Combined Technical Services Examination

(NON – INTERVIEW POSTS)

COMPUTER BASED TEST

DATE OF EXAM : 18.08.2026 A.N.

PAPER – II : ENVIRONMENTAL AND CHEMICAL ENGINEERING (P.G. DEGREE)

SUB. CODE : 393

1. World conservation organisation put forward the slogan "Sustainable development" for the first time in the year _____.

(A) 1980 (B) 1970
(C) 1960 (D) 1990
(E) Answer not known

2. IGBC : Indian Green Building Council was formed in the year _____.

(A) 2001 (B) 2003
(C) 2005 (D) 2007
(E) Answer not known

3. In Economics _____ refers to a bundle of entitlements defining the owner's rights, privileges and limitations for use of the resources

(A) Copy rights (B) Legal rights
(C) Ownership approval (D) Property rights
(E) Answer not known

4. Estimated summary comparison of benefits and costs from the Clean Air Act 1990-2020 is _____.

(A) $ 2006 million (B) $ 1800 million
(C) $ 2100 million (D) None of the above
(E) Answer not known

5. In the year 1996 _____ country introduced Green Building standards.

(A) Hong Kong
(B) Japan
(C) Brazil
(D) South Korea
(E) Answer not known

6. ERC stands for _____.

(A) Emission Reduction Credit
(B) Emission Reducing Credit
(C) Emission Reduction Card
(D) Emission Reducing Card
(E) Answer not known

7. Environment Kuznets curve depicting the plotting curve between Income and Pollution showed in India as

(A) Sigmoid curve
(B) Inverted "U" shaped curve
(C) Bell shaped curve
(D) Directly proportional curve
(E) Answer not known

8. Solid Waste Management Rules 2016 insists local authorities the below mentioned collection system to collect the waste from households including commercial, institutional and other non residential premises.

(A) Curb side collection
(B) Community Bin collection
(C) Back door / Yard collection
(D) Door to Door collection
(E) Answer not known

9. Which of the following statements about Environmental Management Systems audits (EMS) is False?

(A) EMS audits helps in identifying risks and opportunities for environmental improvement

✓(B) EMS audits are always mandatory by law

(C) EMS audits assess the effectiveness of environmental policies and procedures

(D) EMS audits contribute to regulatory compliance and enhanced environmental performance.

(E) Answer not known

10. Which of the following could be a source for taking non-specific trade measures?

(A) Carbon taxes

(B) Trade – Related Investment Measures (TRIMs)

(C) Border – tax adjustments

✓(D) The Convention Biological Diversity

(E) Answer not known

11. In practice, circular economy implies _____ to a minimum.

(A) Pollution Tax

✓(B) Reducing Waste

(C) Reduction of economic burden

(D) None of the above

(E) Answer not known

12. ISO 14040 & ISO 14041 specifies guidelines for

(A) Environmental Labeling
(B) Environmental Management System
✓(C) Life Cycle Assessment
(D) Environmental Auditing
(E) Answer not known

13. Task of Tiwari Committee (1980) is

✓(A) To review & recommend legislative measures and administrative machinery for environmental protection
(B) To promote research in environmental areas
(C) To review, formulate and promote policies and programs relating to environmental projects
(D) To constitute the environmental board in various states and union territories
(E) Answer not known

14. Among 4 phases of life cycle assessment which phase is concerned with data collection and calculation procedures?

(A) Goal & Scope definition
✓(B) Inventory analysis
(C) Impact assessment
(D) Interpretation
(E) Answer not known

15. What factor is identified as the most visible and discussed consequence of economic development in recent times?

(A) Increasing Birth rates
(B) Water pollution
✓(C) Climate change
(D) Urban overpopulation
(E) Answer not known

16. Which of the following is the primary step involved in industrial sustainability?

(A) Eco-Efficiency
(B) Sustainability
(C) Economic sustainability
(D) Eco-friendly
(E) Answer not known

17. Which of the following best describes the goal of "No Poverty" under the UNSD goals?

(A) Reduce income inequality within and among countries
(B) Ensure access to affordable and clean energy for all
(C) End poverty in all its forms, everywhere
(D) Promote sustained, inclusive and sustainable economic growth
(E) Answer not known

18. OECD stands for _____.

(A) Organisation for Economic Co-operation and Development
(B) Organisation in Environment, Compliance Department
(C) Optimum Education and Consultancy Development
(D) Organisational Environment for Corporation Department
(E) Answer not known

19. Which of the following convention deals with Persistant Organic Pollutants (POPs)

(A) Stockholm convention
(B) Ramsar convention
(C) Bonn convention
(D) Vienna convention
(E) Answer not known

20. Number of Sustainable Development Goals are

(A) 15 (B) 16

(C) 17 (D) 18

(E) Answer not known

21. Choose the correct matches in the classification used in India for tropical cyclones.

	Type		Wind Speed (Kmph)
1.	Depression	–	31 to 49
2.	Deep depression	–	62 to 88
3.	Cyclonic storm	–	89 – 118
4.	Very severe cyclone storm	–	119 to 221

(A) 1 and 2 are correct (B) 1 and 4 are correct

(C) 2 and 3 are correct (D) 2 and 4 are correct

(E) Answer not known

22. Which of the following statements about Fire Extinguishers?

(i) Class 'A' for fires on paper, plastic, wood and other common combustible materials.

(ii) Class 'B' for fires on burning electrical motor.

(iii) Class 'C' for grease, oil and gasoline.

(A) (i) only (B) (i) and (iii) only

(C) (i) and (ii) only (D) (ii) and (iii) only

(E) Answer not known

23. The drinking water formed by product chloroform due to chlorine disinfection. Calculate Chronic Daily Intake (CDI) by using following data :

1. The weight of the person is 70 kg
2. Chloroform concentrates is 0.10 mg/li
3. Daily intake of water is 2 litres
4. The Age of the person is 50 years

(A) 0.00143 ✓(B) 0.00286

(C) 0.0143 (D) 0.0286

(E) Answer not known

24. A graphical representation of the logic model that identifies and quantifies the possible outcomes of an initiating event is known as _____.

(A) Relative Ranking Technique (RRT)

(B) Human Reliability Analysis (HRA)

(C) Cause and Consequence Analysis (CCA)

✓(D) Event Tree Analysis (ETA)

(E) Answer not known

25. _____ deals with the anatomical, anthropometric, physiological and biomechanical parameters in static and dynamic physical work.

✓(A) Physical Ergonomics

(B) Cognitive Ergonomics

(C) Neuro Ergonomics

(D) Social or Organizational Ergonomics

(E) Answer not known

26. Herzberg's theory of motivation - Hygiene is similar to Maslow theory of needs hierarchy in that factors create job satisfaction with the needs of self esteem and self actualisations from as following sequence of needs.

(A) Physiological → Social → Safety and Security needs

(B) Social → Safety and Security → Physiological needs

(C) Social → Physiological → Safety and Security needs

✓(D) Physiological → Safety and Security → Social needs

(E) Answer not known

27. The risk management, approach is important for the following statements. Choose the correct code given below :

1. Legislative health and safety requirements.

2. Quantitative and qualitative approach to the risk.

3. To care to its workers, customers & contractor.

(A) 1 & 2

(B) 1 alone

(C) 2 alone

✓(D) 1, 2 & 3

(E) Answer not known

28. Tsunami disaster of 2004 was the result of

(A) Super cyclone

(B) Landslide

✓(C) Earthquake

(D) Floods

(E) Answer not known

29. The matching of job to the worker and product to the users is known as _____.

(A) Ergonomics
(B) Productivity
(C) Effectivity
(D) Efficacy
(E) Answer not known

30. Enduring reactions toward people, places or object based on beliefs and emotional feelings is known as _____.

(A) Attitude
(B) Gratitude
(C) Culture
(D) Indebtedness
(E) Answer not known

31. A factory handling five silica dust decides to switch to a wet process instead of dry handling to reduce air borne dust. This control is best classified as :

(A) PPE
(B) Administrative control
(C) Engineering control
(D) Substitution
(E) Answer not known

32. Arrange the following Indian acts in Chronological order

1. Factories Act
2. Mines Act
3. Petroleum Act
4. Explosives Act

(A) 3, 4, 1, 2
(B) 4, 1, 3, 2
(C) 4, 3, 1, 2
(D) 4, 1, 2, 3
(E) Answer not known

33. Which of the following statements are true regarding work place safety?

(i) Take small 10 to 30 seconds breaks for every 30 minutes.

(ii) Reduce the noise by growing tree around the industry.

(iii) Educate workers on the value of ergonomics

(A) (i) only
✓(B) (i) and (iii) only
(C) (i) and (ii) only
(D) (ii) and (iii) only
(E) Answer not known

34. Which of the following lists the Hierarchy of control measures for occupational health risks in order from most preferable to least preferable?

(A) Elimination – Engineering controls – Administrative controls – Substitution – PPE
✓(B) Elimination – Substitution – Engg. Controls – Administrative Controls – PPE
(C) Elimination – Administrative controls – Engineering Controls – Substitution – PPE
(D) Elimination – Substitution – Administrative controls – Engineering Controls – PPE
(E) Answer not known

35. Occupational lung disease (column 1) and person working in the concerned area (column 2) is given. Match the following :

	Column 1		Column 2
(a)	Silicosis	1.	Asbestos miners
(b)	Byssinosis	2.	Coal miners
(c)	Pneumoconiosis	3.	Workers in part of cotton textile industry
(d)	Asbestosis	4.	Tunnel operator

	(a)	(b)	(c)	(d)
(A)	4	2	3	1
✓(B)	4	3	2	1
(C)	3	2	4	1
(D)	3	4	2	1

(E) Answer not known

36. Choose the correct microorganism that have been used as model viruses for studying virus removal by activated sludge process.

(A) Coliforms
✓(B) Coliphages
(C) β – galactosidase
(D) Enterobacter aerogenes
(E) Answer not known

37. How much time is required theoretically for complete biological oxidation of organic matter in the BOD test at 20°C?

(A) 20 days
(B) 5 days
(C) 100 days
✓(D) infinite time
(E) Answer not known

38. The chemicals that have appeared more recently remained in the environment for some time and have been found to be more toxic than originally thought are called _____.

(A) Surface chemical contaminants
(B) Emerging contaminants
(C) Temporary contaminants
(D) Seasonal contaminants
(E) Answer not known

39. The spores are the environmentally resistant stage of _____.

(A) Viruses
(B) Protozoa
(C) Bacteria
(D) Helminths
(E) Answer not known

40. Which of the following is major component in soil?

(A) Air
(B) Minerals
(C) Organic matters
(D) Water
(E) Answer not known

41. Assertion [A] : A stable atmospheric condition at a high temperature is necessary for the formation of photochemical smog in the atmosphere.

Reason [R] : A stable atmospheric conditions is achieved when there is a temperature inversion in the troposphere.

(A) [A] is true but [R] is false

✓(B) Both [A] and [R] are true and [R] is the correct explanation of [A]

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

42. Depletion of dissolved oxygen in the contaminated water is due to increased concentration of

(A) Sulphate ion

(B) Chloride ion

✓(C) Nitrogen, Phosphorus and Potassium ions

(D) Sulphate and Chloride ions

(E) Answer not known

43. Which instrument is not applicable to analyse the nonvolatile compounds?

(A) Gas solid chromatography

✓(B) Gas chromatography

(C) Gas liquid chromatography

(D) Both (A) and (C)

(E) Answer not known

44. Which of the following gas has minimum Ozone – depleting potential?

(A) CCl_2F_2 (B) CCl_3F

(C) $CCl_3 - CF_3$ (D) $CHClF_2$

(E) Answer not known

45. Atom economy methodology designed in green chemistry is to _____.

(A) maximise the incorporation of starting materials into the desired final product

(B) minimise the incorporation of starting materials into the desired final product

(C) use the waste materials to make final product

(D) use the toxic materials

(E) Answer not known

46. Which gas constitutes the largest percentage of Earth's atmosphere?

(A) Oxygen (O_2) (B) Nitrogen (N_2)

(C) Carbon dioxide (CO_2) (D) Argon (Ar)

(E) Answer not known

47. Acid rain can be minimised by controlling the release of _____.

(A) CO and NO_Y (B) MO and CH_4

(C) SO_3 and CO (D) NO_X and SO_X

(E) Answer not known

48. The London type smog generally occurs during _____.

(A) Warm sunny days
(B) Early hours of winter
(C) Late night of summer
(D) Early sunny days
(E) Answer not known

49. Ammonium molybdate – Ascorbic acid method is used to analyze the content of _____ in water.

(A) Chloride
(B) Nitrate
(C) Fluoride
(D) None of these
(E) Answer not known

50. The complicated reuse properties due to the presence of hazardous substance are classified as _____.

(A) Red field sites
(B) Black field sites
(C) Brown field sites
(D) Gray field sites
(E) Answer not known

51. Choose the correct purpose of designing Gas Solid Separator (GSS) in UASB.

1. Allow for solids to slide back into the sludge blanket zone.
2. Encourage separation of gas and liquid particles.
3. Discourage the separation of gas and solid particles.
4. Encourage separation of gas and solid particles.

(A) 1 and 2 are correct
(B) 3 and 2 are correct
(C) 1 and 4 are correct
(D) 3 and 1 are correct
(E) Answer not known

52. In the following process, which process generate more bio-gas by the degradation of bio-degradable waste in waste water?

✓(A) Anaerobic process

(B) Aerobic process

(C) Fermentation process

(D) Advanced oxidation process

(E) Answer not known

53. What is the normal time period for removal sludge from the drying beds?

(A) 1 – 3 days

(B) > 15 days

✓(C) 7 – 10 days

(D) 10 – 15 days

(E) Answer not known

54. In trickling filter design equations, which of the following equation is improved version of Velz equation?

(A) Rankin's equation

(B) NRC equation

✓(C) Eckenfelder equation

(D) Galler and Gottas equation

(E) Answer not known

55. Recommended method of large plants (<7,500 m^3/day) have the steps for Sludge processes before disposal

(A) Thickener → Dewatering → Anaerobic digestion

(B) Dewatering → Anaerobic digestion → Thickener

✓(C) Thickener → Anaerobic digestion → Dewatering

(D) Anaerobic digestion → Thickener → Dewatering

(E) Answer not known

56. In waste water treatment processes, the removal of which component in dispersed flow reactors typically follows first-order kinetics?

(A) Organic substrate
(B) Inorganic substrate
(C) Squeezed out water
(D) Carbon-dioxide
(E) Answer not known

57. Matching the post treatment methods and their objective in upflow anaerobic sludge Blanket.

	Methods		Objectives
i.	Aerated lagoon	–	to reduce nutrients
ii.	Chemical treatment	–	to adjust pH
iii.	Oxidation ponds	–	to eliminate helminths
iv.	Duck weed ponds	–	to reduce pathogen

Among the four matches which one is wrongly matched.

(A) i
(B) ii
(C) iii
(D) iv
(E) Answer not known

58. Motto of usage of membrane bioreactor in waste water treatment technology.

(A) Design high quality technology
(B) Produce high quality effluent
(C) Minimise manpower
(D) Produce with low cost
(E) Answer not known

59. In activated sludge design, the term "Sludge Age" or "Mean Cell Residence Time (MCRT)" refers to

(A) The time waste water spends in the aeration tank

✓(B) The average time microorganisms remain in the system

(C) The time for sludge to settle in the secondary clarifier

(D) The time required for sludge digestion

(E) Answer not known

60. In the design of secondary clarifier of activated sludge process, which of the following parameters is used to determine surface area of clarifier?

(A) Gravity flux (G_g)

(B) Underflow flux (G_u)

✓(C) Limiting flux (G_L)

(D) Inorganic solid concentration

(E) Answer not known

61. Which of the following process the soluble and colloids are transformed into microbial masses?

(A) Screening

(B) Skimming

✓(C) Activated sludge system

(D) Disinfection

(E) Answer not known

62. Following are the data pertaining to an ASP, Effluent BOD = 25 mg/L, BOD of the raw sewage = 300 mg/L, efficiency of PST = 30%, the effluent contains 20 mg/L of suspended solids contribute to 14 mg/L of BOD, the efficiency of removal of the soluble BOD by the system is

(A) 91.7%

(B) 88.1%

✓(C) 94.8%

(D) 96.3%

(E) Answer not known

63. Which one of the statement is not correct?

i. Rotating disc biological contractors are essentially plug flow reactor without recycle.

ii. The substrate removal occurs due to microbial metabolism.

iii. Micro metabolism occurs both in film and liquid phase.

iv. Plug flow is not a continuous model.

(A) i
✓(B) iv
(C) ii
(D) iii
(E) Answer not known

64. In which activated sludge process, where the waste is aerated and its organics get adsorbed and thickened followed by recycled rest is wasted?

✓(A) Contact stabilization process
(B) High rate activated sludge process
(C) Conventional activated sludge process
(D) Extended aeration and oxidation process
(E) Answer not known

65. Which of the following is an advantage of the activated sludge process is

(A) High cost operation
(B) Necessity of constant skilled attendance
✓(C) Amount of hydraulic head consumed by the process is less
(D) Very sensitive to variations in the quality of sewage
(E) Answer not known

66. In secondary settling tank of mixed liquor of the activated sludge process has different regions with types. What is the type IV?

(A) Discrete settling
(B) Flocculent settling
(C) Hinder settling
✓(D) Compression settling
(E) Answer not known

67. In an activated sludge process operating under steady state conditions the sludge age θ_c is gradually increased by reducing the waste sludge flow rate Q_w. Assuming all other operational conditions remain constant. Which of the following long term effects is most likely to occur?

(A) Increase in effluent BOD due to lower food availability for microbes
(B) Decreases in nitrification efficiency due to older biomass
✓(C) Increase in endogenous respiration and sludge stability
(D) Decrease in MLSS concentration due to lower biomass retention
(E) Answer not known

68. Sequence of the microbial growth in the sludge fermented process

i. Stationary
ii. Exponential
iii. Decay
iv. Lag

✓(A) iv → ii → i → iii
(B) i → ii → iii → iv
(C) i → ii → iv → iii
(D) i → iii → ii → iv
(E) Answer not known

69. Biological removal of degradable organics in soluble, colloidal or suspended form from wastewater involves a sequence of steps.

i. Mass on transfer
ii. Absorption
iii. Adsorption
iv. Biochemical enzymatic reactions.

(A) i → ii → iii → iv
(B) iv → iii → ii → i
(C) i → iv → iii → ii
✓(D) i → iii → ii → iv
(E) Answer not known

70. Every entering elements of flow leaves the reactor in the same order are called as :

(A) Batch type flow
✓(B) Piston flow
(C) Completely mixed flow
(D) Dispersed flow
(E) Answer not known

71. The microorganisms that survive under < 20°C are classified as :

(A) Obligophiles
✓(B) Psychrophiles
(C) Mesophiles
(D) Thermophiles
(E) Answer not known

72. Which of the following best explains why mass balance is important in wastewater treatment?

(A) It helps determine the energy consumption of the plant
✓(B) It ensures that the quantity of pollutants entering equals the quantity leaving or accumulating
(C) It measures the temperature changes during treatment
(D) It tracks the color and odor of the treated water
(E) Answer not known

73. The Sequencing Batch Reactor (SBR) is best suited for

(A) Very large municipal plants with high continuous flow

✓(B) Small to medium plants with variable influent characteristics

(C) Treatment of hazardous industrial waste without biological methods

(D) Systems requiring continuous discharge of treated water

(E) Answer not known

74. In a facultative pond, the zonation of the various microbial operations from surface to bottom occurs in which order?

✓(A) Aerobic → facultative → anaerobic

(B) Aerobic → anaerobic → facultative

(C) Anaerobic → aerobic → facultative

(D) Facultative → aerobic → anaerobic

(E) Answer not known

75. Which of the following statement/s is/are correct in the case of RBC reactor?

(a) It is a unique adaptation of the attached growth process.

(b) Micro organisms growing on the medium surface remove food from the waste water.

(c) In which randomly packed solid forms provide surface area for biofilm growth.

(d) Most often waste water being sprayed over the medium by stationary nozzles.

✓(A) (a) & (b) are correct

(B) (c) & (d) are correct

(C) (a) & (c) are correct

(D) (b) & (d) are correct

(E) Answer not known

76. _____ which gives the terminal settling velocity of the particle diameter, density of the fluid and viscosity of the medium.

✓(A) Stokes' Law
(B) Chicks' Law
(C) Newtons' Law
(D) Henrys' Law
(E) Answer not known

77. Choose the right objectives of using control equipment for particulate emission control.

1. Prevention of nuisance
2. Settling chambers
3. Electrostatic Precipitators
4. Improvement of product quality.

(A) 1 and 3 are correct
(B) 2 and 4 are correct
(C) 3 and 4 are correct
✓(D) 1 and 4 are correct
(E) Answer not known

78. Sounds below 20 hertz are not detected by human ear and are described as

✓(A) Infrasonic
(B) Ultrasonic
(C) Electrosonic
(D) Weak listeners
(E) Answer not known

79. The presence of carbon monoxide in polluted air is analysed by _____.

(A) Gravimetric method
✓(B) Non-dispersive infrared spectroscopy
(C) Methylene blue method
(D) Amperometry
(E) Answer not known

80. A room of 28 cum volume of air is contaminated by presence of a single individual in 20 minutes. How much of total air requirement per hour?

(A) 560 cum per hour
(B) 48 cum per hour
✓(C) 84 cum per hour
(D) 0.14 cum per hour
(E) Answer not known

81. The major green house gases are _____,

(A) SO_2
(B) O_3
✓(C) N_2O
(D) VOC
(E) Answer not known

82. Assertion [A] : CNG, LPG diesel and petrol are not environment friendly clean fuels.

Reason [R] : These fuels are inherently pollute the environment due to its hydrocarbon nature.

(A) Both [A] and [R] false
✓(B) Both [A] and [R] are true and [R] is correct explanation
(C) [A] is true but [R] is false
(D) Both [A] and [R] are true but [R] is not correct explanation
(E) Answer not known

83. The house paint should have _____ to reduce the human health effects.

(A) Medium VOCs
(B) High VOCs
(C) Low VOCs
✓(D) Low and non VOCs
(E) Answer not known

84. The Natural self-cleaning properties of the environment the adsorption impaction is effective for the size of particles _____.

(A) 11 to 14 μm
(B) 8 to 11 μm
(C) 10 to 12 μm
✓(D) 10 to 15 μm
(E) Answer not known

85. For stability class 'C', dispersion co-efficients $\frac{\sigma_y}{\sigma_z}$ is essentially constant. Then based on Gaussian plume distribution model relation between vertical dispersion co-efficient (σ_z) and effective stack height (H) is

✓(A) $\sigma_z = \frac{H}{\sqrt{2}}$
(B) $\sigma_z = \frac{H}{2}$
(C) $\sigma_z = 2H$
(D) $\sigma_z = \sqrt{2}H$
(E) Answer not known

86. The condition for absolute stability in Lapse rate in terms of $\Gamma_d, \Gamma_m, \Gamma_e$

where Γ_d is the dry adiabatic lapse rate (10°C km^{-1})

Γ_m is the moist adiabatic lapse rate (6°C km^{-1})

Γ_e is the environmental lapse rate (variable –0°C km^{-1})

✓(A) $\Gamma_d > \Gamma_m > \Gamma_e$
(B) $\Gamma_d > \Gamma_m < \Gamma_e$
(C) $\Gamma_d < \Gamma_m > \Gamma_e$
(D) $\Gamma_d < \Gamma_m < \Gamma_e$
(E) Answer not known

87. The cities typically located in warm, dry and sunny climates with few polluting industries are called _____.

(A) Gray air cities
✓(B) Brown air cities
(C) Black air cities
(D) Brownish gray cities
(E) Answer not known

88. _____ is a major burden of air pollution.

(i) Ionosphere
(ii) Troposphere
(iii) Thermosphere
(iv) Stratosphere

(A) (iii) only
(B) (i) and (ii) only
✓(C) (ii) only
(D) (i) and (iv) only
(E) Answer not known

89. Annual arithmetic mean of minimum at a particular site taken on the account of

(A) 106 measurements /year, Thrice/week, 24 hourly
✓(B) 104 measurements /year, Twice/week, 24 hourly
(C) 104 measurements/year, Twice/day
(D) 102 measurements/year, Twice/week, 24 hourly
(E) Answer not known

90. Which of the following in combination cause corrosion/damage the metal surfaces, fabrics and plant leaves?

(A) Carbon monoxide with water molecules of air
(B) Nitrous oxide and water molecules of air
✓(C) Sulfur dioxide with water molecules of air
(D) Lead with water molecules of air
(E) Answer not known

91. Which of the following is an assumption made by the Gaussian dispersion model?

(A) The pollutant dispersion is uniform in all direction

(B) Wind speed fluctuates randomly

(C) The pollutant dispenses at a constant rate vertically

(D) The pollutant does not interact with the environment

(E) Answer not known

92. Which of the following is true about biofilm reactors?

(A) They rely on suspended microbial growth

(B) Biofilm reactors use surfaces for microbial growth and reactions

(C) All biofilm reactors are fluidised bed designs

(D) Biofilms cannot form in natural environments

(E) Answer not known

93. Which of the following best describes a steady state simulation in groundwater modeling?

(A) Simulates changing hydraulic head over time

(B) Models flow under fluctuating recharge conditions

(C) Assumes no change in hydraulic head or concentration with time

(D) Used only for aquifer performance tests

(E) Answer not known

94. Which of the following statements correctly describes steady state conditions in continuous flow reactors?

(A) Concentrations of substrates, biomass and products vary over time

(B) Mass input equals mass output with no accumulation of substrates or biomass

(C) Microbial populations cannot respond to environmental fluctuations

✓(D) Concentrations of substrates biomass and products remain constant with no change over time

(E) Answer not known

95. Which of the following statements about the Monod equation in microbial growth kinetics is correct?

(A) It depends only on temperature

(B) It models enzymatic reactions not microbial growth

✓(C) It models microbial growth but is limited by uncertain parameters like Y, kd, bm and ks

(D) It is no longer used due to inaccuracy

(E) Answer not known

96. The calibration data set should be as similar as possible to the design condition for the problem being studied. If the model is being used to analyze a wastewater discharge into a stream, the design condition would usually for the _____ conditions.

(A) Winter

(B) Spring runoff

✓(C) Summer low-flow

(D) Autumn

(E) Answer not known

97. What distinguishes the negative binominal distribution from the geometric distribution?

(A) Geometric counts failures, negative binomial counts success

✓(B) Geometric is for 1 success, negative binomial is *r* successess

(C) Geometric uses dependent trials negative binomial uses independent ones

(D) Both count only the first success

(E) Answer not known

98. Which of the following is a type of probability sampling?

(A) Convenience sampling

(B) Judgment sampling

✓(C) Simple random sampling

(D) Snowball sampling

(E) Answer not known

99. Who initiated the theory of testing of hypothesis?

(A) Ronald Fisher & Karl Pearson

✓(B) J. Neyman & E.S. Pearson

(C) George Box and David Cox

(D) John Tukey & William Gosset

(E) Answer not known

100. What does the test of significance help determine?

(A) The exact population value

✓(B) Whether observed deviations are due to random sampling or meaningful differences

(C) The total error in the data

(D) Whether the data is qualitative or quantitative

(E) Answer not known

101. Which of the following best explains the relationship between a null hypothesis (H_0) and an alternative hypothesis (H_a)

(A) H_0 is accepted when the data supports H_a

(B) H_a is tested directly using test statistics

✓(C) H_0 is assumed true until evidence suggests otherwise, in which case H_a is considered

(D) Both H_0 and H_a are accepted if test results are inconclusive

(E) Answer not known

102. This type of input causes the values of a flow or converter to "spike" at a specified point in time.

(A) RAMP

(B) STEP

✓(C) PULSE

(D) RANDOM

(E) Answer not known

103. What does model building often involve today?

(A) Only collecting data through fieldwork

(B) Using historical records for prediction

✓(C) Compartmentalising the problem and defining it as compartments and flows

(D) Relying solely on manual calculations

(E) Answer not known

104. Which of the following error/s arise from using a numerical approximation to a problem where there is no known analytical solution?

✓(A) Procedural errors

(B) Computational errors

(C) Propagation errors

(D) Both (A) & (C)

(E) Answer not known

105. Which one of the following is not a typical step in environmental modelling?

(A) Problem definition
(B) Model formulation
✓(C) Political approval
(D) Model validation
(E) Answer not known

106. In environmental clearance the time period for public hearing is

(A) 30 days
✓(B) 45 days
(C) 60 days
(D) 100 days
(E) Answer not known

107. EIA was made statutory for 29 specified activities falling under various sectors was amended in India in

(A) 27th January 1994
(B) 5th June 1980
(C) 30th January 1972
✓(D) 4th May 1994
(E) Answer not known

108. Overlay method of Environmental Impact assessment was developed by

(A) Lohani and Halim
(B) Bisset
(C) Canter
✓(D) McHarg
(E) Answer not known

109. Which of the following sectors was NOT originally included in the early expansion of EIA beyond river valley projects?

(A) Industrial projects
(B) Thermal power projects
✓(C) Urban housing projects
(D) Mining schemes
(E) Answer not known

110. When complete information is submitted by the project authority, within how many days must a decision on environmental clearance be made, as per the process?

(A) 60 days
(B) 90 days
(C) 120 days
(D) 150 days
(E) Answer not known

111. Which of the following areas has not been mentioned as a region selected for environmental feasibility studies?

(A) Doon valley
(B) Tapi Estuary
(C) Sunderbans Delta
(D) Damodar River Basin
(E) Answer not known

112. The Environment Protection Act, 1986 come out with the background of _____.

(A) Prevention and control of pollution
(B) Biomedical wastes
(C) Minamata bay
(D) Bhopal tragedy
(E) Answer not known

113. Assertion [A] : The Environment Protection Act (EPA), aims in preparing Environmental statements along with reports and recommendations of development projects.

Reason [R] : Environment Protection Act establishes the national environmental policy, considering only the environmental effects in decision making process.

✓(A) [A] is true but [R] is false

(B) Both [A] and [R] are true, and [R] is the correct explanation

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

114. Match the objectives of the respective Legislations levied for Environmental protection in India :

Acts	Objectives
(a) Water Act, 1974	1. Umbrella
(b) Environmental Protection Act, 1986	2. Control and pollution abatement
(c) Water cess Act, 1977	3. Pollutant discharge
(d) Air Act, 1981	4. Formulation of standards

	(a)	(b)	(c)	(d)
(A)	4	3	1	2
✓(B)	3	1	4	2
(C)	3	4	1	2
(D)	4	2	1	3

(E) Answer not known

115. Assertion [A] : The air (Prevention and Control of Pollution) Act, 1981 was enacted to prevent and control air pollution in India.

Reason [R] : The Act prohibits the emission of air pollutants from various sources and provides for the establishment of Pollution Control Boards.

✓(A) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(B) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(C) [A] is true, but [R] is false

(D) [A] is false, but [R] is true

(E) Answer not known

116. Assertion [A] : It is the duty of every citizen to protect and improve the natural environment, including forests, lakes, rivers and wild life.

Reason [R] : The reference to the environment is made in both the Directive Principles of State Policy (Article 48A) and the Fundamental Rights (Article 51 A (g)) of the Constitution.

(A) Both [A] and [R] are true, [R] is not the correct explanation of [A]

✓(B) Both [A] and [R] are true, and [R] is the correct explanation of [A]

(C) [A] is true, but [R] is false

(D) [A] is false, but [R] is true

(E) Answer not known

117. Choose the correct (right) major objectives of the Environment Protection Act, 1986 from the following statement.

(i) Creation of authorities with adequate powers for environmental protection.

(ii) Co-ordination of the activities of the various regulatory Agencies.

(iii) Regulation of discharge of environmental pollutants and handling of hazardous substances.

(iv) Slow response in the event of accidents threatening the environment and provision for different punishments.

(A) (i), (ii) & (iii) are correct

(B) (i), (iii) & (iv) are correct

(C) (i), (ii) & (iv) are correct

(D) (ii), (iii) & (iv) are correct

(E) Answer not known

118. Which of the following statements about SO_2 standards in ecologically sensitive areas is correct?

(A) The 24-hour and annual limits are higher than in other areas

(B) The annual limit is stricter than in Industrial and residential areas

(C) The SO_2 limits are not applicable in ecologically sensitive areas

(D) Both 24-hour and annual limits are the same as for all other areas

(E) Answer not known

119. Assertion [A] : The increasing population of India exerts pressure on the environment and natural resources.

Reason [R] : The government implements various policies and programs for ecosystem conservation and pollution prevention.

(A) Both [A] and [R] are true and [R] is the correct explanation of [A]

✓(B) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(C) [A] is true, but [R] is false

(D) [A] is false, but [R] is true

(E) Answer not known

120. Match the following averaging times with their corresponding NO_2 concentration limits for industrial areas (in $\mu g/m^3$) :

	Column A		Column B
(a)	Annual Average	1.	80
(b)	24-hour Average	2.	40

	(a)	(b)
✓(A)	2	1
(B)	1	2
(C)	2	2
(D)	1	1

(E) Answer not known

121. Assertion [A] : The Environment (Protection) Act 1986 empowers the Central Government to establish authorities to prevent environmental pollution.

Reason [R] : These authorities can address environmental issues unique to different regions of India.

(A) [A] is true, but [R] is false

(B) [A] is false, but [R] is true

✓(C) Both [A] and [R] are true, and [R] correctly explains [A]

(D) Both [A] and [R] are true, but [R] does not explains [A]

(E) Answer not known

122. Match the National Air Quality Index with their health hazard results, as per Environment (Protection) Act, 1986

	NAQI, mg/m^3		Result
(a)	101-200	1.	Serious breathing problem
(b)	301-400	2.	Bad for lungs
(c)	401-500	3.	Satisfactory
(d)	50-100	4.	Very bad, bronchitis pneumonia

	(a)	(b)	(c)	(d)
✓(A)	2	1	4	3
(B)	1	3	2	4
(C)	3	2	1	4
(D)	4	2	3	1

(E) Answer not known

123. As per Water Pollution Control Act under section (24) contains

(A) Not permitting disposal of polluting matter

(B) Partial permitting as per standards laid down by Boards

(C) Only Domestic wastewater permitted

✓(D) Both (A) and (B)

(E) Answer not known

124. In landfilling, as per EPA 1993 requirements the bottom layer should consist of

(A) Permeable layers of sandstones

✓(B) Impermeable layers of clay, thick plastic and sand

(C) Permeable layers with pumping facilities

(D) Impermeable layers with gas collection facilities

(E) Answer not known

125. Under Tamil Nadu's ban on single-use plastics effective from 01.01.2019, how many types of 'use and throwaway' plastic items were banned regardless of thickness?

(A) 10 (B) 12

✓(C) 14 (D) 16

(E) Answer not known

126. Which authority is responsible for granting authorization to local bodies for processing and disposal of solid waste?

(A) Ministry of Home Affairs

✓(B) Pollution Control Board

(C) Municipal Corporation

(D) Ministry of Urban Development

(E) Answer not known

127. What is the approximate percentage of total solid waste generated per day by the Greater Chennai Corporation out of the total 14,600 TPD in Tamil Nadu?

(A) 25%

(B) 34%

✓(C) 41%

(D) 46%

(E) Answer not known

128. Under the E-waste (Management) Rules, 2022, which entities are required to register on the CPCB portal?

(A) Only recyclers and refurbishers

(B) Only manufacturers and producers

(C) Informal sector workers

✓(D) Manufacturer, producer, refurbisher and recycler

(E) Answer not known

129. Which of the following activities is not typically part of the Integrated Solid Waste Management (ISWM) approach?

(A) Waste generation

(B) Resource recovery

(C) Waste incineration without recovery

✓(D) Waste disposal without treatment

(E) Answer not known

130. Which regulatory authority defines the criteria for identifying ignitable waste as D001?

(A) OSHA

(B) FDA

✓(C) EPA

(D) CDC

(E) Answer not known

131. Arrange the following leather processing steps in the correct sequential order:

1. Soaking
2. Fleshing
3. Liming
4. Unhairing
5. Bating

✓(A) $1 \rightarrow 3 \rightarrow 4 \rightarrow 2 \rightarrow 5$

(B) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5$

(C) $1 \rightarrow 4 \rightarrow 2 \rightarrow 3 \rightarrow 5$

(D) $1 \rightarrow 2 \rightarrow 4 \rightarrow 3 \rightarrow 5$

(E) Answer not known

132. Which of the following methods can be used to reduce the BOD load in poultry wastewater?

(A) Flocculation
(B) Physical
✓(C) Biological
(D) Chemical
(E) Answer not known

133. In fertilizer industry pollutants are listed in Column A. Treatment methods are given in Column B. Match the following :

	Column A		Column B
(a)	Ammonia	1.	Electrolytic oxidation
(b)	Phosphate	2.	Hot ammonium phosphate
(c)	Urea	3.	Air stripping
(d)	P_2O_5	4.	Chemical precipitation

	(a)	(b)	(c)	(d)
(A)	3	1	2	4
(B)	1	2	3	4
(C)	3	2	4	1
✓(D)	3	4	1	2

(E) Answer not known

134. Which industrial effluent has more BODs characteristics?

(A) Dairy
(B) Cotton – Textiles
(C) Refineries
✓(D) Tannery
(E) Answer not known

135. In pesticide industry, which of the following components can be easily removed by coagulation with alum followed by filtration?

(A) DDT
(B) Lindane
(C) Parathion
(D) Aldrin
(E) Answer not known

136. From the given options match the material with right disease designation :

(a)	Flax	1.	Silicosis
(b)	Iron-oxide	2.	Byssinosis
(c)	Coal	3.	Siderosis
(d)	Quartz	4.	Pneumoconiosis

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	3	1	2	4
(C)	4	2	1	3
(D)	1	4	3	2

(E) Answer not known

137. Which of the following statements are correct regarding biorefractory organic pollutants?

(i) synthetic organic chemicals

(ii) poorly biodegradable

(iii) eliminated by waste water treatment

(A) (i) only
(B) (i) and (iii) only
✓(C) (i) and (ii) only
(D) (ii) and (iii) only
(E) Answer not known

138. Which of the following chemicals is used for colour removal from pulp and paper mill effluent?

✓(A) Lime
(B) Sulfuric acid
(C) Caustic soda
(D) Sodium hydroxide
(E) Answer not known

139. What is the catalyst used in contact process in the conversion of sulphur dioxide to sulphur trioxide?

(A) Platinum
✓(B) Vanadium pentoxide
(C) Molybdenum
(D) Finely divided iron
(E) Answer not known

140. In sugar manufacturing process, _____ acts as a bleaching agent.

✓(A) SO_2
(B) Phosphoric acid
(C) CO_2
(D) Hot water
(E) Answer not known

141. In pulp and paper mill, employing kraft process may produce wastewater volume in the range of _____ m^3 per tonne of paper manufactured.

(A) 200 to 350 m^3
(B) 250 to 400 m^3
(C) 100 to 200 m^3
(D) 400 to 550 m^3
(E) Answer not known

142. What is the environmental risk associated with improper disposal of cement kiln dust?

(A) Groundwater contamination by heavy metals
(B) Acidification of soil due to low pH
(C) Release of green house gases
(D) Eutrophication due to nutrient release
(E) Answer not known

143. Which approach is being followed in cleaner production?

(A) Preventative upstream approach
(B) Preventative downstream approach
(C) Curative upstream approach
(D) Curative downstream approach
(E) Answer not known

144. What is the main use of clean coal technology?

(i) High heat output

(ii) Low operational cost

(iii) Low carbon footprint

(iv) Emission reduction of SO_x and NO_x

(A) (i) only
(B) (ii) and (iii) only
(C) (i) and (ii) only
✓(D) (i), (iii) and (iv) only
(E) Answer not known

145. Identify the correct match from the followings :

1. K-list wastes – source specific wastes
2. P-list wastes – harmful even in small quantities
3. U-list wastes – wastes from non-specific manufacturing and industrial process
4. F-list wastes – Hazardous, but not acutely so

(A) 1 and 3 are correct
✓(B) 1 and 2 are correct
(C) 2 and 3 are correct
(D) 3 and 4 are correct
(E) Answer not known

146. In composting, biodegradable materials breakdown through natural processes and produce _____

✓(A) Humus
(B) Solid waste
(C) Biogas
(D) Biodiesel
(E) Answer not known

147. Kjeldahl nitrogen is the measure of nitrogen content in a sample determined by :

(A) Direct measurement of nitrate ions

✓(B) Digestion of the sample followed by estimation of ammonia produced

(C) Measurement of nitrogen gas released during combustion

(D) Titration of nitrite ions

(E) Answer not known

148. The threshold value of hexavalent chromium for aerobic biological treatment is _____

(A) 5 mg/L

✓(B) 2 mg/L

(C) 10 mg/L

(D) 8 mg/L

(E) Answer not known

149. Match the following :

(a)	Paunch Manure	1.	Iron and steel industries
(b)	Blast Furnace Gas	2.	Pharmaceuticals
(c)	Black Liquor	3.	Meat processing units
(d)	Spent Beer	4.	Pulp and paper plants

	(a)	(b)	(c)	(d)
(A)	2	3	1	4
✓(B)	3	1	4	2
(C)	4	3	2	1
(D)	1	4	2	3

(E) Answer not known

150. Of the given options, which one is the biorefractory organic compound?

(A) Plant debris
(B) Nitrate
(C) Pyrethrin
✓(D) Styrene
(E) Answer not known

151. The industrial wastes containing phosphorous are usually treated with

✓(A) Flocculating agents
(B) Activated carbon
(C) Acids
(D) Highly basics
(E) Answer not known

152. Which of the following statements are true about the amount of pollution is generally expressed in terms of parameters such as :

(i) pH

(ii) Suspended solids

(iii) Total dissolved solids

(A) only (i)
(B) only (iii)
(C) only (ii)
✓(D) (i), (ii) and (iii)
(E) Answer not known

153. Generally, a _____ day period is chosen for standard BOD test.

(A) 4
(B) 8
✓(C) 5
(D) 10
(E) Answer not known

154. Which test is specifically more suitable to measure organic matter present in industrial wastes?

(A) ThOD
(B) BOD
✓(C) COD
(D) DO
(E) Answer not known

155. A high nitrogen content in wastewater is harmful because :

(A) It increases oxygen solubility
(B) It causes rapid sedimentation
✓(C) It promotes algal blooms and eutrophication
(D) It neutralizes acids
(E) Answer not known

156. Choose the correct statement on the desalination of saline water.

✓(A) Electrodialysis process removes both cations and anions
(B) Electrodialysis process removes cations only
(C) Electrodialysis process removes only anions
(D) Electrodialysis process removes non-ionic compounds only
(E) Answer not known

157. Which one of the following is the most commonly removed substance by adsorption techniques?

✓(A) BOD
(B) Inorganic compounds
(C) Suspended solids
(D) Turbidity
(E) Answer not known

158. Choose the correct classic laws for analysing the nonflocculating particles with relevant to particle settling theory.

1. Conservation of linear momentum
2. Gauss law
3. Stokes law
4. Newton law

(A) 2 and 4 are correct
(B) 1 and 2 are correct
(C) 4 and 1 are correct
✓(D) 3 and 4 are correct
(E) Answer not known

159. Choose the correct removal efficiency of solids dependence if all solids in wastewater were discrete particles of uniform size, uniform density, uniform specific gravity and uniform shape in rectangular sedimentation tank.

1. Horizontal speed in the tank above the scouring speed
2. Time of detention
3. Combination of flocculator-clarifier
4. Surface area of the tank

(A) 1 and 4 are correct
(B) 3 and 1 are correct
✓(C) 2 and 4 are correct
(D) 1 and 2 are correct
(E) Answer not known

160. In the ion exchange bed regeneration, the backwash rate should be used enough to expand the bed by _____

(A) 10%-20%
(B) 60%-80%
✓(C) 30%-50%
(D) 90%-100%
(E) Answer not known

161. The "Sweep-Floc" reaction among the aluminium hydroxide precipitate and colloids in suspension occurs at pH _____

(A) > 6.0 ✓
(B) < 6.0
(C) 3.0-5.0
(D) 2.0-4.0
(E) Answer not known

162. Silver is used as a disinfectant in both their metallic form and as nitrates with the dosage of _____

(A) > 250 µg/L
(B) < 50 mg/L ✓
(C) < 50 µg/L
(D) > 250 mg/L
(E) Answer not known

163. An electrocoagulated flock contain _____ and more shear resistant than from chemical coagulation.

(A) Less unbound moisture
(B) More unbound moisture
(C) More bound water
(D) Less bound water ✓
(E) Answer not known

164. If the residual chlorine is expected to affect the aquatic life of the microorganisms in the receiving water body, how will you dechlorinate it?

(A) Using potassium chromate solution
(B) Using ammonia nitrogen solution
(C) Using carbon dioxide solution
(D) Using sulphur dioxide solution ✓
(E) Answer not known

165. Aeration is a process of _____ mass transfer.

(A) Gas-liquid-Gas
✓(B) Gas-liquid
(C) Liquid-Gas
(D) Liquid-Gas-Liquid
(E) Answer not known

166. A rectangular clarification basin has the required plan area of 13.33 ft^2, detention time of 6h and length to width ratio of 2 : 1. Compute the dimensions, L × W × H ; if the flow is 8 MGD.

(A) 120 ft × 60 ft × 24.5 ft
(B) 180 ft × 90 ft × 72.5 ft
✓(C) 170 ft × 85 ft × 18.5 ft
(D) 240 ft × 120 ft × 65.5 ft
(E) Answer not known

167. A typical neutralisation tank that use either calcium or magnesium hydroxide slurries for base addition has a hydraulic residence time of _____

✓(A) Between 10 and 20 min
(B) Between 60 and 90 min
(C) Less than 5 min
(D) Greater than 120 min
(E) Answer not known

168. The optimal dosage of neutralizing agents can be obtained from _____ only if the waste water composition is known.

(A) COMSOL
(B) GAMBIT
(C) SQL
✓(D) MINEQL
(E) Answer not known

169. Type I settling or free settling is the settling of discrete and _____ particles in a dilute suspension.

(A) Flocculant
✓(B) Non-flocculent
(C) Nano-sized colloidal
(D) Micro-sized colloidal
(E) Answer not known

170. If 2.5 ml of raw sewage has been diluted to 250 ml and the D.O. concentration of the diluted sample at the beginning of the BOD test was 8 ppm and 5 ppm after 5 day incubation at 20°C. Determine the BOD of raw sewage.

(A) 295 ppm
(B) 297 ppm
✓(C) 300 ppm
(D) 301 ppm
(E) Answer not known

171. Why the catenary screens are not provided normally in the sewage treatment unit?

✓(A) Requires greater space
(B) Requires overhead clearance often
(C) Damages in the submerged parts
(D) Requires more frequency of cleaning
(E) Answer not known

172. If the wastewater has BOD of 2000 mg/L and with the flow of 120 m^3/d and the per capita BOD load of 54 g/inhabitant day, then the population equivalent (PE) is

(A) 4.444 inhabitants
(B) 12,960 inhabitants
(C) 12.96 inhabitants
✓(D) 4,444 inhabitants
(E) Answer not known

173. Water quality standards are considered to be _____

(A) Analytical
(B) Descriptive
(C) Empirical
✓(D) Normative
(E) Answer not known

174. In accordance with U.S. EPA (1987), GRIT is defined as the particles larger than 65 mesh and having a specific gravity _____.

(A) Less than 2.65
✓(B) Greater than 2.65
(C) Equal to unity
(D) Equal to zero
(E) Answer not known

175. _____ is a large opening bar screen (1-3 in) that is intended to exclude large debris in wastewater.

(A) Wedge wire
(B) Disk screen
(C) Drum screen
✓(D) Trash rack
(E) Answer not known

176. Which of the following are vertical conduits provided for easy transportation of biomedical waste vertically in case of establishment with more than two floors?

(A) Trolleys
(B) Wheel barrows
✓(C) Chutes
(D) Trucks
(E) Answer not known

177. In Indian E-waste management rules was implemented in the year.

(A) 2000
(B) 2010
✓(C) 2016
(D) 2020
(E) Answer not known

178. Identify the waste treatment method that generates frequency between 300-3,000,000 MHz and the waste is heated for disinfection.

(A) Shredding
✓(B) Microclaving
(C) Incineration
(D) Composting
(E) Answer not known

179. Using salvaged materials for new construction elements are known as

✓(A) Reusing materials on-site
(B) Recycling
(C) Source reduction
(D) Waste segregation
(E) Answer not known

180. The current hazardous waste rules are deemed to be

(i) Environment friendly
(ii) Industry friendly
(iii) Ocean friendly
(iv) Human friendly

✓(A) (i) and (ii) only
(B) (ii) and (iii) only
(C) (iii) and (iv) only
(D) (i) and (iv) only
(E) Answer not known

181. What is the key indicator of water quality and provides valuable insights into the level of organic pollutants present in aquatic environments?

✓(A) Biological oxygen demand
(B) Carbon oxygen demand
(C) Nitrogen oxygen demand
(D) Sulphur oxygen demand
(E) Answer not known

182. When non structures are built and when existing structures are renovated or demolished _____ is generated.

(A) Ferrous metals
✓(B) Construction and demolition debris
(C) Non-ferrous metal
(D) Plastic lumber
(E) Answer not known

183. Which type of collection vehicle is ideally suited for the collection of demolition wastes at construction sites?

(A) Tilt frame container
(B) Hoist truck
✓(C) Trash trailer
(D) Truck with compactor
(E) Answer not known

184. Bioconcentration is the selective absorption and storage of

✓(A) Persistent organic chemicals
(B) Proteins
(C) Carbohydrates
(D) Vitamins
(E) Answer not known

185. Which of the following chemical substance released by the vinyl chloride factory in to the Minamata bay and caused strong illness in the Japanese costal town?

(A) Methyl Mercury
(B) Methyl Chloride
(C) Methyl Sulphate
(D) Methyl Borate
(E) Answer not known

186. Assertion [A] : PET bottles are better containers to store carbonated beverages.

Reason [R] : PET provides a better platform for transmission of gases.

(A) [A] is correct ; [R] is wrong
(B) Both [A] and [R] are wrong
(C) [A] is wrong and [R] is correct
(D) [A] is correct and [R] is the correct explanation for [A]
(E) Answer not known

187. Which method is best suited for sites where no natural slopes exists?

(A) Area method
(B) Trench method
(C) Ramp method
(D) Modified method
(E) Answer not known

188. Which of the following parameter helps to measure the amount of oxygen required by microorganisms to decompose organic matter in water and indicate the level of organic pollution?

(A) Carbonaceous Oxygen Demand (COD)

(B) Nitrogenous Oxygen Demand (NOD)

✓(C) Biological Oxygen Demand (BOD)

(D) Chemical Oxygen Demand (COD)

(E) Answer not known

189. By adding nutrients and oxygen to enhance the capabilities of any microorganism already present at the contamination site is called

(A) Insitu bioremediation

(B) Exsitu bioremediation

✓(C) Biostimulation

(D) Bioaugmentation

(E) Answer not known

190. All biological waste treatment processes depend on microbial degradation activities such as

(i) Hydrolysis

(ii) Oxidation

(iii) Reduction

(A) (i) and (ii) only

(B) (ii) and (iii) only

(C) (i) and (iii) only

✓(D) (i), (ii) and (iii) only

(E) Answer not known

191. Higher BOD value signifies higher amount of oxidisable organic matter present and such a sewage is called

✓(A) Strong sewage
(B) Weak sewage
(C) Neutral sewage
(D) Zero sewage
(E) Answer not known

192. Which method of landfilling is ideally suited to areas where the water table is not near the surface and availability of adequate depth of cover material is available?

(A) Area method
✓(B) Trench method
(C) Canyon method
(D) Bioreactor
(E) Answer not known

193. Find the correct statement.

(i) The waste from one process becomes the input for another process.

(ii) All the processes related to consumption and production. Produce some kind of waste.

(iii) There is no real waste in nature.

(A) (i) and (ii) only
(B) (i) and (iii) only
(C) (ii) and (iii) only
✓(D) (i), (ii) and (iii) only
(E) Answer not known

194. Match the following :

Column A	Column B
(a) Moisture content	1. Hydraulic conductivity of compacted waste
(b) Density	2. Downward pull of gravity
(c) Field capacity	3. Mass per unit volume (kg/m^3)
(d) Permeability	4. Incineration

	(a)	(b)	(c)	(d)
✓(A)	4	3	2	1
(B)	1	2	3	4
(C)	2	4	1	3
(D)	3	1	4	2

(E) Answer not known

195. Identify the wastes which are highly infectious and may possess severe threat if not managed properly.

(A) Agricultural waste
✓(B) Biomedical waste
(C) Inert waste
(D) Composite waste
(E) Answer not known

196. Which of the following wastes are combustible and non combustible in nature?

(i) Garbage
(ii) Ashes
(iii) Rubbish

(A) (i) and (ii) only
(B) (ii) only
(C) (ii) and (iii) only
✓(D) (iii) only
(E) Answer not known

197. Causes of solid wastes are

(i) Urbanisation

(ii) Over population

(iii) Use and throw culture

(A) (i) only

(B) (i) and (ii) only

(C) (ii) and (iii) only

✓(D) (i), (ii) and (iii) only

(E) Answer not known

198. Match the following waste collection with its suitable components :

(a) Collection point	1. Located between collection point and disposal site
(b) Collection crew	2. Collecting waste in a specific area
(c) Collection routes	3. Collecting the waste from house to house
(d) Transfer station	4. Collection of waste from generated sources

	(a)	(b)	(c)	(d)
✓(A)	4	3	2	1
(B)	3	2	1	4
(C)	2	1	4	3
(D)	1	2	3	4

(E) Answer not known

199. Optimal composting of the waste is achieved at pH range of

(A) 4.2 – 4.8 ✓(B) 5.0 – 5.8

(C) 8.3 – 9.0 (D) 10.4 – 11.0

(E) Answer not known

200. High moisture content in solid waste will affects the net energy recovery by _____ technique.

(A) Pyrolysis ✓(B) Incineration

(C) Land filling (D) Bio accumulation

(E) Answer not known
