for cleaning and maintenance
 - (B) reduce the effect of water hammer
 - (C) store a definite quantity of water all the time
 - (D) None of the above

3. A geologic formation or stratum that confines water in an adjacent aquifer is called
 - (A) Aquiclude
 - (B) Aquifuge
 - (C) Water table
 - (D) None of the above

4. Which of the following diseases is caused by the intake of water and vegetables high in nitrate?
 - (A) Fluorosis
 - (B) Minamata disease
 - (C) Methemoglobinemia
 - (D) Hepatitis

5. Which one of the following is a useful biological indicator of sulphur dioxide pollution?
 - (A) Grasses
 - (B) Lichens
 - (C) Bryophytes
 - (D) Pinus

6. Air binding in a rapid sand filter is caused by
- (A) Excessive negative pressure
 - (B) Excessive turbidity
 - (C) Excessive water pressure
 - (D) Excessive water flow
7. Which of the following does not influence the efficiency of a sedimentation tank?
- (A) Detention period
 - (B) Length of tank
 - (C) Depth of tank
 - (D) Velocity of water
8. Which of the following is a secondary pollutant?
- (A) Sulphur dioxide
 - (B) Carbon monoxide
 - (C) Suspended particulate matter
 - (D) Ozone
9. The method used to measure the colour of a water sample
- (A) Gravimetric analysis
 - (B) Chromatography
 - (C) Tintometer method
 - (D) Nephelometry
10. What is the concentration of H^+ ions in moles/L in water if the pOH value is 5?
- (A) 10^{-9}
 - (B) 10^{-5}
 - (C) 10^{-6}
 - (D) 10^{-8}
11. Which of the following water borne diseases is caused by virus infection?
- (A) Typhoid fever
 - (B) Hepatitis A
 - (C) Cholera
 - (D) Dysentery

12. Which of the following works by an external fluid being pumped into either side of a cylinder simultaneously?
- (A) Hydraulic ram
 - (B) Hydraulic press
 - (C) Hydraulic turbine
 - (D) Hydraulic pump
13. Pick the chemical process in which the combustible portion of the waste is combined with oxygen forming carbon dioxide and water, which are released into the atmosphere.
- (A) Incineration
 - (B) Pyrolysis
 - (C) Composting
 - (D) Stabilisation
14. An area of land that feeds all the water running under it and draining off of it into a body of water is known as
- (A) Water cycle
 - (B) Catchment area
 - (C) Water shed
 - (D) Water reservoir
15. Which of the following greenhouse gases has the highest global warming potential on a 100-year scale?
- (A) Nitrous oxide
 - (B) Carbon tetra fluoride
 - (C) Methane
 - (D) Water vapour
16. A disease that affects a large number of people within a community, population, or region is known as
- (A) Pandemic
 - (B) Endemic
 - (C) Epidemic
 - (D) Outbreak

17. Any substance that can disturb the development of an embryo or foetus is called
- (A) Carcinogen
 - (B) Mutagen
 - (C) Teratogen
 - (D) Antibody
18. Rapid growth of bacteria is observed in the phase of the growth curve.
- (A) Lag phase
 - (B) Stationary phase
 - (C) Endogenous phase
 - (D) Log phase
19. Removal of sand, and gravel in the primary treatment of waste water is known as
- (A) Coagulation
 - (B) Screening
 - (C) Grit removal
 - (D) Adsorption
20. Which of the following techniques can be used for the effective removal of emulsified oil from water?
- (A) Gravity separation
 - (B) Screening
 - (C) Filtration
 - (D) Dissolved air floatation
21. Which of the following is a global treaty that aims to protect human health and the environment from the effects of persistent organic pollutants?
- (A) Montreal protocol
 - (B) Stockholm convention
 - (C) Basel convention
 - (D) Rotterdam Convention
22. is a dimensionless parameter measuring the ratio of "the inertia force on an element of fluid to the weight of the fluid element"
- (A) Froude number
 - (B) Reynolds number
 - (C) Nusselt number
 - (D) Prandtl number

23. The concentration of many harmful pollutants has been found to increase in higher trophic levels. This phenomenon is known as
- (A) Biomagnification
 - (B) Eutrophication
 - (C) Biodegradation
 - (D) Bioremediation
24. is considered as a common indicator organism of sewage pollution in a water body.
- (A) Lemna paucicostata
 - (B) Eicchornia Crassipes
 - (C) Escherichia coli
 - (D) Entamoeba histolytica
25. Which of the following weirs has less head loss?
- (A) Ogee shaped
 - (B) Broad crested
 - (C) Sharp crested
 - (D) Narrow crested
26. Select the two air pollution control devices that are usually used to remove very fine particles from the flue gas
- (A) Cyclone and Venturi Scrubber
 - (B) Cyclone and Packed Scrubber
 - (C) Electrostatic Precipitator and Bag Filter
 - (D) Settling Chamber and Tray Scrubber
27. The normal depth in a wide rectangular channel is increased by 10%. The percentage increase in the discharge in the channel is
- (A) 20.1
 - (B) 15.4
 - (C) 10.5
 - (D) 17.2
28. The presence of hardness in excess of permissible limit causes
- (A) Cardio vascular problems
 - (B) Skin discoloration
 - (C) Calcium deficiency
 - (D) Increased laundry expenses

29. The 5-day BOD of a wastewater sample is obtained as 190 mg/l (with $k = 0.01 \text{ h}^{-1}$). The ultimate oxygen demand (mg/l) of the sample will be
- (A) 380
 - (B) 475
 - (C) 271
 - (D) 190
30. Standard 5-day BOD of a waste water sample is nearly percent of the ultimate BOD.
- (A) 78
 - (B) 68
 - (C) 58
 - (D) 48
31. Excessive fluoride in drinking water can lead to
- (A) Alzheimer's disease
 - (B) Skin cancer
 - (C) Methemoglobinemia
 - (D) Mottling of teeth and embrittlement of bones
32. The lift force acting on an immersed body in a flowing fluid is
- (A) always in the opposite direction to gravity
 - (B) due to Wake phenomenon
 - (C) the dynamic fluid-force component normal to approach velocity
 - (D) due to buoyant force
33. Muskingum method for routing of flood
- (A) is used for routing floods through reservoirs
 - (B) uses a conservation of mass approach to route an inflow hydrograph
 - (C) is a hydrologic method of routing floods through streams
 - (D) uses only energy equation
34. The temporary hardness of water, is caused by
- (A) carbonates of calcium and magnesium
 - (B) bicarbonates of sodium and potassium
 - (C) bicarbonates of calcium and magnesium
 - (D) dissolved carbon dioxide

35. The unit of dynamic viscosity of a fluid is
- (A) m^2/s
 - (B) Ns/m^2
 - (C) $\text{Pa s}/\text{m}^2$
 - (D) $\text{kg s}^2/\text{m}^2$
36. Chemical oxygen Demand (COD) of a sample is always greater than Biochemical Oxygen Demand (BOD) since it represents
- (A) biodegradable and non-biodegradable organic matter
 - (B) non-biodegradable organic matter only
 - (C) biodegradable organic matter only
 - (D) inorganic matter
37. An outlet irrigates an area of 20 ha. The discharge (l/s) required at this outlet to meet the evapotranspiration requirement of 20 mm occurring uniformly in 20 days neglecting other field losses is
- (A) 2.52
 - (B) 2.31
 - (C) 2.01
 - (D) 1.52
38. According to Darcy's law for flow through porous media, the flow rate is proportional to
- (A) Pressure gradient
 - (B) Effective stress
 - (C) Cohesion
 - (D) Stability number
39. Which of the following does not affect the disinfection efficiency of chlorine in water treatment?
- (A) Contact time
 - (B) pH
 - (C) Temperature
 - (D) Viscosity

40. Breakpoint chlorination of water involves addition of chlorine in an amount sufficient to
- (A) react with any ammonia and readily oxidisable organic matter
 - (B) kill Giardia cysts
 - (C) react with inorganic matter
 - (D) reduce bacterial growth in filters
41. The substances having physical properties that are equal in all directions are known as
- (A) Homogeneous
 - (B) Isotropic
 - (C) Orthotropic
 - (D) Visco-elastic
42. A soil sample has a void ratio of 0.5. Its porosity will be approximately
- (A) 50%
 - (B) 66%
 - (C) 33%
 - (D) 100%
43. The pressure at a point in a fluid in motion is the same in all directions. This fluid is
- (A) A Newtonian fluid
 - (B) A Non-Newtonian fluid
 - (C) A Real fluid
 - (D) An Ideal fluid
44. How will you increase the efficiency of a sedimentation tank, for a given discharge?
- (A) By increasing the depth of the tank
 - (B) By increasing the surface area of the tank
 - (C) By decreasing the surface area of the tank
 - (D) By decreasing the depth of the tank
45. The compound used to control the growth of algae in reservoirs is
- (A) Copper sulphate
 - (B) Bleaching powder
 - (C) Lime solution
 - (D) Alum solution

46. Which of the following bacteria require free oxygen for their survival?
- (A) Anoxic bacteria
 - (B) Anaerobic bacteria
 - (C) Aerobic bacteria
 - (D) Facultative bacteria
47. The most commonly used non-empirical formula for determining the velocity of flow of underground water is
- (A) Lacy's formula
 - (B) Slichter's formula
 - (C) Hazen's formula
 - (D) Darcy's formula
48. Which of the following contributes to the turbidity of water?
- (A) Suspended clay
 - (B) Suspended silt
 - (C) Finely divided organic material
 - (D) All the above
49. Which of the following statements is true for disinfection of water with ozone?
- (A) It is more effective than chlorine in destroying viruses and bacteria
 - (B) It removes the color, taste and odour from water
 - (C) It adds taste to the water
 - (D) It vanishes before water reaches the consumers
50. The normal range of overflow rate for plain sedimentation tanks in litres/hr/m² is
- (A) 100 to 250
 - (B) 250 to 500
 - (C) 500 to 750
 - (D) 750 to 1000
51. The maximum pressure to which cast iron pipes may be subjected to, is
- (A) 10 kg/cm²
 - (B) 7 kg/cm²
 - (C) 5 kg/cm²
 - (D) 3 kg/cm²

52. Biochemical Oxygen Demand (B.O.D.) of safe drinking water must be
- (A) Nil
 - (B) 5 mg/l
 - (C) 10 mg/l
 - (D) 15 mg/l
53. Which of the following can be used to detect low turbidity of water?
- (A) Turbidity tube
 - (B) Jackson turbidity meter
 - (C) Baylis turbidimeter
 - (D) Hellige turbidimeter
54. The maximum permissible concentration of nitrates (measured as nitrogen) in drinking water is
- (A) Nil
 - (B) 10 mg/l
 - (C) 50 mg/l
 - (D) 100 mg/l
55. What does a Ringelmann chart measure?
- (A) Combustibles present in automobile exhaust
 - (B) Flue gas temperature
 - (C) Exhaust gas density
 - (D) Smoke density from a chimney
56. Prolonged exposure to high concentration of carbon monoxide (> 5000 ppm) can be fatal. Why?
- (A) Due to clotting of blood
 - (B) Due to jamming of respiratory tract
 - (C) It forms carboxyhemoglobin by combining with haemoglobin of blood, thereby making it incapable of absorbing oxygen
 - (D) It forms CO₂ by combining with oxygen present in the blood
57. Zeolite process is used in water treatment to remove
- (A) Hardness
 - (B) Alkalinity
 - (C) Acidity
 - (D) Iron and zinc

58. Absorbent used for the removal of SO_2 from flue gas is
- (A) Iron oxide
 - (B) Limestone powder
 - (C) Silica gel
 - (D) Activated carbon
59. Among the following, which gas has the widest explosion limit range?
- (A) Acetylene
 - (B) Hydrogen
 - (C) Carbon monoxide
 - (D) Ammonia
60. Soluble silica present in boiler feed water can be removed by
- (A) Coagulation
 - (B) Filtration
 - (C) Ion exchange
 - (D) Absorption
61. Which of the following is a measure of the resistance of water to the passage of light through it?
- (A) Dissolved gases
 - (B) Color
 - (C) Hardness
 - (D) Turbidity
62. Which of the following can be used to reduce the high noise levels produced during operation of fans and compressors?
- (A) Acoustic adsorbent
 - (B) Mufflers
 - (C) Lagging of noisy duct
 - (D) Acoustic barriers
63. Identify the equipment that is not a source of ozone emission.
- (A) Dermatological photo-therapy equipments
 - (B) Xerox machines
 - (C) Refrigerators
 - (D) High voltage electrical equipments

64. The minimum recommended WHO value for free chlorine residual in treated drinking water
- (A) 0.2 mg/l
 - (B) 0.001 mg/l
 - (C) 2 mg/l
 - (D) 10 mg/l
65. Which of the following is a masonry structure built below ground level where anaerobic biochemical reaction takes place?
- (A) Cesspool
 - (B) Septic tank
 - (C) Skimming mill
 - (D) Lagoon
66. The most active zone of atmosphere in which weathering events like rain, storm and lightning occurs is
- (A) Thermosphere
 - (B) Ionosphere
 - (C) Stratosphere
 - (D) Troposphere
67. Which of the following removes oil and fatty substances in sewage treatment?
- (A) Aeration tank
 - (B) Equalisation tank
 - (C) Skimming tank
 - (D) Rapid sand filter
68. The most efficient particulate removal equipment for the removal of submicronic dust particles from blast furnace gas is
- (A) Packed scrubber
 - (B) Electrostatic precipitator
 - (C) Gravity settling chamber
 - (D) Hydro cyclone
69. Black smoke is coming out of the chimney of a furnace. It is an indication of
- (A) the presence of large quantity of excess combustion air in the furnace
 - (B) the presence of low amount of excess combustion air in the furnace
 - (C) the use of furnace oil as fuel
 - (D) the use of pulverized coal as fuel

70. Identify the major gas evolved from a sludge digestion tank.
- (A) CO
 - (B) CO₂
 - (C) H₂
 - (D) CH₄
71. Which of the following is not responsible for the emission of considerable amount of SO₂ into the atmosphere?
- (A) Thermal power plant
 - (B) Nitric acid plant
 - (C) Petroleum refinery
 - (D) Sulphuric acid plant
72. Which of the following processes take place in an Imhoff tank used for sewage treatment?
- (A) Digestion
 - (B) Filtration
 - (C) Sedimentation
 - (D) Both digestion and sedimentation
73. Which of the following is provided in the primary treatment of sewage to remove grit and fine sand particles?
- (A) Detritus tank
 - (B) Skimming tank
 - (C) Mixing tank
 - (D) Aeration tank
74. The temperature rise of an aquatic system can lead to the reduction of
- (A) Biochemical oxygen demand of water
 - (B) Dissolved oxygen content of water
 - (C) Vapor pressure of water
 - (D) All (A), (B) and (C) above

75. The most efficient technique for the removal of very finely divided suspended solids and colloidal matter from polluted water is
- (A) Sedimentation
 - (B) Filtration
 - (C) Mechanical flocculation
 - (D) Chemical coagulation
76. The least efficient dust collection equipment for the removal of sub-micron particles from air is
- (A) Bag filter
 - (B) Cyclone separator
 - (C) Gravity type dust catcher
 - (D) Hollow wet scrubber
77. The major reason for hydrodynamic noise is
- (A) Pipe vibrations
 - (B) Boundary layer separation
 - (C) Cavitation
 - (D) Fluctuation in liquid flow
78. Disinfection of water by irradiating it with ultraviolet light of suitable wavelength is commonly used in
- (A) Food industry
 - (B) Municipal sewage treatment
 - (C) Petroleum refinery
 - (D) Iron and steel plant
79. Which of the following processes facilitates replenishment of dissolved oxygen in a stream polluted with industrial waste?
- (A) Natural aeration of water stream
 - (B) Photosynthetic action of algae
 - (C) Decay of vegetable matter
 - (D) Both (A) and (B) above
80. Which of the following is the most detrimental for water used in high pressure boiler?
- (A) Turbidity
 - (B) Silica
 - (C) Phenol
 - (D) Dissolved oxygen

81. The working principle of a cyclone separator is based on the
- (A) Diffusion of dust particles
 - (B) Effect of gravitational force on dust particles
 - (C) Effect of centrifugal force on dust particles
 - (D) Effect of electrostatic force on dust particles
82. The inhalation of dust for a long time can lead to the disease known as 'siderosis'.
- (A) Coal
 - (B) Iron
 - (C) Silica
 - (D) Cotton
83. Which of the following eye irritating compounds is formed in atmosphere by the direct reaction of unsaturated hydrocarbons with either NO or NO₂?
- (A) Peroxyacetyl nitrate (PAN)
 - (B) Benzaldehyde
 - (C) Benzopyrene
 - (D) Polyacrylonitrile
84. The most commonly used pump for pumping raw sewage is
- (A) Electromagnetic pump
 - (B) Centrifugal pump
 - (C) Reciprocating pump
 - (D) Gear pump
85. The valve that facilitates close control flow of fluids is
- (A) Gate valve
 - (B) Check valve
 - (C) Butterfly valve
 - (D) Globe valve
86. Prandtl mixing length is
- (A) applicable to laminar flow problems
 - (B) a universal constant
 - (C) zero at the pipe wall
 - (D) None of the above

87. Drag co-efficient for flow past immersed body is the ratio of to the product of velocity head and density.
- (A) Average drag per unit projected area
 - (B) Shear force
 - (C) Shear stress
 - (D) None of the above
88. Which of the following equations represents fluid flow through a packed bed?
- (A) Fanning's
 - (B) Ergun's
 - (C) Hagen-Poiseuille's
 - (D) Stoke's
89. The ratio of inertial forces to viscous forces for a fluid is called the number.
- (A) Froude
 - (B) Euler
 - (C) Reynold
 - (D) Mach
90. In laminar flow through a round tube, the discharge varies
- (A) Linearly as the viscosity
 - (B) Inversely as the pressure drop
 - (C) Inversely as the viscosity
 - (D) As the square of the radius
91. Which of the following can be used to create a flow of gas, where no significant compression is required?
- (A) Reciprocating compressor
 - (B) Blower
 - (C) Axial flow compressor
 - (D) Centrifugal compressor
92. For a fluid rotating at constant angular velocity about vertical axis as a rigid body, the pressure intensity varies as the
- (A) Square of the radial distance
 - (B) Radial distance linearly
 - (C) Inverse of the radial distance
 - (D) Elevation along vertical direction

93. Which of the following is used for very accurate measurement of flow of gas at low velocity?
- (A) Pitot tube
 - (B) Rotameter
 - (C) Segmental orificemeter
 - (D) Hot wire anemometer
94. Which of the following parameters is measured by a piezometer provided in the pipe?
- (A) Friction factor
 - (B) Dynamic pressure
 - (C) Static pressure
 - (D) None of the above
95. The reason for providing foot valves in the suction line of a centrifugal pump is
- (A) to avoid priming, every time we start the pump
 - (B) to remove the contaminant present in the liquid
 - (C) to minimize the fluctuation in discharge
 - (D) to control the liquid discharge
96. The boundary layer in fluid flow is caused by
- (A) Surface tension
 - (B) Fluid viscosity
 - (C) Fluid density
 - (D) Gravity forces
97. Metacentric height of a floating body is defined as the distance between metacentre and
- (A) Water surface
 - (B) Centre of buoyancy
 - (C) Centre of gravity
 - (D) None of the above
98. The scale up of an agitator design requires
- (A) Geometrical similarity only
 - (B) Dynamic similarity only
 - (C) Both geometrical and dynamic similarity
 - (D) All geometrical, dynamic and kinematic similarity

99. The reason for the less energy loss in flow through Venturimeter compared to that through a flow nozzle is that
- (A) The flow nozzle has a shorter length
 - (B) Throat diameter is more in the case of flow nozzle
 - (C) Sudden expansion of flow occurs in the downstream in the case of flow nozzle
 - (D) Distance between the throat and the inlet is more in a flow nozzle
100. The flow rate of high velocity flue gas discharged through a stack to the atmosphere can be most conveniently measured by a
- (A) Pitot tube
 - (B) Manometer
 - (C) Rotameter
 - (D) Orificemeter
101. If A is the cross-sectional area of the flow through a non-circular duct and P is the wetted perimeter of the cross-section, the hydraulic diameter of the duct will be
- (A) $2A/P$
 - (B) $4A/P$
 - (C) $3A/P$
 - (D) $8A/P$
102. Which of the following laws is applicable to velocity distribution in the turbulent boundary layer?
- (A) Parabolic law
 - (B) Linear law
 - (C) Logarithmic law
 - (D) Newton's law
103. The schedule number of a pipe is related to
- (A) Size
 - (B) Roughness
 - (C) Material density
 - (D) Wall thickness
104. The margin of pressure over vapor pressure, at the pump suction nozzle is known as
- (A) Static submergence
 - (B) Net positive suction head
 - (C) Cavitation sensitivity
 - (D) Priming efficiency

105. Which of the following types of centrifugal pump has the highest specific speed?
- (A) Axial flow type
 - (B) Radial flow type
 - (C) Mixed flow type
 - (D) None of the above
106. The type of roof that is most commonly used for cylindrical storage tanks is
- (A) Dome
 - (B) Flat
 - (C) Conical
 - (D) Umbrella
107. A light rope is loaded with many equal weights at equal horizontal intervals. The points of suspension on the rope lie on a
- (A) Catenary
 - (B) Parabola
 - (C) Cycloid
 - (D) Ellipse
108. A force P of 50 N and another force Q of an unknown magnitude act at 90 degrees to each other. They are balanced by a force of 130 N. What is the magnitude of Q?
- (A) 60 N
 - (B) 80 N
 - (C) 100 N
 - (D) 120 N
109. The equation of motion of a particle starting from rest along a straight line is $x = t^3 - 3t^2 + 5$. The ratio of the velocities after 5 sec and 3 sec will be
- (A) 5
 - (B) 2
 - (C) 3
 - (D) 4
110. Which of the following is a graphical method used to determine the deflection of a framed structure under the load?
- (A) Williot-Mohr diagram
 - (B) Venn diagram
 - (C) Nyquist diagram
 - (D) Bending moment diagram

111. Three forces act on a rigid body to keep it in equilibrium.
The forces must be coplanar and
- (A) Concurrent parallel
 - (B) Parallel
 - (C) Concurrent
 - (D) None of the above
112. The moment of inertia of a hollow circular section whose external diameter is 8 cm and internal diameter is 6 cm, about centroidal axis is
- (A) 437.5 cm^4
 - (B) 337.45 cm^4
 - (C) 237.5 cm^4
 - (D) 137.45 cm^4
113. Facultative bacteria are able to work in
- (A) Presence of oxygen only
 - (B) Absence of oxygen only
 - (C) Presence as well as in absence of oxygen
 - (D) Presence of water
114. Air binding phenomena in rapid sand filters occur due to
- (A) Excessive negative head
 - (B) Mud ball formation
 - (C) Higher turbidity in the effluent
 - (D) Low temperature
115. The rate of BOD exerted at any time is
- (A) Directly proportional to BOD satisfied
 - (B) Directly proportional to BOD remaining
 - (C) Inversely proportional to BOD satisfied
 - (D) Inversely proportional to BOD remaining
116. A sewer that receives the discharge of a number of house sewers is called
- (A) House sewer
 - (B) Intercepting sewer
 - (C) Lateral sewer
 - (D) Sub-main sewer

117. The maximum permissible limit for fluoride in drinking water is
- (A) 0.1 mg/liter
 - (B) 1.5 mg/liter
 - (C) 5 mg/liter
 - (D) 10 mg/liter
118. The treatment of water with bleaching powder is known as
- (A) Pre-chlorination
 - (B) Super chlorination
 - (C) De-chlorination
 - (D) Hypo-chlorination
119. A pipe which is installed in the house drainage to preserve the water seal of traps is called
- (A) Vent pipe
 - (B) Anti-siphonage pipe
 - (C) Waste pipe
 - (D) Soil pipe
120. Which of the following global treaties deals with the trans boundary movement of hazardous wastes?
- (A) Kyoto protocol
 - (B) Stockholm convention
 - (C) Basel convention
 - (D) Ramsar convention
121. The best method for the determination of average annual precipitation in a catchment basin is
- (A) Isohyetal method
 - (B) Thiessen's mean method
 - (C) Arithmetical method
 - (D) None of the above
122. A hydroelectric scheme operating under a head of 80 m will be classified as
- (A) Low head scheme
 - (B) Medium head scheme
 - (C) High head scheme
 - (D) None of the above

123. Precipitation caused due to upward movement of warmer air as compared to surrounding air, is called
- (A) Cyclonic precipitation
 - (B) Convective precipitation
 - (C) Orographic precipitation
 - (D) Radiative precipitation
124. Isopiestic lines are the contours
- (A) Drawn to represent water table
 - (B) Drawn to represent piezometric heads
 - (C) Drawn to piezometric surface
 - (D) None of the above
125. The surface run-off is the quantity of water
- (A) Absorbed by soil
 - (B) Intercepted by buildings and vegetative cover
 - (C) Required to fill surface depressions
 - (D) That reaches the stream channels
126. Remote sensing techniques make use of the properties of emitted, reflected or diffracted by the sensed objects.
- (A) Electric waves
 - (B) Sound waves
 - (C) Electromagnetic waves
 - (D) Wind waves
127. The ratio of limiting friction and normal reaction is known as
- (A) Coefficient of friction
 - (B) Angle of friction
 - (C) Angle of repose
 - (D) Sliding friction
128. The moment diagram for a cantilever which is subjected to a uniformly distributed load will be a
- (A) Triangle
 - (B) Parabola
 - (C) Rectangle
 - (D) Cubic parabola

129. A cylinder is said to be thin if the ratio of its thickness and diameter, is less than
- (A) 1/25
 - (B) 1/20
 - (C) 1/15
 - (D) 1/10
130. Which of the following is **NOT** the unit of pressure?
- (A) kg/cm
 - (B) atm
 - (C) kg/cm²
 - (D) Newton
131. A diagram which shows the variations of the axial load for all sections of the span of a beam, is called
- (A) Bending moment diagram
 - (B) Shear force diagram
 - (C) Thrust diagram
 - (D) Stress diagram
132. The main function of a diversion head works of a canal from a river, is
- (A) to remove silt
 - (B) to control floods
 - (C) to store water
 - (D) to raise water level
133. The difference in level between the top of a bank and supply level in a canal, is called
- (A) Berm
 - (B) Free board
 - (C) Height of bank
 - (D) None of the above
134. The best method of irrigation for standing crops in undulating sandy soil is
- (A) Sprinkler irrigation
 - (B) Free flooding
 - (C) Check method
 - (D) Furrow method

135. The main cause of silting up in a channel is
- (A) Non-regime section
 - (B) Inadequate slope
 - (C) Defective head regulator
 - (D) All the above
136. Plasticity index is defined as the range of water content between
- (A) Semi-solid limit and liquid limit
 - (B) Plastic limit and semi solid limit
 - (C) Liquid and plastic limit
 - (D) Liquid limit and solid limit
137. Rankine's theory of earth pressure assumes that the back of the wall is
- (A) Plane and smooth
 - (B) Plane and rough
 - (C) Vertical and smooth
 - (D) Vertical and rough
138. The maximum pressure which a soil can carry without shear failure is called
- (A) Safe bearing capacity
 - (B) Net safe bearing capacity
 - (C) Net ultimate bearing capacity
 - (D) Ultimate bearing capacity
139. The clay soil mainly consists of
- (A) Kaolinite
 - (B) Montmorillonite
 - (C) Vermiculite
 - (D) All the above
140. An exhausted anion-exchange resin can be regenerated by treating it with
- (A) Concentrated HCl solution
 - (B) Concentrated NaOH solution
 - (C) Dilute brine solution
 - (D) Concentrated brine solution

141. Flash evaporation is a method of getting pure water from
- (A) Sea water
 - (B) Industrial waste water
 - (C) Domestic sewage
 - (D) River water
142. Animals that consume both plants and animal matter are called
- (A) Carnivores
 - (B) Omni-carnivores
 - (C) Necromorphs
 - (D) Omnivores
143. Kyoto protocol is related to
- (A) Population
 - (B) Resources
 - (C) Global warming
 - (D) Pollution
144. Decomposers which specifically act on the fecal matter of other organisms are called
- (A) Heterophagic
 - (B) Coprophagic
 - (C) Paraphagic
 - (D) Allophagic
145. The ratio between energy flows at different points along the food chain is called
- (A) Ecological efficiency
 - (B) Ecological capacity
 - (C) Ecological potential
 - (D) Ecological assimilation
146. Soap and detergents are the source of organic pollutants like
- (A) Glycerol
 - (B) Polyphosphates
 - (C) Sulphonated hydrocarbons
 - (D) All of the above

147. The maintenance of relatively constant internal environment is called
- (A) Homeostasis
 - (B) Exotherms
 - (C) Homeobox
 - (D) Endotherms
148. Upper layer in a single body of water is known as
- (A) Hypolimnion
 - (B) Epilimnion
 - (C) Thermocline
 - (D) Hydroline
149. In pond ecosystem, the pyramid of biomass is
- (A) Upright
 - (B) Spindle-shaped
 - (C) Inverted
 - (D) Irregular
150. Trophic levels are formed by
- (A) Plants only
 - (B) Animals only
 - (C) Organisms linked in food chains
 - (D) All of the above

FINAL 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	D	61	D	91	B	121	A
2	B	32	A	62	B	92	A	122	C
3	A	33	B	63	C	93	D	123	B
4	C	34	C	64	A	94	C	124	C
5	B	35	B	65	B	95	A	125	D
6	A	36	A	66	D	96	B	126	C
7	D	37	B	67	C	97	C	127	A
8	D	38	A	68	B	98	D	128	B
9	C	39	D	69	B	99	C	129	D
10	A	40	A	70	D	100	A	130	A
11	B	41	B	71	B	101	B	131	C
12	A	42	C	72	D	102	C	132	D
13	A	43	D	73	A	103	D	133	B
14	C	44	B	74	B	104	B	134	A
15	B	45	A	75	D	105	A	135	D
16	B	46	C	76	C	106	C	136	C
17	C	47	D	77	C	107	B	137	C
18	D	48	D	78	A	108	D	138	A
19	C	49	A	79	D	109	B	139	D
20	D	50	C	80	B	110	A	140	B
21	B	51	B	81	C	111	C	141	A
22	A	52	A	82	B	112	D	142	D
23	A	53	C	83	A	113	C	143	C
24	C	54	B	84	B	114	A	144	B
25	B	55	D	85	D	115	B	145	A
26	C	56	C	86	C	116	C	146	D
27	D	57	A	87	A	117	B	147	A
28	D	58	B	88	B	118	D	148	B
29	C	59	A	89	C	119	B	149	C
30	B	60	C	90	C	120	C	150	C