ENGINEERING SCIENCE
(Final)

1. Organisms which feed directly or indirectly on producers are called

(A) Prey
(B) Consumers
(C) Decomposers
(D) Detritus

2. Expanded form of EIA is

(A) Environment and Industrial Act
(B) Environment and Impact Activities
(C) Environmentally Important Activity
(D) Environmental Impact Assessment

3. Blue baby syndrome is caused by the contamination of water due to

(A) nitrates
(B) phosphates
(C) sulphates
(D) arsenic

4. Which of the following is considered as an alternate fuel?

(A) Kerosene
(B) CNG
(C) Coal
(D) Petrol

5. The first major environmental protection act promulgated in India was

(A) Noise Pollution Act
(B) Air Act
(C) Water Act
(D) Environmental Act

6. The distruction of ozone in stratosphere is due to

(A) Oxygen
(B) CFCs
(C) Carbon di-oxide
(D) Methane

7. Automobile emissions cause environmental effects such as

(A) green-house effect
(B) global climate change
(C) both green-house effect and global climate change
(D) None of the above

8. Sustainable Development requires change in

(A) Elimination of Waste
(B) Consumption of Energy
(C) Utilization of Natural Resources
(D) All of the above

9. Which of the following is a non-point source of pollution?

(A) Storm Runoff
(B) Sewage Treatment Plants
(C) Industrial Wastes
(D) None of the above

10. pH range of drinking water is

(A) 6 to 9
(B) 6.5 to 8.5
(C) 5 to 8.5
(D) None of the above

11. Food chain consists of

(A) Sunlight, Producers, Consumers and Decomposers
(B) Decomposers and Producers
(C) Producers and Decomposers
(D) All of the above

12. Anthropogenic sources of pollution are

(A) Natural
(B) Industrial
(C) Man-made
(D) None of the above

13. Minamata disease is due to the contamination of

(A) Chromium
(B) Nickel
(C) Cadmium
(D) Mercury

14. London smog is due to

(A) petrol burning
(B) diesel burning
(C) coal burning
(D) None of the above

15. Bhopal gas tragedy was the result of the release of

(A) Methyle Iso Cyanide (MIC)
(B) Chlorine
(C) Argon
(D) Hydrogen

16. EIS stands for

(A) Environmental Instructional Source
(B) Environmental Impact Statement
(C) Environmental Industrial Source
(D) None of the above

17. The expanded form of MINAS

(A) Minimum National Service
(B) Minimum International Standards
(C) Minimization of Solids
(D) Minimum National Standards

18. Eco-mark is a labeling system given for

(A) Eco-friendly Products
(B) Industrial Products
(C) Rural Products
(D) Urban Products

19. Cleaner Development Mechanisms reduce

(A) Manpower
(B) Accumulation of Wastes
(C) End of Pipe Emissions
(D) None of the above

20. Extinction of flora and fauna in biodiversity is due to

(A) Habitat Destruction
(B) Hunting and Fishing
(C) Diseases
(D) Genetic Assimilation

21. The process catabolism involves

(A) Breaking down of organic wastes to simpler molecules
(B) Breaking down of complex organic wastes
(C) Breaking down of amino acids
(D) None of the above

22. End products of aerobic reaction are

(A) CH_4 and H_4
(B) NH_3 and NO_3
(C) CO_2 and H_2O
(D) NO_3 and H_2S

23. The end products of anaerobic reaction are

(A) O_2 and H_2O
(B) H_2S and NO_3
(C) PO_4 and H_2S
(D) CH_4 and H_2

24. Leachate is the main product of

(A) Solid Waste Dumps
(B) Wastewater Treatment
(C) Sedimentation
(D) None of the above

25. Free residual chlorine availability is known by

(A) Reaction of Chlorine
(B) Breakpoint
(C) Concentration of Ammonia
(D) None of the above

26. One of the primitive methods of treating sewage is

(A) Sedimentation
(B) Septic Tank
(C) Disinfection
(D) Digestion

27. Domestic Wastewater collection is achieved through

(A) Network of Treatment Plants (B) Collection Wells
(C) Sewer Network (D) None of the above

28. Coagulation and Flocculation processes are meant to remove

(A) Organic Solids (B) Inorganic Solids
(C) Heavy Metals (D) Colloids

29. MPN stands for

(A) Most Probable Number (B) Mixpipox Network
(C) Most Polluted Norm (D) None of the above

30. Indicator organisms in water are

(A) *Salmonella Typhae* (B) *Pseudomonas*
(C) *Escherichia Coli* (D) None of the above

31. Sterilization of water kills

(A) All microorganisms (B) Pathogens only
(C) Beneficial microorganisms (D) None of the above

32. Infectious diseases are caused by

(A) useful bacteria (B) pathogens
(C) aerobes (D) anaerobes

33. Removal of dissolved gases in water is brought about by

(A) digestion (B) sedimentation
(C) coagulation (D) aeration

34. For biological treatment BOD_5/COD ratio must be

(A) more than 1 (B) between 0.4 and 0.7
(C) 0.2 (D) 0.3

35. Hardness in water is caused by

(A) Ca^{++} and Mg^{++} Ions (B) K^{+} and Na^{+} Ions
(C) Only Anions (D) None of the above

36. Optimum dosage of coagulant is determined in the lab by

(A) Kjeldhal Operator (B) Mechanical Stirring
(C) Jar Test (D) Vibrator

37. The term 'Brownian Movement' is used to indicate

(A) Random Motion of Colloids
(B) Stabilization of Colloids
(C) Destabilization of Colloids
(D) Settling of Colloids

38. The expanded form of COD is

(A) Carbon Oxygen Demand
(B) Chromium Oxygen Demand
(C) Chemical Oxygen Demand
(D) Corrosion Oxygen Demand

39. Physical treatment units of water and wastewater treatment are known as

(A) Unit Operations
(B) Unit Processes
(C) Biological Treatment
(D) None of the above

40. Unit processes of water and wastewater treatment represent

(A) Physico-chemical Units
(B) Biological Units
(C) Chemical Units
(D) Both (B) and (C)

41. Thermal Stratification of lakes in winter is

(A) reverse
(B) inverse
(C) direct
(D) None of the above

42. The friction loss in filter beds is determined by

(A) Hazen-Willam's Equation
(B) Differential Equation
(C) Carmen-Kozney Equation
(D) Statistical Equation

43. Zeolite softener is used to remove

(A) Toxic Chemicals
(B) COD
(C) BOD
(D) Hardness

44. Types of settling are classified into

(A) four categories
(B) three Categories
(C) two categories
(D) None of the above

45. Critical deficit of DO in rivers is determined by

(A) Manning's Equation
(B) Monod's Equation
(C) Streeter-Phelps Equation
(D) Michaelis-Menten Equation

46. Source-sink relationship in an aquatic system is applied to

(A) Dissolved Oxygen
(B) Conservative Pollutant
(C) Non-Conservative Pollutant
(D) None of the above

47. Water dispersed in air system is used in

(A) Wastewater Treatment
(B) Water Treatment
(C) Solid Waste Treatment
(D) Hazardous Waste Treatment

48. Grit chamber maintains an Horizontal velocity of

(A) 1 m/sec
(B) 2 m/sec
(C) 0.1 m/sec
(D) 0.3 m/sec

49. Accelerated growth of bacterial cells is termed as

(A) Lag Phase
(B) Stationary Phase
(C) Exponential Phase
(D) Decay Phase

50. Biological sludge retention time (BSRT) is symbolized as

(A) θ_C
(B) θ
(C) ϕ
(D) λ

51. Unit of Measurement for gaseous pollutants is

(A) ppm
(B) ppb
(C) ppt
(D) $\mu g/m^3$

52. Environmental Protection Act was promulgated in India in

(A) 2002
(B) 1974
(C) 1986
(D) 1984

53. Vehicular traffic leads to

(A) Significant Water Pollution
(B) Significant Allergens
(C) Noise Pollution
(D) Major Air Pollution

54. Respirable particulate matter measures

(A) 0-10 μ
(B) 10-100 μ
(C) 100-1000 μ
(D) None of the above

55. Acid Rain is due to

(A) Combination of Water and Acid
(B) Reaction of SO_2 and Humidity
(C) Photochemical Oxidation
(D) None of the above

56. Major contributors of green-house effect are

(A) NO_X and SO_X (B) H_2S and CH_4
(C) NH_3 and CO_2 (D) CH_4 and CO_2

57. Catalytic converters are used in vehicles for

(A) improving fuel efficiency (B) increasing speed
(C) exhaust emission control (D) None of the above

58. Cyclone separators are used

(A) to separate particles from gas (B) to absorb gas
(C) to adsorb gas (D) None of the above

59. Maximum mixing depth (MMD) is used to design

(A) Effluent Treatment Plant (B) Industrial Stacks
(C) Domestic Chimneys (D) Water Treatment Plant

60. Wind speed and direction are represented by

(A) Gaussian Plume (B) Wind mill
(C) Windrose Diagram (D) None of the above

61. Electrostatic precipitators remove efficiently

(A) Gaseous Molecules (B) Turbid Particles
(C) Toxic Chemicals (D) Suspended Particulate Matter

62. Cancer is caused by

(A) Carcinogens (B) Viruses
(C) Bacteria (D) Fung

63. Looping of a plume is due to

(A) inversion (B) subversion
(C) lapse rate (D) adsorption

64. Lapse rate is

(A) rate of change of reaction (B) rate of temperature change
(C) increase in temperature (D) None of the above

65. In an unstable atmosphere rising parcel of air remains

(A) Cooler (B) Neutral
(C) Warmer (D) Hotter

66. In an unstable atmosphere descending parcel of air remains

(A) Cooler (B) Warmer
(C) Hotter (D) Neutral

67. Compounds having the same molecular formula are known as

(A) Alcohols (B) Sugars
(C) Proteins (D) Isomers

68. Saturated hydrocarbons are also termed as

(A) Alkanes (B) Radicals
(C) Alkenes (D) None of the above

69. Alkenes belong to

(A) Saturated hydrocarbon (B) Unsaturated hydrocarbon
(C) Alcohols (D) None of the above

70. Equilibrium pH of a solution containing 10^{-3} M H_2SO_4

(A) 6.96 (B) 7.0
(C) 2.70 (D) 3.0

71. The ratio of ammonia nitrogen in NH_3 form to that in NH_4^+ form in a solution with a pH of 7.4

(A) 0.014 (B) 0.012
(C) 0.02 (D) 0.01

72. Waste minimization is one of the ways of

(A) recycling waste (B) reusing Waste
(C) reducing waste (D) None of the above

73. The best water distribution network is

(A) Loop System (B) Branch System
(C) Deadend System (D) None of the above

74. Gram molecular weight (GMW) refers

(A) Atomic weight in grams
(B) Molecular weight in grams
(C) Equivalent weight in grams
(D) Milli-equivalent weight in grams

75. Destabilization and removal of colloids mainly depend on

(A) Size
(B) General Properties
(C) Electro-kinetic Properties
(D) None of the above

76. Iso-electric point is also termed as

(A) negative charge
(B) positive charge
(C) both positive and negative charge
(D) point of zero charge

77. Mass curve method is adopted to determine

(A) Volume of Equalization tank
(B) Volume of Sedimentation Tank
(C) Volume of Digester
(D) Volume of Filter

78. Which of the following refers to aerobic suspended growth system of biological waste treatment?

(A) Trickling Filter
(B) UASB
(C) Activated Sludge Process (ASP)
(D) Secondary Clarifier

79. In anaerobic digestion % conversion of acetic acid to methane is

(A) 50%
(B) 60%
(C) 72%
(D) 75%

80. Fluorimetric measurements are based on a phenomenon

(A) Fluorescence
(B) Absorbance
(C) Transmission
(D) None of the above

81. Working of Flame Photometer is based on

(A) Optical Method
(B) Emission Method
(C) Resonance Method
(D) Electrical Method

82. Sludge thickeners are used in wastewater treatment for

(A) settling
(B) digestion
(C) solid-liquid Separation
(D) None of the above

83. Treated effluent BOD_5 standard at 20^0C is

(A) 100 mg/L
(B) 30 mg/L
(C) 50 mg/L
(D) 75 mg/L

84. Attached growth system of waste treatment is preferred due to

(A) maximum surface area
(B) maximum depth
(C) maximum length
(D) None of the above

85. Organic farming is a farming without

(A) pesticides
(B) green manures
(C) synthetic fertilizers
(D) both synthetic fertilizers and pesticides

86. The process of removing contaminants from soil and groundwater is termed as

(A) bioengineering
(B) bioprocess
(C) bioremediation
(D) None of the above

87. The maximum noise level that human can hear is

(A) 120 dB
(B) 140 dB
(C) 80 dB
(D) 190 dB

88. Methaenoglobanemia is caused by the contamination of water due to

(A) Phosphates
(B) Nitrates
(C) Sulphates
(D) Chromites

89. Accumulation of heavy metals in the aquatic flora and fauna is called

(A) Bioconcentration
(B) Biosettling
(C) Biooxidation
(D) Biomagnification

90. Geometric method is one of the methods to forecast

(A) population
(B) water demand
(C) wastewater
(D) None of the above

91. Low biomass production is expected in

(A) conventional ASP
(B) extended aeration
(C) oxidation ditch
(D) high rate ASP

92. Instream standards refer to

A) Effluent Discharge Standards
(B) Raw Wastewater Characteristics
(C) Receiving Stream Standards
(D) None of the above

93. Slowly biodegradable organics are termed as

(A) inorganic elements
(B) organic elements
(C) hazardous elements
(D) refractory organics

94. Microbial metabolic pathway consists of

(A) catabolism and anabolism
(B) hydrolysis and anabolism
(C) oxidation and catabolism
(D) None of the above

95. Increase in dissolved oxygen is observed during

(A) chemo oxidation
(B) reduction
(C) Photosynthesis
(D) Photocatalysis

96. Coagulant aid is generally used in

(A) water treatment
(B) wastewater treatment
(C) hazardous Waste Treatment
(D) neutralization

97. Drinking water turbidity according to Bureau of Indian Standards (BIS) is

(A) 20 NTU
(B) 30 NTU
(C) 5 NTU
(D) 10 NTU

98. Eco-mark is an eco-label used in

(A) United Kingdom
(B) Russia
(C) United States of America
(D) India

99. Environmental (Protection) Act, 1986 was promulgated in India after

(A) Chlorine Leak
(B) Bhopal Gas Tragedy
(C) Offshore Oil Burning
(D) None of the above

100. Maintenance of good public health and sanitation is the prime duty of municipalities in India according to

(A) 69^{th} Amendment
(B) 70^{th} Amendment
(C) 73^{rd} and 74^{th} Amendment
(D) None of the above

101. Net national product refers to

(A) GDP – Investments on Pollution Control
(B) GDP
(C) GDP + Investments on Pollution Control
(D) GDP – Investments on Pollution Control + its impact

102. Pollutant's concentration is predicted using

(A) Advanced Instruments
(B) Environmental Modelling
(C) Titration Methods
(D) None of the above

103. The common problem in lakes across the globe is

(A) Thermal Stratification
(B) Sedimentation
(C) Eutrophication
(D) Coagulation

104. Wastewater from bathrooms and kitchen is generally referred as

(A) White Water
(B) Yellow Water
(C) Green Water
(D) Grey Water

105. Bio-diesel is obtained from

(A) Pongamia Pinnata
(B) Teak
(C) Jattropha
(D) None of the above

106. What percentage of country's geographical area should have forest cover?

(A) 33%
(B) 23%
(C) 13%
(D) 43%

107. All ring compounds fall into the category of

(A) Alkenes
(B) Aromatic Compounds
(C) Isometric Compounds
(D) Alkanes

108. An adsorption isotherm represents

(A) settling rate
(B) reaction rate
(C) sorbed concentration
(D) None of the above

109. Adsorption process is a

(A) physical phenomenon
(B) physico-chemical phenomenon
(C) biological phenomenon
(D) chemical phenomenon

110. Major nuclear radiations include

(A) α, β and γ
(B) α, β and λ
(C) β, λ and μ
(D) α, μ and ω

111. No growth phase of bacterial cells is referred as

(A) Endogenous phase
(B) stationary phase
(C) exponential phase
(D) lag phase

112. The term ppt refers to

(A) Precipitation
(B) Parts per trillion
(C) Parts per tonne
(D) None of the above

113. The richest eco-systems in the world are

(A) Wetlands
(B) Forests
(C) Deserts
(D) Mountains

114. The percentage of earth's total surface covered with water is

(A) 75% (B) 60%
(C) 71% (D) 80%

115. Spreading of deserts all over is termed as

(A) Non-desert (B) Desertification
(C) Spread Desert (D) None of the above

116. Deserts experience

(A) very cold climate (B) very hot climate
(C) extreme climate (D) None of the above

117. Available free residual chlorine is identified at

(A) extreme point (B) boiling point
(C) cooling point (D) break point

118. The unit of measurement for ozone layer thickness is

(A) Dobson units (B) Arithmetical units
(C) Geometrical units (D) None of the above

119. A positive Langelier's index signifies that the water is

(A) under-saturated (B) saturated
(C) over-saturated (D) Neutral

120. Hydrogen sulphide in sewers causes

(A) Methane production (B) Bursting
(C) Staling of sewage (D) Crown corrosion

121. BOD_5 at 20^0C reaction rate constant (K) for domestic wastewater is around

(A) 0.25/day (B) 0.20/day
(C) 0.10/day (D) 0.30/day

122. Sodium fluoride (NaF) is used in water treatment for

(A) Defluoridation (B) Chlorination
(C) Fluoridation (D) None of the above

123. BOD_5/COD ratio is an indication of subjecting wastewater for

(A) Biological waste treatment (B) Tertiary treatment
(C) Preliminary treatment (D) Primary treatment

124. Manning's formula is used to design

(A) Pumps (B) Engines
(C) Stacks (D) Sewers

125. What percentage of MLSS is considered as MLVSS in wastewater treatment?

(A) 100% (B) 80%
(C) 75% (D) 50%

126. Total BOD refers to

(A) CBOD (B) NBOD
(C) ThOD (D) CBOD + NBOD

127. Stabilization ponds are generally provided with

(A) lower detention periods (B) longer detention periods
(C) no detention periods (D) None of the above

128. High organic loading is given to

(A) anaerobic ponds (B) aerobic ponds
(C) facultative ponds (D) oxidation ponds

129. Settling velocity of a particle in a sedimentation tank is determined using

(A) Chezy's equation (B) Hazen-William equation
(C) Manning's equation (D) Newton's equation

130. Measurement of noise is generally done by

(A) sound level meter (B) aqua meter
(C) pressure meter (D) None of the above

131. The unit of measurement of noise is

(A) ppb (B) percentag
(C) dB (D) None of the above

132. Waste produced by IT-ITES sector is termed as

(A) solid waste (B) e-waste
(C) liquid waste (D) gaseous waste

133. Carboxy-haemoglobin found in human blood is due to

(A) smoking (B) drinking
(C) exercising (D) None of the above

134. Rapid sand filters are grouped under

(A) dual filters
(B) single filters
(C) gravity filters
(D) pressure filters

135. Rate of filtration in slow sand filters is generally

(A) 6,000 lt/hr.m^2
(B) 250 lt/hr.m^2
(C) 400 lt/hr.m^2
(D) 1,000 lt/hr.m^2

136. Peri-kinetic flocculation is due to

(A) Coagulation
(B) Sedimentation
(C) Filtration
(D) Brownian Motion

137. Vigorous stirring induces

(A) Orthokinetic Flocculation
(B) Flocculation
(C) Peri-kinetic Flocculation
(D) None of the above

138. Hardness in very hard water is more than

(A) 1,000 mg/L
(B) 300 mg/L
(C) 250 mg/L
(D) 600 mg/L

139. The bacterial density most likely to be present in water is reported as

(A) Mixed liquor suspended solids (MLSS)
(B) Total solids (TS)
(C) Most probable number (MPN)
(D) Total Suspended Solids (TSS)

140. Most commonly used joint in cast iron pipes used in water supplies is

(A) Flanged joints
(B) Spigot and socket joint
(C) Collared joints
(D) Victaulic joints

141. Water hammer is a phenomenon generally observed in

(A) gravity mains
(B) open channels
(C) pumping mains
(D) None of the above

142. A geologic formation which yields water in a significant quantity is termed as

(A) aquitard
(B) aquiclude
(C) aquifuge
(D) aquifer

143. An impervious formation that neither contains nor transmits water is called

(A) Aquifuge
(B) Unconfined Aquifer
(C) Confined Aquifer
(D) Aquifer

144. Water-borne diseases are generally due to

(A) pathogens
(B) chemicals
(C) contaminants
(D) None of the above

145. Grit chamber is used in

(A) Air Pollution Control
(B) Water Treatment
(C) Wastewater Treatment
(D) None of the above

146. Per capita water supply in an average Indian city is

(A) 250 lpcd
(B) 135 lpcd
(C) 150 lpcd
(D) 200 lpcd

147. Excreta disposal in rural areas is generally done through

(A) water closet
(B) flushing cistern
(C) pit privy
(D) None of the above

148. Average water pressure head for a single storey house is

(A) 10 m
(B) 20 m
(C) 7 m
(D) 15 m

149. The first International Earth Summit was held at

(A) Johannes Berg
(B) Rio de Janeiro
(C) Kyoto
(D) Stockholm

150. Chernobyl disaster in Russia happened in the year

(A) 1986
(B) 1996
(C) 2006
(D) 1886

***