Combined Technical Services Examination

(NON – INTERVIEW POSTS)

COMPUTER BASED TEST

DATE OF EXAM : 17.08.2026 A.N.

PAPER – II : ENVIRONMENTAL SCIENCE, BIOLOGY AND CHEMISTRY (PG DEGREE STD.)

SUB. CODE : 557

1. Compressed Natural Gas (CNG) is preferred over the Liquefied Petroleum Gas (LPG) because of it is

(A) Costlier than LPG
(B) Lighter than LPG
(C) Easy to transport than LPG
(D) Causes less pollution and Safer
(E) Answer not known

2. India ranks globally in which place among the renewable energy installed capacity

(A) 1st
(B) 2nd
(C) 10th
(D) 4th
(E) Answer not known

3. It involves various conservation strategies, prevention of wastage, recycling and substitution. What type of resources depletion time it is?

(A) Rapid depletion time
(B) Extended depletion time
(C) Indefinite depletion time
(D) Definite depletion time
(E) Answer not known

4. The dredging technique of mining is applied to the minerals found _____

(A) Deep beneath the Earth's surface
(B) Just above topsoil
(C) In the Himalayan mountains
(D) Under water mineral deposits
(E) Answer not known

5. Match correctly the tropical rain forest with the vertical layers :

(a)	Emergent layer	1.	Bottom layer of the forest
(b)	Canopy layer	2.	Between middle layer and forest floor
(c)	Understorey layer	3.	Middle layer of trees
(d)	Forest floor	4.	Tree top layer

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

(E) Answer not known

6. The first nuclear power station established in India is

(A) Narora
(B) Tarapur
(C) Kalpakkam
(D) Rawatbhata
(E) Answer not known

7. Natural uranium is commonly known as

(A) White Cake
(B) Red Cake
(C) Yellow Cake
(D) Blue Cake
(E) Answer not known

8. Which organisation has ranked India as a wind superpower?

(A) TERI (India)
(B) UNIDO-United Nations Organisation
(C) TESLA (USA)
(D) World Watch Institute (USA)
(E) Answer not known

9. "Earth hour" is celebrated as an international event on

(A) 22 March
(B) 23 March
(C) 24 March
(D) 25 March
(E) Answer not known

10. The world commission on environment and development report is also known as the _____

(A) Sustainable development report
(B) Sustainability report
(C) Brundtland commission report
(D) UN development report
(E) Answer not known

11. Which of the following is a phytoparasite?

(A) Plasmodium
(B) Tapeworm
(C) Cuscuta (Dodder)
(D) Roundworm
(E) Answer not known

12. Which of the following is not biotic component of the ecosystem?

(A) Autotrophs
(B) Heterotrophs
(C) Saprotrophs
(D) Mineral nutrients
(E) Answer not known

13. Which one of the following the primary producers in the marine ecosystem?

(A) Foraminifera
(B) Gracilaria
(C) Copepods
(D) Krills
(E) Answer not known

14. Assertion [A] : Natural ecosystem maintain homeostasis.

Reason [R] : Homeostasis as the tendency of natural ecosystem to resist changes and to remain in a state of equilibrium.

(A) Both [A] and [R] are true, but [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

15. Which of the following are Gaseous Cycle?

(A) Carbon, Nitrogen, Sulphur

(B) Carbon, Oxygen, Nitrogen

(C) Nitrogen, Phosphorus, Sulphur

(D) Carbon, Nitrogen, Phosphorus

(E) Answer not known

16. In grassland ecosystem, the pyramid of energy is

(A) Inverted pyramid

(B) Upright pyramid

(C) Mixed pyramid

(D) Constrictive pyramid

(E) Answer not known

17. The community which become stable and in equilibrium with the environment is termed as

(A) Pioneer community
(B) Seral community
(C) Climax community
(D) Mixed community
(E) Answer not known

18. In a food chain of the ecosystem, the trophic level of insectivorous plants is

(A) Primary consumer
(B) Secondary consumer
(C) Producer
(D) Decomposers
(E) Answer not known

19. The final and stable community in ecological succession is known as

(A) A Pioneer community
(B) A seral community
(C) A climax community
(D) An intermediate community
(E) Answer not known

20. Mycorrhiza is an association between _____

(A) Algae and fungi
(B) Fungi and bacteria
(C) Fungi and vascular plants
(D) Fungi and roots of higher plants
(E) Answer not known

21. The given cycle is primarily driven by the weathering of rocks

(A) Carbon cycle
(B) Nitrogen cycle
(C) Phosphorus cycle
(D) Sulfur cycle
(E) Answer not known

22. Which of the following is an example of mutualism?

(A) Abingdon tortoise in Galapagos Islands
(B) Fungi and Cyanobacteria
(C) Yeast and roots of plants
(D) Cuscuta and host plant
(E) Answer not known

23. The outer most layer of Earth's crust consisting of soil is called _____

(A) Asthenosphere
(B) Pedosphere
(C) Lithosphere
(D) Troposphere
(E) Answer not known

24. Tar sands consists essentially a mixture of

(A) Sand and asphalt
(B) Sand and calcium
(C) Asphalt and clay
(D) Calcium and Asphalt
(E) Answer not known

25. The science which deals with the study of soil is known as

(A) Ethology
(B) Etiology
(C) Ethnology
(D) Edaphology
(E) Answer not known

26. The _____ is responsible for Earth's magnetic field.

(A) Mantle
(B) Crust
(C) Liquid Outer Core
(D) Inner Core
(E) Answer not known

27. The lowest layer of atmosphere in which man along with other organisms live is known as

(A) Stratosphere
(B) Trophosphere
(C) Thermosphere
(D) Mesosphere
(E) Answer not known

28. Which of the following statements are correct about the Hydrosphere?

(1) It covers more than two-thirds of earth's surface.

(2) Water has a high value of latent heat.

(3) Fresh potable water is available only 1% in rivers, lakes and ground water.

(4) The water is unfit for consumption due to high salt content.

(A) (1) & (2) are correct
(B) (1) & (3) are correct
(C) (1), (2) & (3) are correct
(D) All are correct
(E) Answer not known

29. Due to _____ the wind in the Southern Hemisphere is diverted to the left.

(a) Temperature variations
(b) Rotation of the earth
(c) Difference in pressure
(d) Coriolis effect

(A) (a) and (b)
(B) (a) only
(C) (b) only
(D) (d) only
(E) Answer not known

30. The lithosphere broken into large and rigid blocks is called

(a) Tectonic plates
(b) Asthenosphere
(c) Mantle plumes
(d) Core fragments

(A) (a) and (c)
(B) (a) only
(C) (b) and (c)
(D) (d) only
(E) Answer not known

31. Match the List I with List II regarding the various meteorological indexes and their respective persons/organizations according to World Meteorological Organization (WMO) :

	List I		List II
(a)	Aridity Anomaly Index (AAI)	1.	De Martonne
(b)	Aridity Index (AI)	2.	Bhalme and Mooley
(c)	Crop Moisture Index (CMI)	3.	India Meteorological Department
(d)	Drought Area Index (DAI)	4.	Palmer

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

(E) Answer not known

32. The main route of human exposure to dioxins is through.

(a) Inhalation of contaminated air

(b) Drinking contaminated water

(c) Eating contaminated food

(d) Direct contact with contaminated animals

(A) (a), (b) and (d)

(B) (a), (b) and (c)

(C) (d) and (a)

(D) (c) and (d)

(E) Answer not known

33. Examples of Persistent Organic Pollutants (POPs) include _____

(A) Fungicides

(B) Polychlorinated biphenyls and dioxins

(C) Herbicides

(D) PCBs and Herbicides

(E) Answer not known

34. Inhalation toxicity is often measured using :

(a) LD 50

(b) LC 50

(c) NOAEL

(d) LOAEL

(A) (a) and (b)

(B) (b) only

(C) (c) and (d)

(D) (d) only

(E) Answer not known

35. Among the following, the compound that is not a pesticide is _____

(a) Bendiocarb

(b) Allethrin

(c) Rotenone

(d) Alprazolam

(A) (a) and (b)

(B) (c) only

(C) (d) only

(D) (b) only

(E) Answer not known

36. Which of the following problem is not considered as poor aggregation of primary particles in soils?

(A) Compaction
(B) Low infiltration rates
(C) Low microbial populations
(D) Limited aeration
(E) Answer not known

37. Which of the following phytoremediation strategy is most effectively used for removal of heavy metal(loid)s in soil?

(A) Phytodegradation
(B) Phytoextraction
(C) Phytostabilization
(D) Phytovolatilization
(E) Answer not known

38. Match List I with List II regarding the heavy metals and their respective sources in environment :

List I Heavy Metals		List II Sources
(a) Cadmium	1.	Chlor-alkali
(b) Chromium	2.	Phosphate fertilizer
(c) Lead	3.	Tanning
(d) Mercury	4.	Gasoline

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

(E) Answer not known

39. The Natural Process of converting food items and other organic waste into manure is called _____

(a) Landfill

(b) Incineration

(c) Vermicomposting

(d) Recycling

(A) (a) and (d)
(B) (c) and (b)
(C) (b) only
(D) (c) only
(E) Answer not known

40. The aerobic method of Mechanical Composting in India is called

(A) Indore method
(B) Nagpur method
(C) Bangalore method
(D) Bhuvaneswar method
(E) Answer not known

41. Which one is not about the properties of MICA?

(A) poor Electrical and Thermal insulation
(B) groups of silicate minerals
(C) low Q factor
(D) capacitance instability
(E) Answer not known

42. Itai itai disease is caused by which pollution?

(a) Mercury

(b) Arsenic

(c) Cadmium

(d) Lead

(A) (a) and (d)
(B) (b) and (c)
(C) (c) only
(D) (d) only
(E) Answer not known

43. How are PAHs related to soil pollution?

(A) They are carcinogenic organic compounds
(B) They are fertilizer waste
(C) They are inorganic waste from Industries
(D) They are harmful metals that pollute the soil
(E) Answer not known

44. The layer of Earth's crust where weathered minerals, living organisms and their decay products are mixed is called _____

(A) Nematicide
(B) Soil
(C) Troposphere
(D) Biofertilizer
(E) Answer not known

45. Electrodialysis removes

(A) Colloidal dissolved species
(B) Oil and grease
(C) Pesticides
(D) None of the above
(E) Answer not known

46. _____ is the process of overgrowth of plants and algae in lakes.

(a) Photosynthesis
(b) Eutrophication
(c) Reproduction
(d) Transpiration

(A) (a) and (b)
(B) (b) and (c)
(C) (b) only
(D) (c) only
(E) Answer not known

47. Match List I with List II and select the correct answer using the codes given below the lists :

	List I (Parameter)		List II (Units)
(a)	Turbidity	1.	TON
(b)	Pathogen	2.	TCU
(c)	Odour	3.	JTU
(d)	Colour	4.	MPN

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

(E) Answer not known

48. Zeolite is a

(A) Natural salt
(B) Hydrated silica
(C) Silicon carbide
(D) Hydrated aluminium silicate
(E) Answer not known

49. Identify the following which is NOT a water pollutant?

(A) Chromium
(B) Glacier
(C) Silt
(D) Arsenic
(E) Answer not known

50. Sound Transmission Class (STC) rate is high in the following building material.

(A) 4 inch brick wall
(B) 6 inch dense concrete
(C) 12 inch brick wall
(D) 5/16 inch plywood
(E) Answer not known

51. What is the main purpose of tertiary treatment in industrial effluent management?

(A) To settle down precipitate at bottom of the tank
(B) To decrease the load of nitrogen and phosphorus compound present in the effluent
(C) To prevent corrosion of sewers
(D) To prevent spread of epidemic
(E) Answer not known

52. The Noise level at which instantaneous rupture of the eardrum happens is _____.

(a) 100 dB
(b) 120 dB
(c) 146 dB
(d) 150 dB
(A) (a) only
(B) (b) only
(C) (a) and (c)
(D) (d) only
(E) Answer not known

53. Identify the ministry which published a draft of noise pollution rules.

(A) Ministry of Pollution control
(B) Ministry of Foreign affairs
(C) Ministry of Environment and forests
(D) Ministry of Industries
(E) Answer not known

54. Match the noise evaluation index with their utility domain :

(a)	L_{10} (18 hour) index	1.	Aircraft
(b)	Equivalent noise level (Leq)	2.	Industries
(c)	Effective perceived noise level (Lepn)	3.	Traffic

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

(E) Answer not known

55. Venturi scrubbers are particularly effective in controlling

(a) Carbon monoxide emissions

(b) Volatile organic compounds

(c) Particulate matter and aerosols

(d) Sulfur dioxide and nitrogen oxides

(A) (a) and (b)

(B) (c) only

(C) (d) only

(D) (a) only

(E) Answer not known

56. Match the following :

(a)	CFC	1.	Green House effect
(b)	CO_2	2.	Most Available gas
(c)	N_2	3.	Poisonous gas
(d)	CO	4.	Ozone depletion

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

(E) Answer not known

57. The process by which Persistent Organic Pollutants (POPs) accumulate in the fatty tissues of organisms is called _____

(a) Bio degradation

(b) Biotransformation

(c) Bioaccumulation

(d) Bioremediation

(A) (a) and (b)

(B) (c) only

(C) (d) only

(D) (c) and (d)

(E) Answer not known

58. Which one of the following is NOT a primary air pollutant?

(A) Oxides of sulphur

(B) Oxides of carbon

(C) CFC

(D) Ground level O_3

(E) Answer not known

59. Smoke and Fumes are effectively removed by

(A) Venturi scrubber

(B) Cyclone scrubber

(C) Spray tower

(D) Fabric filters

(E) Answer not known

60. Match the following :

	Gaseous pollutants		Adsorbents used in solid form
(a)	SO_2	1.	Silica gel
(b)	H_2S	2.	Porous NaF pellets
(c)	HF	3.	Iron oxide
(d)	NOx	4.	Alkalized Alumina

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

(E) Answer not known

61. Choose the correct statement(s) pertaining to the role of Public participation in EIA process.

Statement I : Public participation typically occurs at scoping and EIA Report stages.

Statement II : It may also occur at any other stages of the EIA process.

(A) Both Statements I and II are correct

(B) Both Statements I and II are incorrect

(C) Statement I is correct and Statement II is incorrect

(D) Statement II is correct and Statement I is incorrect

(E) Answer not known

62. Which of the following aspect is not considered during scoping of EIA process?

(A) important issues and concern
(B) regulations requirement
(C) critical assessment of impacts
(D) areas of less concern for the present acts
(E) Answer not known

63. The three facets of Triple Bottom line are

(A) People, Production and Profit
(B) Planet, People and Profit
(C) People, Production and Planet
(D) People, Planet and Profit
(E) Answer not known

64. How many variables maximum overlayed in a transparency map in overlay method of EIA?

(A) 8
(B) 10
(C) 11
(D) 12
(E) Answer not known

65. Which of the following is not considered as crucial environmental concern in the context of life cycle assessment?

(A) Global climate change

(B) Lose of biodiversity

(C) Oil spills

(D) Depletion of fossil fuel resources

(E) Answer not known

66. How does noise cause hearing loss at 3000 – 6000 Hz?

(A) damages cochlear hair cells due to ear canal amplification

(B) inflames the ear drum

(C) blocks the ear canal

(D) damages the auditory nerve only

(E) Answer not known

67. Match the following :

(a)	Physical hazard	1.	Height of chairs and tables
(b)	Chemical hazard	2.	Radiation
(c)	Biological hazard	3.	Leptospirosis
(d)	Ergonomic hazard	4.	Solvents

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

(E) Answer not known

68. Which of the following statements regarding pollution threats and safety measures are correct as per the operational protocol?

(I) Contaminated oil can be mixed with clean oil after filtration

(II) Waste materials like cloth and tissues used in cleaning must be collected for cleanup procedure

(III) High transformer temperature can be managed using external cooling and reduced load

(IV) Drives transporting hazardous oil need not inform any authority during transport

(A) (I) and (II) only correct

(B) (II) and (III) only correct

(C) (III) and (IV) only correct

(D) (I) and (IV) only correct

(E) Answer not known

69. Which of the following statement about ISO 14000 family of standards is not correct?

(A) ISO 14000 focuses on environmental management systems

(B) ISO 14000 includes ISO 14001, which specifies requirements for environmental management systems

(C) ISO 14000 provides detailed guidelines for conducting Life Cycle Assessments (LCA)

(D) ISO 14000 is related to improving an organisations environmental performance

(E) Answer not known

70. Environmental Management Plan should include one of the following :

(A) Delineation of unmitigated impacts (minimize negative impacts and maximize positive ones)

(B) A list of approved project contractors only

(C) A schedule of public holidays during construction

(D) A summary of company profits and losses

(E) Answer not known

71. What is the concentration of CO_2 in atmosphere during 2024?

(A) 404 ppm

(B) 434 ppm

(C) 424 ppm

(D) 414 ppm

(E) Answer not known

72. Which of the following statements correctly reflects the WHO guidelines values (Global Air Quality guidelines) for particulate matter concentration?

(A) The 24 hr mean for $PM_{2.5}$ is 10 $\mu g/m^3$, while the annual mean for PM_{10} is 25 $\mu g/m^3$

(B) $PM_{2.5}$ has a stricter annual mean guidelines (10 $\mu g/m^3$) than PM_{10} (20 $\mu g/m^3$) and a 24 hr mean of 25 $\mu g/m^3$

(C) Both $PM_{2.5}$ and PM_{10} have the same 24 hr mean guideline values of 50 $\mu g/m^3$

(D) WHO recommends an annual mean of 20 $\mu g/m^3$ for $PM_{2.5}$ and 10 $\mu g/m^3$ for PM_{10} due to higher toxicity of $PM_{2.5}$

(E) Answer not known

73. According to the EIA notification, why are certain industrial activities prohibited within 1.0 km of the high tide mark in areas like Revdanda creek?

(A) to promote tourism related industries only and protect fragile coastal ecosystems

(B) to allow free industrial development near coastal zones

(C) to encourage mining activities in these areas

(D) to develop urban infrastructure without environmental oversight

(E) Answer not known

74. Which of the following statement is/are true pertaining to the maximum permissible limit for BOD in effluent discharge?

(i) 250 ppm limit for public sewers

(ii) 30 ppm limit for inland surface water

(iii) 100 ppm limit for marine coastal areas

(A) (ii) only

(B) (iii) only

(C) (i) and (ii) only

(D) (ii) and (iii) only

(E) Answer not known

75. What does the Indian Governments Legislative response after the Stockholm conference and the 42nd Constitutional Amendment reveal?

(A) That international conference have limited impact on India's Internal legal structure

(B) That global environmental events can prompt constitutional and statutory reforms in India

(C) That the Stockholm conference directly amended the Indian Constitution

(D) That India prioritized industrial development over environmental regulation

(E) Answer not known

76. Why was the water (Prevention and Control of Pollution) Cess Act, 1977 enacted?

(A) To fund river cleaning programs by international agencies

(B) To impose criminal liability on polluting industries

(C) To generate financial resources for pollution control Boards and promote pollution control through economic incentives

(D) To provide free water treatment services to all rural industries

(E) Answer not known

77. Match the following

Area		Maximum permissible noise level (Day time in dB)
(a) Industrial area	1.	50 dB
(b) Commercial area	2.	65 dB
(c) Residential area	3.	55 dB
(d) Silent Zone	4.	75 dB

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

(E) Answer not known

78. How is the Chairperson of the NGT (National Green Tribunal) appointed?

(A) By the Prime Minister
(B) By the President in consultation with the chief justice of India
(C) By the Ministry of Environment
(D) By the Chief Justice of India directly
(E) Answer not known

79. Match the following

(a)	CRZ – IA	1.	Intertidal zone between HTL & LTL
(b)	CRZ – IB	2.	Ecologically sensitive areas (mangroves corals)
(c)	CRZ – II	3.	Rural areas population density Less than 2161/km^2
(d)	CRZ – IIIB	4.	Developed Urban areas with in municipal unit

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

(E) Answer not known

80. Match the List I with List II pertaining to various sections and their respective features in The Biological Diversity Act 2002

List I Sections	List II Features
(a) Section 23	1. Constitution of National Biodiversity Fund
(b) Section 27	2. Constitutions of Biodiversity Management Committees
(c) Section 37	3. Functions of State Biodiversity Board
(d) Section 41	4. Biodiversity heritage sites

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

(E) Answer not known

81. Match List I with List II pertaining to biomedical wastes categories

List I Type of Waste	List II Category
(a) Human Anatomical waste	1. Red
(b) Catheters and urine bags	2. Blue
(c) Needles and Blades	3. Yellow
(d) Metallic body implants	4. White

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

(E) Answer not known

82. Choose the correct statement(s) pertaining to E-Waste (Management) Rules 2016

Statement 1 : Extended Producer Responsibility (EPR) is the responsibility of every producer of electrical and electronic equipment for channelisation of e-waste to an authorised dismantler/recycler to ensure environmentally sound management of such waste

Statement 2 : The producers has strictly adhere their EPR plan at the time of initial permission from the designated authorities

Statement 3 : Producers may submit multiple options and schemes for channelization of e-waste.

(A) Both Statements 1 and 2 are correct

(B) Both Statements 1 and 3 are correct

(C) Both Statements 2 and 3 are correct

(D) Only Statement 2 is correct

(E) Answer not known

83. Match the List I with List II pertaining to categories of electrical and electronic equipment and their respective codes as per Schedule I of E-waste (management) Rules 2016

List I	List II
(a) Notebook Computers	1. CEEW 3
(b) Printers including cartridges	2. CEEW 2
(c) Washing machine	3. ITEW 4
(d) Refrigerator	4. ITEW 6

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

(E) Answer not known

84. Choose the correct pair pertaining to the various sections under Hazardous and other wastes (Management and Transboundary Movement) Rules 2016

(A) Section 8 – Utilisation of hazardous and other wastes

(B) Section 9 – Storage of hazardous and other wastes

(C) Section 18 – Transportation of hazardous and other wastes

(D) Section 24 – Recycling of hazardous waste

(E) Answer not known

85. Choose the correct statement(s) pertaining to various stages of environmental clearance under EIA notification 2006 in India.

Statements 1 : The Terms of Reference (ToR) approved by MoEF and CC or State Environment Impact Assessment Authority (SEIAA)

Statements 2 : The preparation of EIA report requires involvement of 12 functional area experts to assess the various aspects of EIA process. The baseline data is to be collected for three months including the monsoon season.

Statements 3 : On-site public hearing and inviting written responses are two components of public consultation and these are organised by the Central Pollution Control Board.

(A) Both Statements 1 and 2 are correct
(B) Both Statements 1 and 3 are correct
(C) Both Statements 2 and 3 are correct
(D) Only Statement 1 is correct
(E) Answer not known

86. The working electrode used in voltametric estimation is

(A) Calomel electrode
(B) Silver electrode
(C) Dropping mercury electrode
(D) Platinum electrode
(E) Answer not known

87. Among the types of conductometric titrations, which one can give best result?

1. Acid Base Titration (neutralisation)
2. Precipitation Titration
3. Complexometric Titration

(A) 1 only
(B) 2 and 3
(C) 2 only
(D) 3 only
(E) Answer not known

88. The equivalent conductance at infinite dilution λ_∞ can be written as

(A) $\lambda_\infty = C \times 1000$ ohm.cm^2
(B) $\lambda_\infty = \frac{K_\infty}{C} \times 1000$ ohm.cm^2
(C) $\lambda_\infty = \frac{K_\infty}{C}$ ohm.cm^2
(D) $\lambda_\infty = K_\infty \times 1000$ ohm.cm^2
(E) Answer not known

89. Advantages of Quinlydrone electrode are

(1) Equilibrium is reached quickly
(2) Simple and in expensive
(3) It can be used for determining pH values less than 8 only
(4) It cannot be used in presence of oxidizing and reducing agents

(A) (1), (2) and (3) only
(B) (1) and (2) only
(C) (3) and (4) only
(D) All the four
(E) Answer not known

90. The Butler-Volmer equation is

(A) $i = i_0 \left\{ e^{(1-\alpha)\,\eta F / RT} - e^{-\alpha \eta F / RT} \right\}$

(B) $i = i_0 \, \eta \, F / RT$

(C) $i = i_0 e^{(1-\alpha)} \, \eta F / RT$

(D) $\ln i = \ln i_0 - \alpha \eta F / RT$

(E) Answer not known

91. Choose the correct answer in the oxidation techniques of TOC.

(i) Thermal oxidation

(ii) Photochemical oxidation

(iii) Wet chemical oxidation

(iv) Bacterial oxidation

(A) (i) only

(B) (i) and (ii) only

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

(D) (i), (ii), (iii) and (iv)

(E) Answer not known

92. What is the role of the reduction column in an elemental analyzer?

(A) To oxidize the sample

(B) To convert nitrogen oxides to nitrogen gas

(C) To separate the gaseous products based on their size

(D) To detect the different elements

(E) Answer not known

93. Which of the following gas permeable membrane is used in carbon dioxide gas sensing electrode?

(A) Silicon rubber
(B) PVC membrane
(C) Fluoro carbon
(D) Polythene
(E) Answer not known

94. What is the primary function of a stack data structure?

(A) LIFO operations
(B) FIFO operations
(C) Both LIFO and FIFO operations
(D) Push operations
(E) Answer not known

95. Identify the major adverse impacts of SO_2 on environment

(i) Acid rain
(ii) Global warming
(iii) Ozone layer depletion
(iv) Respiratory disorders

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

96. Assertion [A]: Oxygen gas is not suitable for GLC as a carrier gas

Reason [R]: Oxygen does not react with substances of stationary phase

(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

97. The refractive index monitor of the HPLC and UV-visible spectrophotometer used as _____

(A) Adsorbent

(B) Detectors

(C) Stationary phase

(D) Mobile phase

(E) Answer not known

98. In chromatographic techniques, the movement of solute relative to the solvent is expressed in terms of _____.

(A) RT value

(B) KT value

(C) K_f value

(D) R_f value

(E) Answer not known

99. In thin layer chromatography the size of the chromatoplates is _____.

(A) 15 cm × 5 cm
(B) 20 cm × 5 cm
(C) 60 cm × 10 cm
(D) 100 cm × 20 cm
(E) Answer not known

100. The adsorbent used in column chromatography is _____

(A) Polystyrene
(B) Glass wool
(C) Alumina
(D) Calcium carbonate ($CaCO_3$)
(E) Answer not known

101. The carrier gases used in gas chromatography are

(A) N_2, H_2 and O_2
(B) N_2, Cl_2 and H_2
(C) N_2, He and H_2
(D) N_2, H_2 and F_2
(E) Answer not known

102. In UV-Vis absorption, the absorption maximum (λ_{max}) is shifted towards shorter wavelength is known as

(A) Bathochromic shift
(B) Hypsochromic shift
(C) Hyperchromic shift
(D) Hypochromic shift
(E) Answer not known

103. In general, the lamp used in variable wavelength detectors for UV in HPLC is

(A) Deuterium
(B) Tungsten
(C) Carbon arc
(D) Lithium
(E) Answer not known

104. Pick the correct energy transition order.

(A) $\sigma \rightarrow \sigma^* > n \rightarrow \sigma^* > \pi \rightarrow \pi^* > n \rightarrow \pi^*$
(B) $\sigma \rightarrow \sigma^* = n \rightarrow \sigma^* > \pi \rightarrow \pi^* > n \rightarrow \pi^*$
(C) $\sigma \rightarrow \sigma^* < n \rightarrow \sigma^* < \pi \rightarrow \pi^* < n \rightarrow \pi^*$
(D) $\sigma \rightarrow \sigma^* < n \rightarrow \sigma^* = \pi \rightarrow \pi^* > n \rightarrow \pi^*$
(E) Answer not known

105. A typical example of a chromophore is

(A) $\rangle C=O$

(B) $-OH$

(C) $-NH_2$

(D) $-Cl$

(E) Answer not known

106. How does SEM-EDX, analyze and differentiate elements within a sample?

(A) By the intensity of back scattered electrons

(B) By the wavelength of emitted X-rays

(C) By the energy of emitted X-rays

(D) By the speed of emitted X-rays

(E) Answer not known

107. In Atomic Absorption Spectroscopy (AAS) the absorption intensity _____ of flame

(A) Is depend upon the temperature

(B) Does not depend upon the temperature

(C) Is directly proportional to the temperature

(D) Is inversely proportional to the temperature

(E) Answer not known

108. The plasma in ICP-MS is primarily sustained through _____

(A) An electric field

(B) A magnetic field

(C) Inductive coupling

(D) Chemical reactions

(E) Answer not known

109. Which of the following components of the X-ray fluorescent spectrometer induces fluorescent radiation?

(A) Excitation source
(B) Energy analyser
(C) X-ray spectrometer
(D) Detection system
(E) Answer not known

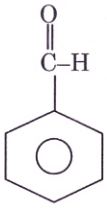
110. In atomic absorption spectroscopy, the most strongly absorbed light is called as

(A) Base line
(B) Stokes line
(C) Anti-Stokes line
(D) Resonance line
(E) Answer not known

111. According to Beer-Lambert's law

(A) $\ln I = \ln I_0 + KCl$
(B) $\ln I = \ln I_0 - KCl$
(C) $\ln I = \ln I_0 - KC$
(D) $I = I_0 + KC$
(E) Answer not known

112. Match the following :

IR data has been given for 

	A Band at $\bar{\nu}$	B Functional group
(a)	3080 cm^{-1}	1. C–H stretching of –CHO
(b)	2860 cm^{-1}	2. C=C stretching of $-C_6H_5$
(c)	1700 cm^{-1}	3. C–H stretching of $-C_6H_5$
(d)	1595 cm^{-1}	4. C=O stretching of –CHO

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

(E) Answer not known

113. If the spin of the electron does not undergo any change and the net spin is zero, then the electrons are in ———— state

(A) Singlet state

(B) Triplet state

(C) Ground state

(D) Both singlet and triplet state

(E) Answer not known

114. In Atomic Absorption Spectroscopy (AAS)

Statement 1 : Metal in aqueous solution is more difficult to atomize.

Statement 2 : Metal in organic solution is easy to atomize.

Which statement/s is/are correct?

(A) Both (1) and (2) are correct

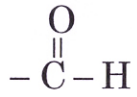
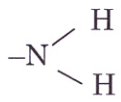
(B) Both (1) and (2) are incorrect

(C) (1) only correct

(D) (2) only correct

(E) Answer not known

115. Match the following:

	Bond		Frequency (cm^{-1})
(a)		1.	3600–3650
(b)		2.	2650–2880
(c)	–O–H	3.	3300–3500
(d)		4.	1680–1760

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

(E) Answer not known

116. The indicator used in estimation of chloride by Mohr's method is

(A) AgCl
(B) Ag_2CrO_4
(C) K_2CrO_4
(D) Phenolphthalein
(E) Answer not known

117. 1, 10 phenanthroline is a reagent used for the estimation of ———

(A) Fe
(B) Mg
(C) Cd
(D) Pb
(E) Answer not known

118. In the determination TDS of water at what temperature the dish is to be dried to measure total dissolved solids?

(A) 100°C
(B) 150°C
(C) 180°C
(D) 200°C
(E) Answer not known

119. In practice, the number of days required to carryout BOD test of a water sample at 20°C is

(A) 2
(B) 3
(C) 4
(D) 5
(E) Answer not known

120. Fe in water can be analysed by colorimetric method using

(A) DMG
(B) Ammonium thiocyanate
(C) Br_2
(D) Oxalic acid
(E) Answer not known

121. The nephelometric method measures turbidity by

(A) Absorbing light by suspended particles

(B) Comparing scattered light intensity to a standard

(C) Measuring the colour of water directly

(D) Filtering particles and measuring their colour

(E) Answer not known

122. Why are quartz or TFE containers preferred for samples in metal analysis?

(A) They prevent contamination and absorption of metals

(B) They are cheaper and easier to handle

(C) They absorb metals to improve detection

(D) They react with metals to stabilise the sample

(E) Answer not known

123. The most preferred containers for storing water samples for metal analysis :

(A) Polypropylene or linear polyethylene

(B) Soft glass containers without acid rinsing

(C) Untreated plastic bags or bottles

(D) Any containers made of metal or ceramic

(E) Answer not known

124. In the estimation of the free chlorine of a water sample by iodometric method, chlorine present in water oxidizes _____

(A) KI

(B) I_2

(C) $AgNO_3$

(D) $Na_2S_2O_3$

(E) Answer not known

125. Why should temperature, redox potential and dissolved gases be measured in situ in water or wastewater samples?

(A) Because they remain stable after collection
(B) Because they can change rapidly
(C) Because laboratory equipments are unreliable
(D) Because these parameters do not affect water quality
(E) Answer not known

126. COD value is generally _____ for a water sample.

(A) Greater than BOD
(B) Smaller than BOD
(C) Equal to BOD
(D) Not related
(E) Answer not known

127. The reagent used in the estimation of Cr in a water sample is

(A) $KMnO_4$
(B) Diphenyl carbazide
(C) Dithizone
(D) Persulphate
(E) Answer not known

128. What does the dissociation constant (Ka) represent?

(A) The strength of an acid in solution
(B) The temperature at which a compound dissociates
(C) The volume of acid needed to neutralise a base
(D) The solubility of a compound in water
(E) Answer not known

129. Which of the following compound present in pharmaceutical drugs can be analysed by aquous or nonaquous acid base titrations?

(A) Salicylic acid
(B) Sodium chloride
(C) Benzene
(D) Methane
(E) Answer not known

130. In the titrimetric estimation of alkalinity of water against standard acid using phenolphthalein and methyl orange as indicators, when phenolphthalein alkalinity is equal to half of methyl orange alkalinity, it implies that

(A) Both OH and CO_3^{2-} are absent
(B) Only CO_3^{2-} is present
(C) Only OH^- is present
(D) Both OH and CO_3^{2-} are present
(E) Answer not known

131. Match the following :

(a)	Precipitation gravimetry	1.	Hg_2Cl_2
(b)	Electro gravimetry	2.	Cu^{2+}
(c)	Volatilisation gravimetry	3.	C
(d)	Particulate gravimetry	4.	NH_3

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

(E) Answer not known

132. Why is Cupferron useful in liquid-liquid extraction of metal ion?

(A) It reacts only with non-metal ions

(B) It has a strong affinity for metal ions acting as a chelating agent

(C) It dissolves metals without forming complexes

(D) It only extracts metals from organic solvents

(E) Answer not known

133. 2-hydroxybenzaldehyde can be used as a precipitating agent because of

(A) Diffusion property

(B) Aromatic aldehyde

(C) It ability to form chelating ligands with amines

(D) It form isomeric phenols

(E) Answer not known

134. During gravimetric analysis, faster agitation of solution results in

(A) Increase of co-precipitation

(B) Decrease of co-precipitation

(C) Increase of post precipitation

(D) Both (B) and (C)

(E) Answer not known

135. Particle size of the precipitate is large when _____

(A) $\frac{Q-S}{S}$ is small

(B) $\frac{Q-S}{S}$ is large

(C) Q value is large

(D) Faster agitation

(E) Answer not known

136. In the titration of oxalic acid using $KMnO_4$ in acidic medium, the best indicator is _____.

(A) Phenolphthalein

(B) Starch

(C) Methyl orange

(D) $KMnO_4$

(E) Answer not known

137. N/40 solution of hydrated oxalic acid is equal to _____.

(A) 15.75 g/l of solution

(B) 3.15 g/l of solution

(C) 0.315 g/l of solution

(D) 1.575 g/l of solution

(E) Answer not known

138. The solubility of AgCl is 0.0015 g per L. It's solubility product is _____. (Molar mass of AgCl is 143.3 g/mol)

(A) 1.05×10^{-5} mol L^{-1}

(B) 1.43×10^{-5} mol L^{-1}

(C) 1.1×10^{-10} mol^2 L^{-2}

(D) 2.2×10^{-10} mol^2 L^{-2}

(E) Answer not known

139. The amount of Na_2CO_3 required to prepare 120 ml of 0.2 M solution is (Eq. wt of Na_2CO_3 is 53; Mol. wt of Na_2CO_3 is 106)

(A) 1.272 g

(B) 1,272 g

(C) 6.3 g

(D) 2.544 g

(E) Answer not known

140. In Acid-Base titrations, Phenolphthalein acts as a

(A) Weak acid

(B) Amphoteric

(C) Weak base

(D) Strong base

(E) Answer not known

141. Which one of the following is an external indicator?

(A) Potassium Permanganate

(B) Potassium Dichromate

(C) Potassium Ferrocyanide

(D) Phenolphthalein

(E) Answer not known

142. During oxidation-reduction reaction, the colour change of the indicator diphenylamine is ————————.

(A) Red violet to colourless

(B) Violet to colourless

(C) Blue to colourless

(D) Pale blue to Red

(E) Answer not known

143. Match the following :

(a)	Molarity (M)	(1)	$\frac{\text{number EWs solute}}{\text{litres solution}}$
(b)	Molality (m)	(2)	$\frac{\text{Moles solute}}{\text{litres of solution}}$
(c)	Normality (N)	(3)	$\frac{\text{Moles solute}}{\text{Kg solvent}}$
(d)	Formality (F)	(4)	$\frac{\text{number FWs solute}}{\text{litres solution}}$

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

(E) Answer not known

144. Which glassware is most commonly used to deliver titrant accurately in a titration?

(A) Graduated pipette
(B) Burette
(C) Volumetric pipette
(D) Measuring cylinder
(E) Answer not known

145. How much volume of 0.5 N NaOH required to get 60 ml of 0.25 N NaOH solution?

(A) 15
(B) 30
(C) 45
(D) 60
(E) Answer not known

146. International Day of Biological Diversity is celebrated on

(A) June 5
(B) February 2
(C) May 22
(D) August 15
(E) Answer not known

147. How are coliform bacteria related to the intestines of Warm-blooded animals?

(A) They infect the lungs and spread through blood
(B) They are parasites that harm digestion
(C) They normally occur in the intestines and help indicate fecal contamination
(D) They are present only during illness
(E) Answer not known

148. How have recent advancements improved ex situ conservation methods?

(A) By enabling the preservation of gametes and fertilization techniques
(B) By reducing the number of protected areas needed
(C) By promoting hunting to control populations
(D) By encouraging deforestation for agriculture
(E) Answer not known

149. Species that are particularly sensitive to pollutants, human interference and ecological instability or other disturbances is known as

(A) Umbrella species
(B) Indicator species
(C) Keystone species
(D) Recreational species
(E) Answer not known

150. What happens to species diversity as we move away from the equator towards the poles?

(A) It increases
(B) It remains the same
(C) It decreases
(D) It fluctuates randomly
(E) Answer not known

151. How does the illegal introduction of African Catfish (Clarias gariepinus) pose a threat to native catfish species?

(A) By serving as a food source for native catfish
(B) By competing with native catfish for food and habitat
(C) By improving breeding conditions for native catfish
(D) By reducing pollution in rivers
(E) Answer not known

152. Why do some alien species become invasive and threaten indigenous species?

(A) they always have slower reproduction rates than native species

(B) they compete for resources and can out compete native species

(C) they improve habitat conditions for native species

(D) they avoid interaction with native species

(E) Answer not known

153. Assertion [A] : Moisture stress in plants leads to reduced photosynthesis and increased root growth.

Reason [R] : Water deficit causes stomatal closure and alters hormone levels, promoting deeper root development.

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

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

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

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

(E) Answer not known

154. Which enzyme is responsible for the fixation of carbon dioxide in the Calvin cycle?

(A) ATP synthase

(B) Rubisco

(C) PEP carboxylase

(D) $NADP^+$ reductase

(E) Answer not known

155. Assertion [A] : In active absorption, water can be absorbed by plant roots even when the water potential in the root cells is higher than in the surrounding soil.

Reason [R] : Active absorption includes both osmotic and non-osmotic mechanisms, where energy from the plant is used to move water against the potential gradient.

(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] is correct

(E) Answer not known

156. During a detoxification process small polar group is either exposed to the toxicant or added to the toxicant which enhances the solubility of toxicant in water. This process is referred as _____.

(A) Phase IV Transformation

(B) Phase III Transformation

(C) Phase I Transformation

(D) Phase II Transformation

(E) Answer not known

157. Sulfation is an important method of detoxification of foreign compounds. Which of the following acts as a source of sulfate?

(A) Sulphuric acid
(B) Hydrogen sulfide
(C) Phospho adenosine phosphosulfate
(D) Cysteine
(E) Answer not known

158. The detoxification of cyanide by thiosulphate is catalysed by the enzyme _____.

(A) Rhodanase
(B) Phosphoadenosyl phosphate
(C) S-Adenosyl homocysteine
(D) Cysteine
(E) Answer not known

159. Chronic effect of Arsenic poison is _____.

(A) Tremors
(B) Decrease in psychomotor skill
(C) Myelogeneous leukemia
(D) Porphyria cutanea
(E) Answer not known

160. A child of 10 kg consume 1 L of water each day through all uses. If the toxic substance present in the consumed water is 10 mgL^{-1}. Calculate the dose of toxic substance received by child.

(A) 0.01 mg kg^{-1} day^{-1}
(B) 1.0 mg kg^{-1} day^{-1}
(C) 100 mg kg^{-1} day^{-1}
(D) 10 mg kg^{-1} day^{-1}
(E) Answer not known

161. Match the following :

(a)	Lead	1.	Type A human carcinogen
(b)	Cadmium	2.	Minamata
(c)	Arsenic	3.	Painful gastrointestinal
(d)	Mercury	4.	Itai-Itai

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

(E) Answer not known

162. Lethal dose (LD_{50}) of toxicant results in organism death.

Which of the terminology suitable for the above observation?

(A) Hyper sensitivity
(B) Hypo sensitivity
(C) Hypso sensitivity
(D) Batho sensitivity
(E) Answer not known

163. Which of the following acts as a chemical initiator of cancer in human body?

(A) Formaldehyde
(B) Benzopyrene
(C) Ethanol
(D) Methanol
(E) Answer not known

164. (i) Pure cultures of microorganism – Products of cometabolism tend to accumulate and often do not undergo further degradation

(ii) Mixed cultures of microorganism – Complete degradation

In case of cometabolism which pair is correct?

(A) (i) & (ii) are correct
(B) (i) & (ii) are incorrect
(C) (i) is correct (ii) is incorrect
(D) (ii) is correct (i) is incorrect
(E) Answer not known

165. The equilibrium between the concentration of a substance in water and that of in an animal tissue may be expressed as

(A) Eutrophication
(B) Bromagnification factor
(C) Impact factor
(D) Bioconcentration factor
(E) Answer not known

166. Which of the following is a βlactum antibiotics?

(A) griseofulvin
(B) tetracycline
(C) penicillin
(D) deoxycycline
(E) Answer not known

167. The biological treatment techniques used under the process of _____

(A) Unattached growth process
(B) Non combined process
(C) Attached growth process
(D) Not combined growth process
(E) Answer not known

168. Streptomycin is produced by which of the following microorganisms?

(A) streptomyces noursei
(B) streptomyces nodosus
(C) streptomyces fradiae
(D) streptomyces griseus
(E) Answer not known

169. Cyanocobalamine is essential for which of the following processes?

(A) fat metabolism
(B) protein synthesis
(C) human growth
(D) carbohydrate storage
(E) Answer not known

170. Match the following virus with their structure

(a)	Tobacco Mosaic Virus (TMV)	1.	Pleomorphic, Enveloped, Spherical
(b)	Potato Virus X (PVX)	2.	Non-enveloped Capsid, icosahedral
(c)	Cucumber Mosaic Virus (CMV)	3.	Non-enveloped flexons, filamentous
(d)	Tomato Spotted Wilt Virus (TSWV)	4.	Non enveloped rigid rod with helical symmetry

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

(E) Answer not known

171. Reason for creating typhoid fever in water contamination

(A) Salmonella
(B) Websiella
(C) E.coli
(D) Serratia
(E) Answer not known

172. Which of the following statement is true about botolism?

(i) Foodborne botulism is caused by improper processed food

(ii) Botolism is a waterborne disease

(A) (i) is correct

(B) (ii) is correct

(C) (i) and (ii) is correct

(D) (i) and (ii) is incorrect

(E) Answer not known

173. In the bacterial cell wall process that is blocked by _____

(A) antibiotic penicillin

(B) antibiotic amoxicillin

(C) antibiotic ampicillin

(D) antibiotic macrolides

(E) Answer not known

174. A bio fertilizer is a substance which contain living micro organisms which is used for _____

(i) Its promotes growth

(ii) It is unsustainability health of soil

(iii) It is reduces uses of chemical fertilization

(iv) It is not applied to seeds

(A) (i) and (ii) are correct

(B) (ii) and (iii) are correct

(C) (iii) and (iv) are correct

(D) (i) and (iii) are correct

(E) Answer not known

175. Assertion (A) : Biofertilizers are being recommended in place of chemical fertilizers.

Reason (R) : Biofertilizers are the formulations of living micro organisms capable of fixing atmospheric nitrogen and they do not cause health hazards and pollution in soil and they also bring less cost production

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

(B) Both (A) and (R) are false.

(C) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(D) (A) is false but (R) is true

(E) Answer not known

176. Solubilization of unavailable form of phosphorus to available form of phosphorus is done by _____

(A) trichoderma viride

(B) aspergillus niger

(C) nostoc

(D) anabena

(E) Answer not known

177. The total count of E.coli in human digestive system is

(A) 100

(B) 20

(C) 10

(D) 18

(E) Answer not known

178. The primary mechanisms of action of tetanospasmin is

(A) stimulation of acetylcholine release at neuromuscular junction

(B) blocking the release of inhibitory neurotransmitters in the spinal cord

(C) inhibition of acetylcholinesterase

(D) destruction of myelin sheaths in peripheral nerves

(E) Answer not known

179. Assertion (A) : Mycobacterium is rod-shaped and acid fast. The bacterium infects the respiratory tract.

Reason (R) : On being phagocytosed by macrophages the bacteria are enclosed into small and hard tubercles which are the characteristic feature of the disease.

(A) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(B) (A) is true but (R) is false

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

(D) Both (A) and (R) are false

(E) Answer not known

180. The genus of bacterium which is the causative agents of cholera

(A) mycobacterium

(B) salmonella

(C) terponema

(D) vibrio

(E) Answer not known

181. Adopted aquatic organisms are

(A) More sensitive to metals

(B) More tolerant after pre exposure

(C) Unable to survive

(D) Same as unacclimated organisms

(E) Answer not known

182. When did oil pollution become a major public concern for Marine Environment?

(A) After World War I

(B) In the 1980s after the Torrey Canyon accident

(C) In the 1990s after the Exxon Valdez spill

(D) During World War II when ships sank

(E) Answer not known

183. Ballast water is a major pathway for the introduction of

(A) Marine oil pollution

(B) Non indigenous marine species

(C) Heavy metal pollution

(D) Microplastic pollution

(E) Answer not known

184. List the heavy metals which are naturally present in seawater at very low concentration.

(A) Gold, Barium and Selenium
(B) Arsenic, Lead and Cadmium
(C) Sodium, Potassium and Calcium
(D) Silver, Aluminium and Antimony
(E) Answer not known

185. Which IUCN category is primarily designated for areas where the main goal is wilderness protection with minimal human interference?

(A) Category II
(B) Category Ib
(C) Category IV
(D) Category V
(E) Answer not known

186. Only one of the following does not match direct consequence of storm surge?

(A) Inland flooding
(B) Coastal erosion
(C) Ground shaking
(D) Destruction of infrastructure
(E) Answer not known

187. Which of the following disasters are generally not predictable and often occur without early warning?

(A) Cyclones
(B) Tornadoes
(C) Tsunamis
(D) Storms
(E) Answer not known

188. In the Gulf of Mannar marine Biosphere Reserve, what is the current management status of the National Park?

(A) No use zone
(B) Buffer zone
(C) Open access zone
(D) Commercial fishery zone
(E) Answer not known

189. Zooxanthellae found in hermatypic corals belongs to which genus?

(A) Dinophysis
(B) Symbiodinium
(C) Noctiluca
(D) Gymnodinium
(E) Answer not known

190. Why is an epibenthic sled preferred over a plankton net in benthic studies?

(A) Collects large pelagic fish
(B) Samples animals and sediments on or above seabed
(C) Measures seawater chemicals
(D) Catches fast midwater swimmers
(E) Answer not known

191. Why is the disphotic zone called the twilight zone?

(A) No light at all
(B) There is some light, but it is not sufficient for photosynthesis
(C) Highly photosynthesis occur here
(D) This is above to the surface
(E) Answer not known

192. In modern oceanography, the salinity of sea water sample is expressed as a ratio of its conductivity compared to that of standard sea water and is typically expressed as

(A) $S = 25 \times$ (conductivity of sample/conductivity of standard seawater)

(B) $S = 50 \times$ (conductivity of sample/conductivity of standard sea water)

(C) $S = 35 \times$ (conductivity of sample/conductivity of standard sea water)

(D) $S = 350 \times$ (conductivity of sample/conductivity of standard sea water)

(E) Answer not known

193. The subsequent category of marine vertibrates encompasses both honey and cartilaginous species?

(A) Molluscs

(B) Echinoderms

(C) Pisces

(D) Cnidarians

(E) Answer not known

194. Assertion [A] : Chemosynthetic bacteria are found only in deep sea environments

Reason [R] : They require complete darkness to survive.

(A) Both [A] and [R] are true, [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) Both [A] and [R] are false

(E) Answer not known

195. Why are marine benthic macrophytes typically found in sheltered regions?

(A) They rely on high wave action for pollination

(B) Their roots require rocky substrates to anchor

(C) Accumulated sediments in sheltered areas support root development

(D) Strong currents enhance their photosynthetic efficiency

(E) Answer not known

196. Which of the following design(s) is/are advocated when experimental units are homogenous?

(A) CRD only

(B) RCBD only

(C) Either CRD or RCBD

(D) Neither CRD nor RCBD

(E) Answer not known

197. A CRD – Design is an experimental design where treatments are assigned to experimental units _____.

(A) Uniformly and orderly
(B) Randomly
(C) Not equal chance of allotment
(D) Not fitted
(E) Answer not known

198. In which type of experiment, is a CRD most useful?

(A) Experiments with large number of factors
(B) Experiments with large amount of heterogeneity
(C) Experiments with small number of treatments and homogeneous
(D) Experiments where bias is introduced
(E) Answer not known

199. An ANOVA test is performed under the assumption of _____.

(A) Homogeneity of variance
(B) Heterogeneity of variance
(C) Homogeneity of means
(D) Heterogeneity of means
(E) Answer not known

200. In case of simple random sampling with replacement, the sample mean

(A) under estimates the population mean

(B) is an unbiased estimator of the population mean

(C) is a consistent estimator

(D) over estimate the population mean

(E) Answer not known
