

**COMBINED TECHNICAL SERVICES EXAMINATION
(NON-INTERVIEW POST)**

COMPUTER BASED TEST

DATE OF EXAM: 07.08.2025 FN

**PAPER – II – ENVIRONMENTAL SCIENCE,
BIOLOGY AND CHEMISTRY**

(Code-557)

1. WBCSD denoted

- ☒ (A) World Business Council of Sustainable Development
- (B) World Biodiversity Conservation of Sustainable Development
- (C) World Business Conservation of Sustainable Development
- (D) World Biodiversity Council of Sustainable Development
- (E) Answer not known

2. Identify the mismatch

- (i) Forests – A renewable resources
- (ii) Fossil fuels – A renewable resources
- (iii) Fish – A renewable resources
- (iv) Water – A renewable resources
- ☒ (A) (i)
- (B) (iii)
- (C) (iv)
- ☒ (D) (ii)
- (E) Answer not known

3. Diatomic oxygen is produced by Algae is a result of

- ☒ (A) It's photosynthesis of water
- (B) Photosynthesis of CO_2
- (C) Oxidation of CO_2
- (D) Photoreduction of H_2O
- (E) Answer not known

4. The Brundtland Commission report is concerned with :
- (A) Water conservation
 - (B) Air pollution
 - ☒ (C) Sustainable Development
 - (D) Environmental protection
 - (E) Answer not known
5. Match correctly The energy sources with their corresponding :
- | | |
|---|-------------------------|
| (a) KVIC | 1. Hydroelectric energy |
| (b) Kalpakkam | 2. Wind Energy |
| (c) Bhakra Nangal | 3. Biogas |
| ☒ (d) Muppandal | 4. Nuclear Energy |
-
- | | (a) | (b) | (c) | (d) |
|-----|------------------|-----|-----|-----|
| (A) | 2 | 3 | 1 | 4 |
| (B) | 1 | 4 | 3 | 2 |
| (C) | 3 | 1 | 4 | 2 |
| (D) | 3 | 4 | 1 | 2 |
| (E) | Answer not known | | | |
6. The energy which can reduce global warming is
- ☒ (A) Geothermal energy
 - (B) Coal
 - (C) Petroleum
 - (D) Natural Gas
 - (E) Answer not known

7. Government provides a scheme to reduce the expenditure for the plantation of trees by offering land and this is known as
- (A) Coppice system
 - ☒ (B) Taungya system
 - (C) Rotation of cultivation
 - (D) Mulching
 - (E) Answer not known
8. Choose the correct order of wind energy producing states in India.
- (A) Tamil Nadu > Andhra Pradesh > Gujarat > Maharashtra
 - (B) Andhra Pradesh > Maharashtra > Gujarat > Tamil Nadu
 - ☒ (C) Tamil Nadu > Gujarat > Maharashtra > Andhra Pradesh
 - (D) Maharashtra > Tamil Nadu > Gujarat > Andhra Pradesh
 - (E) Answer not known
9. How many Sustainable Development Goals (SDGs) does the 2030 Agenda for sustainable development have?
- (A) 5
 - (B) 10
 - (C) 14
 - ☒ (D) 17
 - (E) Answer not known
10. Phytoplankton living mainly in the region of
- (A) Land
 - ☒ (B) Ocean
 - (C) Land-Ocean interface
 - (D) Soil
 - (E) Answer not known

11. Blood sucking lice and leeches are the characteristic feature of _____ parasites.
- (A) Endoparasites
 - (B) Hyperparasites
 - (C) Zooparasites
 - ☒ (D) Ectoparasites
 - (E) Answer not known
12. The largest ecosystem of the world is
- (A) Grassland Ecosystem
 - (B) Great Lakes Ecosystem
 - ☒ (C) Oceans Ecosystem
 - (D) Forests Ecosystem
 - (E) Answer not known
13. Specific heat is defined as the
- (i) Highest heat of fusion and heat of evaporation
 - (ii) Number of calories necessary to raise one gram of water in one degree centigrade
 - (iii) Highest heat of evaporation only
 - (iv) Number of calories necessary to raise one gram of water in 100 °C
- ☒ (A) (ii) only
 - (B) (iii) and (ii) only
 - (C) (iii) only
 - (D) (iv) only
 - (E) Answer not known

14. Which one of the following is the most appropriate term for producer?
- (A) First order consumer
 - (B) Top consumers
 - ☒ (C) Transducers
 - (D) Saprotrophs
 - (E) Answer not known
15. The current CO₂ content in the atmospheric air is about
- ☒ (A) 0.042%
 - (B) 0.420%
 - (C) 0.032%
 - (D) 0.052%
 - (E) Answer not known
16. Which of the following best describes denitrification?
- (A) The conversion of ammonia to Nitrates
 - ☒ (B) The conservation of nitrates to Nitrogen gas
 - (C) The conservation of Nitrogen to ammonia
 - (D) The conservation of Nitrites to ammonia
 - (E) Answer not known

17. Which of the following is incorrectly paired?

- 1. Xerosere – Dry habitat
- 2. Psammosere – Salty habitat
- 3. Halosere – Sandy habitat
- 4. Lithosere – Rock surface

- ☒ (A) 2 and 3
- (B) 1 and 2
- (C) 2 and 4
- (D) 1 and 3
- (E) Answer not known

18. Which level of the food chain include millipede, woodlice, drug flies and slugs that feed on the dead (or) decaying plant and animal matter?

- (A) Carnivores
- ☒ (B) Detritivores
- (C) Omnivores
- (D) Herbivores
- (E) Answer not known

19. This is true about the secondary succession

- (A) Follows primary succession
- ☒ (B) Takes place on a deforested site
- (C) Is similar to primary succession except that it has a relatively slower pace
- (D) Begins on a bare rock
- (E) Answer not known

20. Pollination is a type of
- ~~(A)~~ Mutualism (B) Commensalism
 (C) Amensalism (D) Competition
 (E) Answer not known
21. Which among the following is not a major type of biogeochemical cycle?
- (a) Carbon cycle
 (b) Oxygen cycle
~~(c)~~ Phosphorous cycle
 (d) Hydrological cycle
- (A) (a) and (b) (B) (c) only
~~(C)~~ (d) only (D) (b) and (c)
 (E) Answer not known
22. Assertion [A] : An ecosystem is the basic functional unit of ecology.
 Reason [R] : It includes both organisms and their abiotic environment. No organisms can exist without the environment
- (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, but [R] is true
 (D) Both [A] and [R] are true and [R] is not the correct explanation of [A]
 (E) Answer not known

23. Choose the correct matches of the regions of atmosphere

- 1. Troposphere – 0 – 11 km
- 2. Stratosphere – 11 – 50 km
- 3. Mesosphere – 90 – 500 km
- 4. Thermosphere – 50 – 90 km

- (A) 1 only is correct
- ~~(B)~~ 1 and 2 are correct
- (C) 2 and 3 are correct
- (D) All are correct
- (E) Answer not known

24. In which layer of the atmosphere the ozone layer is located?

- (a) Troposphere
- (b) Stratosphere
- (c) Mesosphere
- (d) Thermosphere

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

28. Assertion [A] : Oxygen originates by the process of photosynthesis
Reason [R] : Oxygen is responsible for the formation of ozone.
- (A) [A] is true, [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
29. Which of the following statements about the ionosphere is correct?
- I. It is the uppermost layer of the atmosphere.
II. The molecules and atoms of N_2 and O_2 in this layer absorb some of the solar radiation and become ionized.
III. This layer is responsible for reflecting back the radio wave transmitted from the earth.
- (A) I and II
☒ (C) II and III
(E) Answer not known
- (B) I and III
(D) I, II and III

30. Assertion [A] : The movement of lithospheric plates is driven by forces on the Earth's Surface.

Reason [R] : Molten magma inside the Earth causes the Lithospheric plates to move.

- (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

31. Assertion [A] : Major damage to ozone layer occurs in winter at polar stratosphere.

Reason [R] : In winter, tiny ice particles are formed that acts as catalyst to convert chlorine into ozone destroying form, chlorine monoxide.

- ☒ (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, [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

32. The first step indicate in the development of dose-response relationship curve :

- (a) Toxicological end point
 - ☒ (b) End point
 - (c) Start point
 - (d) Intermediate point
 - (A) (a) and (c)
 - (C) (b) only
 - (E) Answer not known
- ☒ (B) (a) only
(D) (d) only

33. Match the following :

Compound	Effect
(a) Estrogens	1. Brain asymmetry
(b) DDE	2. Sex Reversal
(c) PCB	3. Imposex
(d) Tributyltin	4. Metabolic Masculinization (Masculinization)

- | | | | | |
|--------------------------------------|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| ☒ (A) | 2 | 4 | 1 | 3 |
| (B) | 4 | 1 | 2 | 3 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 2 | 3 | 1 | 4 |
| (E) | Answer not known | | | |

34. In the context of toxicology, what does the NOAEL represent?
- (a) The lowest dose at which adverse effects are observed
 - (b) The highest dose at which no adverse effects are observed
 - (c) The dose that causes death in 50% of the population
 - (d) The dose that causes a specific toxic effect in a small percentage of the population
- (A) (b) only (B) (c) only
(C) (d) only (D) (a) and (b)
(E) Answer not known
35. The most commonly used pesticide Toxaphene is classified as a
- (a) Carbamate Pesticide
 - (b) Organophosphate Pesticide
 - (c) Organochlorine Pesticide
 - (d) Antibiotic
- (A) (a) and (b) (B) (c) and (d)
(C) (c) only (D) (d) only
(E) Answer not known
36. The Exchangeable Sodium Percentage (ESP) value of sodic soil in India and the United States is
- (A) < 10 (B) 10 – 15
 - (C) > 15 (D) > 25
 - (E) Answer not known

37. Which one of the following is not an oxidative form of arsenic?

- ☒ (A) +2 (B) -3
(C) +3 (D) +5
(E) Answer not known

38. Sludge bulking is controlled by

- ☒ (A) Chlorination (B) Coagulation
(C) Aeration (D) Denitrification
(E) Answer not known

39. The organic material of the solid waste will decompose

- (a) By the flow of water
(b) By the soil particles
(c) By the action of microorganisms
(d) By oxidation
(A) (b) and (c)
(B) (d) and (a)
(C) (d) only
☒ (D) (c) only
(E) Answer not known

40. The pH and Electrical Conductivity (EC) values of saline soils in India are

- ☒ (A) < 8.2 and $\geq 4 \text{ dSm}^{-1}$
(B) < 8.5 and $\geq 3 \text{ dSm}^{-1}$
(C) > 8.2 and $\geq 2 \text{ dSm}^{-1}$
(D) > 8.5 and $\geq 1 \text{ dSm}^{-1}$
(E) Answer not known

41. Ammonium sulphate is used for which type of cropping Land?

- (A) Acidic (B) Amphoteric
(C) Neutral ☒ (D) Alkaline
(E) Answer not known

42. Match the following.

- | | |
|-------------|---------------|
| (a) Mercury | 1. Itai-Itai |
| (b) Arsenic | 2. Minamata |
| (c) Cadmium | 3. Lead colic |
| (d) Lead | 4. Black foot |

- | | (a) | (b) | (c) | (d) |
|--------------------------------------|------------------|-----|-----|-----|
| (A) | 2 | 3 | 4 | 1 |
| ☒ (B) | 2 | 4 | 1 | 3 |
| (C) | 2 | 1 | 4 | 3 |
| (D) | 2 | 1 | 3 | 4 |
| (E) | Answer not known | | | |

43. Identify the sources of soil pollution
- (i) Industrial effluents
 - (ii) Eutrophication
 - (iii) Unscientific disposal of nuclear waste
 - (iv) Offshore oil drilling
 - (v) Improper management of septic systems
- (A) (i), (ii) and (iii) (B) (ii), (iii) and (iv)
~~(C)~~ (i), (iii) and (v) (D) (ii), (iv) and (v)
(E) Answer not known
44. Matured soil which are arranged in a series of zones is
- (A) Soil zones (B) Soil layers
~~(C)~~ Soil horizons (D) Soil benches
(E) Answer not known
45. The major chronic effect of noise is
- (A) Suppression of immune system
(B) Increase of blood sugar level
~~(C)~~ Enhancement of sensitivity of the body to adrenalin
(D) Noise induced hearing loss
(E) Answer not known
46. The liquid waste from baths and kitchen is called
- ~~(A)~~ Sullage (B) Storm waste
(C) Run off (D) Domestic sewage
(E) Answer not known

47. The colour of water is measured on the
- (A) turbidity scale
 - (B) threshold scale
 - ☒ (C) Platinum-Cobalt scale
 - (D) Calcium Carbonate scale
 - (E) Answer not known
48. 'Methemoglobinemia is caused when drinking water contains high levels of _____.
- (A) Fluoride
 - (B) Iron
 - ☒ (C) Nitrite
 - (D) Nitrate
 - (E) Answer not known
49. Ground water is especially prone to excessive hardness due to
- (A) Calcium and sodium ions
 - ☒ (B) Calcium and magnesium ions
 - (C) Sodium and magnesium ions
 - (D) Potassium and calcium ions
 - (E) Answer not known

50. What is the permissible ambient noise level in a residential area during night time?
- (a) 40 dB
 - (b) 45 dB
 - (c) 50 dB
 - (d) 55 dB
 - (A) (a) and (c)
 - ~~(B)~~ (a) and (b)
 - (C) (a) only
 - (D) (b) only
 - (E) Answer not known
51. Which of the following is NOT a secondary waste water treatment process?
- ~~(A)~~ Screening
 - (B) Activated lagoons
 - (C) Trickling filters
 - (D) Anaerobic digesters
 - (E) Answer not known

52. Assertion [A] : Exposure of noise pollution adversely affects the physiological health of a person

Reason [R]: Exposure to noise pollution adversely affects the psychological health of a person

- (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

53. What type of noise can be abated by providing lining on walls and ceiling with sound absorbing material?

- (A) Source noise
- ☒ (B) Reflection noise
- (C) Structural noise
- (D) Direct air-borne noise
- (E) Answer not known

54. Which of the following statements are true about noise pollution.
- (i) Moderate vibration lead to cyanosis (blue colouration of fingers)
 - (ii) Frequency noise of 50 to 60 dBA affects higher centres of brain.
 - (iii) Noise pollution causes both pathological and psychological disorder.
- (A) (i) only
 - (B) (i) and (ii) only
 - (C) (iii) only
 - ~~(D)~~ (i), (ii), (iii) only
 - (E) Answer not known
55. What type of reaction is responsible for the formation of secondary pollutants?
- (a) Combustion
 - (b) Precipitation
 - (c) Photochemical reactions
 - (d) Condensation
- (A) (a) and (b)
 - ~~(B)~~ (c) only
 - (C) (d) only
 - (D) (a) only
 - (E) Answer not known

56. What is the unit used to measure the quantity of ozone content in the atmosphere?
- (a) Einstein Unit
 - (b) Poise
 - (c) Dobson Unit
 - (d) Becquerel
 - (A) (a) and (b)
 - ☒ (B) (c) only
 - (C) (d) only
 - (D) (b) and (d)
 - (E) Answer not known
57. When a nuclear power plant leaks radiation into the atmosphere, It causes _____
- (A) Pollution
 - (B) Bioaccumulation
 - ☒ (C) Contamination
 - (D) Climate change
 - (E) Answer not known

58. Match the following

- | | |
|-------------|---|
| (a) Aerosol | 1. Denotes high level of water droplets |
| (b) Fog | 2. Liquid particulates |
| (c) Mist | 3. Colloidal-sized atmospheric particles |
| (d) Smoke | 4. Particulates from incomplete fuel combustion |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 3 | 1 | 2 | 4 |
| (B) | 1 | 2 | 3 | 4 |
| (C) | 3 | 4 | 2 | 1 |
| (D) | 4 | 3 | 2 | 1 |
| (E) | Answer not known | | | |

59. Air Quality Index (AQI) is represented in _____.

- (A) Unit of ppm
(B) Percentage (%)
(C) Unit of $\mu\text{g}/\text{m}^3$ (microgram per cubic meter)
~~(D)~~ Numbers
(E) Answer not known

60. Match air pollution incident with their corresponding pollutant

- | | |
|---------------|--------------------|
| (a) Seveso | 1. MIC |
| (b) Bhopal | 2. SO ₂ |
| (c) London | 3. TCDD |
| (d) Chernobyl | 4. Cesium |

- | | (a) | (b) | (c) | (d) |
|--------------------------------------|------------------|-----|-----|-----|
| (A) | 4 | 1 | 2 | 3 |
| (B) | 4 | 2 | 1 | 3 |
| ☒ (C) | 3 | 1 | 2 | 4 |
| (D) | 3 | 4 | 2 | 1 |
| (E) | Answer not known | | | |

61. Which of the following factor is not to be considered for taking decisions based on assessment of significance of an impact?

- (A) Magnitude
- (B) Prevalence
- (C) Duration and frequency
- ☒ (D) Unaccountability
- (E) Answer not known

62. The process of quantifying energy and raw material requirements, atmospheric emissions, water borne emissions solid wastes and other releases for the entire life cycle of a product, process or activity is known as
- (A) Life Cycle Impact Assessment
 - (B) Life Cycle Interpretation
 - ☒ (C) Life Cycle Inventory
 - (D) Life Cycle Innovation
 - (E) Answer not known
63. Which type of ISO standards need for Life Cycle Assessment?
- (A) ISO 14000
 - (B) ISO 14040
 - (C) ISO 14044
 - ☒ (D) Both (B) and (C)
 - (E) Answer not known
64. How many environmental parameters/factors used in Environment evaluation system method in EIA?
- (A) 72
 - (B) 75
 - ☒ (C) 78
 - (D) 82
 - (E) Answer not known

65. Which of the following is incorrectly paired pertaining to the concept of environmental management system.
- (A) P – Planning
 - ☒ (B) D – Demonstration
 - (C) C – Performance Evaluation
 - (D) A – Improvement
 - (E) Answer not known
66. Assertion (A) : Benzene is a known leukemogenic agent and is associated with the development of acute myeloid leukemia (AML).
- Reason (R) : Toluene increases benzenes leukemogenic effects by converting into ferric metabolites that damage bone marrow.
- (A) (A) and (R) are true (R) is correct explanation of (A)
 - (B) (A) is True (R) is wrong
 - (C) (A) is False (R) is true
 - ☒ (D) (A) and (R) are true but (R) is not the correct explanation of (A)
 - (E) Answer not known
67. Which of the following personal protective equipment is tested for performance at the Central Labour Institute, Mumbai?
- (A) Fire extinguishers
 - (B) Safety signs
 - ☒ (C) Canisters – Non Respiratory equipment
 - (D) Ventilation system
 - (E) Answer not known

68. Match the life cycle assessment types

- | | |
|----------------------|--|
| (a) Cradle to Grave | 1. From raw material to extraction to factory gate |
| (b) Cradle to Gate | 2. From raw material to final disposal |
| (c) Cradle to Cradle | 3. From factory gate to factory gate |
| (d) Gate to Gate | 4. Closed loop system where waste is reused as input |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 2 | 1 | 4 | 3 |
| (B) | 1 | 2 | 4 | 3 |
| (C) | 2 | 3 | 1 | 4 |
| (D) | 1 | 2 | 3 | 4 |
| (E) | Answer not known | | | |

69. In EIA, while assessing socio economic impacts, many factors are evaluated. Among them, which of the following is a demographic factor?

- (A) Public awareness
- (B) Public utilities
- ~~(C)~~ Income and Education
- (D) Land use pattern
- (E) Answer not known

70. In EIA, if during the screening phase, a project is found not to require EIA clearance, it means :
- (A) The project has passed detailed environmental prediction
 - ☒ (B) The project falls outside the categories or thresholds defined in the EIA notification and hence does not legally require Environmental Clearance
 - (C) The project is free from any environmental regulation
 - (D) The project has been rejected by the regulatory authority
 - (E) Answer not known
71. Which option best describes the jurisdiction of the National Green Tribunal (NGT)?
- (A) Can decide any Civil or Property dispute if environment is involved
 - (B) Hears only air and water pollution cases under IPC
 - ☒ (C) NGT has jurisdiction over Civil cases involving substantial environmental questions arising from the implementation of specific environmental laws
 - (D) Can decide constitutional issues under articles 32 and 226
 - (E) Answer not known

72. As per Schedule VI of the Environment (Protection) Rules, 1986 what is the correct arsenic (AS) discharge limit for various water bodies?

- (A) Max 0.1 mg/l for inland water; 0.5 mg/l for marine discharge
- ~~(B)~~ Max 0.2 mg/l for inland water, sewers, irrigation kind and marine areas
- (C) Upto 1.0 mg/l in sewers; stricter for other types
- (D) Limit applies only to inland water; other not specified
- (E) Answer not known

73. Match the List I with List II pertaining to the National Ambient Air Quality Standards (NAAQS) 2009 :

List I – Pollutants

List II – Concentration in Ambient Air, (Industrial, Residential, Rural and other areas)

- | | |
|--|------------------------------------|
| (a) Sulphur Dioxide (SO ₂) | 1. 40 µg/m ³ (Annual) |
| (b) Nitrogen Dioxide (NO ₂) | 2. 60 µg/m ³ (24 hours) |
| (c) Carbon Monoxide (CO) | 3. 50 µg/m ³ (Annual) |
| (d) Particulate matter PM _{2.5} | 4. 0.2 mg/m ³ (8 hours) |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 3 | 1 | 4 | 2 |
| (B) | 2 | 3 | 4 | 1 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 4 | 1 | 2 | 3 |
| (E) | Answer not known | | | |

74. Choose the right matches in Indian constitution to protect environment :

- | | |
|--------------------|---|
| 1. Article 48 A | – Protect the Environment Forests and wild life |
| 2. Article 51 A(g) | – Fundamental right of Industrial development |
| 3. Article 21 | – Protection of life and personal liberty |
| 4. Article 51 A(b) | – Liberty of life |

(A) 1 and 2 are correct

(B) 3 and 4 are correct

~~(C)~~ 1 and 3 are correct

(D) 2 and 3 are correct

(E) Answer not known

75. Which of the following statements regarding environmental protection in the Indian Constitution are correct?
1. Article 48-A directs the state to protect and improve the environment and safeguard forests and wildlife
 2. Article 48-A is included under fundamental duties of citizens
 3. Article 51-A(g) imposes a duty on every citizen to protect the natural environment
 4. Both Article 48-A and 51-A(g) were added by the 42nd constitutional Amendment
- (A) 1, 2 and 3 only
(B) 1, 3 and 4 only
(C) 2, 3 and 4 only
(D) 1 and 2 only
(E) Answer not known
76. Which of the following statements about the Air Act and its 1987 Amendment is correct?
- (A) The Air Act was enacted to address water pollution in India
(B) The 1987 Amendment introduced the power of close down default industries and included noise pollution within the Act
(C) The Air Act requires only Central Govt. approval for industrial emissions
(D) The Act doesnot allow citizens to take legal action against polluters
(E) Answer not known

77. Assertion [A] : The wildlife (protection) Act, 1972 prohibits the harming of species listed in schedule I throughout India

Reason [R] : Species listed under Schedule V of the Act are offered the highest level of protection and cannot be hunted under any circumstances.

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

78. Assertion (A) : A recycler can store e-waste for upto 365 days without approval from the State Pollution Control Board (SPCB)

Reason (R) : The e-waste management rules allow unrestricted storage for research and development activities

- (A) (A) and (R) are true, (R) is correct explanation of (A)
- (B) (A) is true (R) is false
- (C) (A) is false (R) is correct
- ☒ (D) (A) and (R) are false
- (E) Answer not known

79. Choose the correct statement(s) pertaining to the National Green Tribunal Act 2010.

Statement 1 : A person who is or has been, a judge of the High Court or Chief Justice of a District Court.

Statement 2 : Provided that a person who is or has been a judge of the sessions court shall also be qualified to be appointed as a Judicial Member.

Statement 3 : The Tribunal shall consists of not less than ten but subject to maximum of twenty full time expert members, as the Central Government may, from time to time, notify.

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

(B) Both statement(s) 2 and 3 are correct

(C) Only statement 2 is correct

~~(D)~~ Only statement 3 is correct

(E) Answer not known

80. Choose the correct pair in the following options regarding the sections and their role in the Biological Diversity Act 2002.

(A) Section 28 – Establishment of State Biodiversity Board

~~(B)~~ Section 38 – Power of Central Government to notify threatened species

(C) Section 39 – Constitution of Biodiversity Management Committee

(D) Section 40 – Grants of Local Biodiversity fund

(E) Answer not known

81. Waste sharps can be treated by dry heat sterilization at a temperature not less than _____.
- (A) 100 °C
 - (B) 125 °C
 - (C) 150 °C
 - ☒ (D) 185 °C
 - (E) Answer not known
82. Repairing of used electrical and electronic equipment as listed in Schedule I for extending its working life for its originally intended use and selling the same in the market or returning to owner is called as
- (A) Recycling
 - (B) Reusing
 - ☒ (C) Refurbishment
 - (D) Renovation
 - (E) Answer not known

83. Match the provision with their respective section in Water Act?

- | | |
|------------------|--|
| (a) Section 21 | 1. Power to give direction for closure of industry |
| (b) Section 23 | 2. Power to take samples |
| (c) Section 33 A | 3. Appeal to National Green Tribunal |
| (d) Section 33 B | 4. Power to enter any industry |

(a) (b) (c) (d)

(A) 3 1 4 2

(B) 2 1 4 3

(C) 4 2 1 3

~~(D)~~ 2 4 1 3

(E) Answer not known

84. In which appraisal committee to decide whether a project should be under B1 or B2 category?

(A) Expert Appraisal Committee (EAC)

~~(B)~~ State Expert Appraisal Committee (SEAC)

(C) District Expert Appraisal Committee (DEAC)

(D) District Environmental Impact Assessment Authority (DEIAA)

(E) Answer not known

85. Match List I with List II pertaining to the validity of environmental clearance in various projects

List I		List II	
(a)	River Valley Project	1.	5 years minimum period
(b)	Mining	2.	Minimum validity period
(c)	Quarrying	3.	10 years
(d)	Area Development Project	4.	30 years

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 4 | 3 | 2 | 1 |
| (B) | 3 | 4 | 1 | 2 |
| (C) | 2 | 3 | 4 | 1 |
| (D) | 4 | 1 | 3 | 2 |
| (E) | Answer not known | | | |

86. In potentiometric titrations, at the end point, the rate of change of the potential is _____.

- (A) Moderate
(B) Low
(C) Minimum
~~(D) Maximum~~
(E) Answer not known

87. Specific conductance can be written as (If cell constant is one)

(A) $k = \frac{1}{R} \text{ohm}^{-1} \text{cm}^{-1}$

(B) $k = \frac{1}{R} \times l \text{ohm}^{-1} \text{cm}^{-1}$

(C) $k = \frac{l}{a} \text{ohm}^{-1} \text{cm}^{-1}$

☒ (D) $k = \frac{l}{a} \times R \text{ohm}^{-1} \text{cm}^{-1}$

(E) Answer not known

88. Measurement of the intensity of the scattered light as a function of the concentration of the dispersed phase forms the basis of ———.

☒ (A) Turbidimetric analysis

(B) Nephelometric analysis

(C) Surface analysis

(D) Qualitative analysis

(E) Answer not known

89. Which of the following is the more sensitive turbidimeter?

(A) Parr turbidimeter

(B) Duboscq colorimeter

☒ (C) Du Pont model 430

(D) Spectrophotometer ER 430

(E) Answer not known

90. In conductometry, the electrical conductivity is entirely due to the movement of
- (A) Electrons
 - (B) Protons
 - (C) Neutrons
 - ☒ (D) Ions
 - (E) Answer not known
91. Which calculation is not necessary when determining the elemental composition from the raw data?
- ☒ (A) Calculating the retention time of each element
 - (B) Correcting for blank values
 - (C) Calculating the weight percentage of each element
 - (D) Calibrating the instruments with standards
 - (E) Answer not known
92. In liquid membrane electrode, the liquid ion exchanger is held in a porous disc of _____.
- (A) Solid material
 - ☒ (B) Semi-permeable membrane
 - (C) Hydrophobic material
 - (D) Hydrophilic material
 - (E) Answer not known

93. Stack monitoring is applicable to
- ☒ (A) Industrial Air Pollution
 - (B) Industrial Water Pollution
 - (C) Industrial Noise Pollution
 - (D) Industrial Labour Problems
 - (E) Answer not known
94. Which of the following is used in the FT-IR spectrophotometer, to process the energy sent to the sample?
- ☒ (A) Sample cell
 - ☒ (B) Interferometer
 - (C) Moving mirror
 - (D) Diffraction grating
 - (E) Answer not known
95. Which among the following gases have ability to be repelled by magnetic fields?
- (A) Oxygen
 - ☒ (B) Nitrogen
 - (C) Nitrogen dioxide
 - (D) Nitric oxide
 - (E) Answer not known

96. In Gas chromatography, synthetic zeolites are called as
- ☒ (A) Molecular Sieve
 - (B) Molecular ion
 - (C) Polymer
 - (D) Co-polymer
 - (E) Answer not known
97. A process in which the solvent displaces the solute molecules that are adsorbed over the surface of adsorbent is known as
- (A) Separation
 - (B) Elimination
 - (C) Displacement
 - ☒ (D) Elution
 - (E) Answer not known
98. In which chromatographic method, stationary phase is solid and the mobile phase is liquid?
1. Paper chromatography
 2. Thin layer chromatography
 3. Column chromatography
 4. High performance liquid chromatography
- (A) 1 and 2 only
 - (B) 2 and 3 only
 - (C) 1 and 4 only
 - ☒ (D) 1,2,3 and 4
 - (E) Answer not known

99. The locating agent used to identify carbohydrate is

- (A) Iodine Vapour
- (B) Ninhydrin
- ~~(C)~~ Alpha-naphthol
- (D) Aniline
- (E) Answer not known

100. The retention factor (R_f) value is defined as

- ~~(A)~~ $R_f \text{ value} = \frac{\text{The distance moved by pure substance}}{\text{The distance moved by the solvent}}$
- (B) $R_f \text{ value} = \frac{\text{The distance moved by the solvent}}{\text{The distance moved by pure substance}}$
- (C) $R_f \text{ value} = \frac{\text{The length of the paper}}{\text{The mass of the substance}}$
- (D) $R_f \text{ value} = \text{The distance between solvent front and paper length}$
- (E) Answer not known

101. Select the chromatography, which is used to diagnosis the inborn errors of metabolism.

- (A) Column chromatography
- (B) Thin layer chromatography
- (C) Gas chromatography
- ~~(D)~~ Gas chromatography – Mass spectrometry
- (E) Answer not known

102. Which force is responsible for the separation of the components in descending paper chromatography?
- (A) Gravitational force
 - (B) Magnetic force
 - (C) Centrifugal force
 - ☒ (D) Capillary action
 - (E) Answer not known
103. If the two analytes present in the sample are of similar chemically choose the suitable chromatographic technique for separation.
- (A) Partition Chromatography
 - (B) Adsorption Chromatography
 - ☒ (C) Chiral Chromatography
 - (D) Gel Chromatography
 - (E) Answer not known
104. R-bands originates due to
- (A) conjugated π system
 - ☒ (B) $n - \pi^*$ transition single within a chromophore such as $-C=O$
 - (C) $\pi - \pi^*$ transition in aromatic (or) heteroaromatic compound
 - (D) Electronic transitions in the benzenoid systems
 - (E) Answer not known

105. The IR region most widely used for quantitative analysis is _____.

- ☒ (A) Near IR
- (B) Mid IR
- (C) Far IR
- (D) All of the above
- (E) Answer not known

106. The typical time taken in FT-IR to acquire a single interferogram is

- ☒ (A) less than a second
- (B) several minutes
- (C) 1-2 hours
- (D) 10-15 minutes
- (E) Answer not known

107. The measurement of intensity of fluorescent x-rays provide a simple and _____ way of _____ analysis.

- (A) Destructive, quantitative
- ☒ (B) Non-destructive, quantitative
- (C) Destructive, qualitative
- (D) Non-destructive, qualitative
- (E) Answer not known

108. The cathode of transmission electron microscope consists of a
- ☒ (A) Tungsten wire
 - (B) Bulb
 - (C) Iron filament
 - (D) Gold wire
 - (E) Answer not known
109. Choose the correct sequence with regard to the functioning of a flame photometry?
- ☒ (A) Sample residue → Excited state atoms → Return in ground state → Emission of radiation
 - (B) Sample residue → Ground State → Excited state → Emission of radiation
 - (C) Emission of radiation → Excited state → Ground State → Sample residue
 - (D) Sample residue → Ground State → Excited state → Emission of radiation
 - (E) Answer not known
110. What is the role of ozone in a sulphur chemiluminescence detector?
- (A) It acts as a catalyst for the reaction
 - (B) It is used to oxidize sulphur compounds to sulphur monoxide
 - ☒ (C) It helps to quantify sulphur light
 - (D) It is a component of the carrier gas
 - (E) Answer not known

111. Predict the λ_{max} values for



- (A) 222 nm
- ☒ (B) 227 nm
- (C) 232 nm
- (D) 247 nm
- (E) Answer not known

112. Which among of the following molecules is most likely to exhibit fluorescence?

1. Conjugated double bond molecules
2. Aliphatic saturated molecule
3. Aliphatic saturated cyclic molecule

- (A) All the three
- ☒ (B) 1 only
- (C) 2 and 3 only
- (D) 3 only
- (E) Answer not known

113. In Atomic Absorption Spectroscopy (AAS) non-metal can be determined by _____ method.

- (A) Direct method
- (B) Emission method
- (C) Scattering method
- ☒ (D) Indirect method
- (E) Answer not known

114. The wavelength of UV radiation falls in the _____ regions of the spectrum.
- ☒ (A) 4000 – 2000 Å
 - (B) 8000 – 2000 Å
 - (C) 4000 – 3000 Å
 - (D) 8000 – 3000 Å
 - (E) Answer not known
115. Cu^{2+} was combined with a chelating agent. The fluorescing chelate gave a slope of 15 intensity units per 1.0 mg/lit of Cu^{2+} and interrupted the origin. Calculate the Cu^{2+} concentration in the system which gave an intensity reading of 90.
- (A) 3.0 mg/lit
 - (B) 4.0 mg/lit
 - (C) 5.0 mg/lit
 - ☒ (D) 6.0 mg/lit
 - (E) Answer not known
116. In COD measurement, Ag_2SO_4 solid is added to
- ☒ (A) Catalyze the oxidation of aliphatic, aromatic hydrocarbons
 - (B) To avoid interference of chlorides
 - (C) Indicate the end point
 - (D) To acidity the solution
 - (E) Answer not known

117. Which one of the following is used as the reference turbidity standard suspension as per ISO standards?
- (A) muddy water
 - (B) Flour water mixture
 - ☒ (C) Formazin polymer
 - (D) Milk of magnesia
 - (E) Answer not known
118. A clear sample of water is boiled to dryness in a container. After drying, the weight of the container was found to increase. This increase gives the measure of
- (A) Suspected solids
 - ☒ (B) Dissolved solids
 - (C) Volatile solids
 - (D) Fixed solids
 - (E) Answer not known
119. A water sample taken from different areas and at different depths and then mixed together is called
- (A) Grab sample
 - ☒ (B) Composite sample
 - (C) Integrated Sample
 - (D) Representative Sample
 - (E) Answer not known

120. How is the colour of water and wastewater most commonly measured?

- (A) using Munsell colour system
- (B) through CIE Lab colour scale
- ☒ (C) by platinum-cobalt colour scale
- (D) using RGB colour model
- (E) Answer not known

121. Why is flavor more complex than taste?

- ☒ (A) It includes taste, smell and nerve sensations
- (B) It is only about tongue sensations
- (C) It ignores smell and mouth feel
- (D) It depends on visual cues
- (E) Answer not known

122. The dichromate oxidation method is used to determine

- (A) DO
- (B) TDS
- (C) BOD
- ☒ (D) COD
- (E) Answer not known

123. Why is the term “true colour” used for watercolour measurement?

- (A) It represents the colour of water including suspended particles
- ☒ (B) It is the colour of water after turbidity is removed
- (C) It measures colour caused only by suspended matter
- (D) It refers to colour measured without filtration
- (E) Answer not known

124. Which one of the following statements is False about 'Turbidity'?

- (A) Turbidity measures the scattering effect that suspended solids have on light
- (B) Turbidity is measured in FTU (or) NTU
- ☒ (C) It is measured by nephelometers
- ☒ (D) Turbidity is NOT Time sensitive
- (E) Answer not known

125. The threshold odour test determines odour by:

- ☒ (A) Measuring odour in undiluted samples directly
- ☒ (B) Diluting samples until odour is just detectable
- (C) Using one tester without calibration steps
- (D) Ignoring individual sensitivity differences
- (E) Answer not known

126. Platinum Cobalt scale is the measure of

- | | |
|----------------------|--|
| (A) Suspended solids | (B) TDS |
| (C) DO | ☒ (D) Colour |
| (E) Answer not known | |

127. The EDTA titration to determine the hardness of water is carried out at the pH of

- | | |
|--|--------|
| (A) 6 | (B) 8 |
| ☒ (C) 10 | (D) 12 |
| (E) Answer not known | |

128. The most essential requisite for accurate gravimetric analysis that
- ☒ (A) Analyte mass proportional to measured mass
 - (B) The analyte must change colour during analysis
 - (C) The analyte must react with multiple reagents
 - (D) The volume of solution must be measured precisely
 - (E) Answer not known
129. DMG is used as precipitant in the gravimetric estimation of
- ☒ (A) Pd^{2+}
 - (B) Zn^{2+}
 - (C) Al^{3+}
 - (D) Cu^{2+}
 - (E) Answer not known
130. _____ is an example for a Chelate forming precipitant.
- ☒ (A) Oxine
 - (B) Benzidine
 - (C) Tetra Phenyl arsonium chloride
 - (D) Ammonium oxalate
 - (E) Answer not known
131. What type of reaction is the most common precipitation reaction involves?
- (A) Redox reaction
 - ☒ (B) Metathesis reaction
 - (C) Combustion reaction
 - (D) Acid base reaction
 - (E) Answer not known

132. The most suitable precipitant for estimation of Ni^{2+} is

- (A) Cupferron
- (B) Oxime
- (C) EDTA
- ~~(D) DMG~~
- (E) Answer not known

133. 'Hydrophobic interactions' between the particles involved in

- (A) Post precipitation
- (B) Condensation
- (C) Frontal precipitation
- ~~(D) Coprecipitation~~
- (E) Answer not known

134. The condition for a precipitation to occur is

- ~~(A) Ionic product > Solubility product~~
- (B) Ionic product = Solubility product
- (C) Ionic product < Solubility product
- (D) Ionic product not related to solubility product
- (E) Answer not known

135. In the titration between KMnO_4 and FeSO_4 , there is a change in _____ at the end point.

- (A) pH
- ~~(B) Oxidation potential~~
- (C) Temperature
- (D) Total alkalinity
- (E) Answer not known

136. Totally how many water molecules present in the sodium Tetra borate and Copper Sulphate?

- ☒ (A) 15 (B) 17
(C) 20 (D) 10
(E) Answer not known

137. Titrations using Ag NO_3 as titrant are termed as

- (A) Ajiometric titrations
(B) Acid - base titrations
☒ (C) Argentometric titrations
(D) Fluid Analysis
(E) Answer not known

138. In the neutralisation titrations, if the acid and base are strong electrolytes the pH of the solution at the end point will be

- (A) 14
(B) 1
☒ (C) 3
(D) 7
(E) Answer not known

139. The titration which involves transfer of electrons

- (A) NaOH vs HCl
(B) NaOH vs Acetic Acid
☒ (C) EDTA vs Mg^{2+}
(D) $\text{K}_2\text{Cr}_2\text{O}_7$ vs FeSO_4
(E) Answer not known

140. EOSin is an indicator used in

- (A) Sodometric titrations
- (B) Complexometric titrations
- (C) Redox titrations
- ☒ (D) Precipitation titrations
- (E) Answer not known

141. Murexide and Bromopyrogallol Red Indicators are used to detect the metal Iron

- ☒ (A) Ni^{2+}
- (B) Zn^{2+}
- (C) Mg^{2+}
- (D) Fe^{2+}
- (E) Answer not known

142. The process in gravimetric analysis where a precipitate is allowed to form larger and purer particles is called

- ☒ (A) Digestion
- (B) Occlusion
- (C) Adsorbate
- (D) Precipitation
- (E) Answer not known

143. Which of the following is NOT a correct pair?

- (I) Volume % – g solute/100 g solution
- (II) Weight to vol% – g solute/100 ml solute
- (III) Parts per million – g solute/ 10^6 g solution
- (IV) Parts per billion – g solute/ 10^9 g solution
- ☒ (A) (I)
- (B) (II)
- (C) (III)
- (D) (IV)
- (E) Answer not known

144. Assertion [A] : It is difficult to obtain an ideal primary standard.

Reason [R] : Therefore, substances with characteristics close to primary standards are used.

Which of the following is correct?

- (A) Both [A] and [R] are true and [R] is 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

145. If the titrant acts as indicator then it is called

- (A) Internal indicator
- (B) External indicator
- ☒ (C) Self indicator
- (D) Neutralization indicator
- (E) Answer not known

146. Match the species group with the correct percentage of species threatened with extinction according to the IUCN Red List:

Species Group	Percentage Threatened
(a) Amphibians	1. 12%
(b) Reef-building corals	2. 41%
(c) Birds	3. 44%
(d) Mammals	4. 26%

- | | | | | |
|--------------------------------------|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| ☒ (A) | 2 | 3 | 1 | 4 |
| (B) | 3 | 1 | 2 | 4 |
| (C) | 4 | 2 | 3 | 1 |
| (D) | 1 | 4 | 2 | 3 |
| (E) | Answer not known | | | |

147. Match the fish with the Migration type

(a) Tuna	1. Anadromous Migration
(b) Carps	2. Catadromous Migration
(c) Eels	3. Potamodromous Migration
(d) Salmons	4. Oceanodromous Migration

- | | | | | |
|--------------------------------------|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) | 3 | 4 | 2 | 1 |
| ☒ (B) | 4 | 3 | 2 | 1 |
| (C) | 2 | 3 | 4 | 1 |
| (D) | 1 | 3 | 4 | 2 |
| (E) | Answer not known | | | |

148. Assertion [A] : Ex situ conservation involves cultivation of plants and rearing of animals outside their natural habitat.

Reason [R] : It is done through botanical gardens, zoos, DNA banks for the conservation of species specific of genetic diversity of endangered species.

- (A) Both [A] and [R] are false.
- (B) [A] is true but [R] is the not correct explanation of [A].
- ☒ (C) Both [A] and [R] are true and [R] is the correct explanation of [A].
- (D) [A] is false, but [R] is true.
- (E) Answer not known

149. Assertion [A] : India is a great hotspot of Biodiversity.

Reason [R] : The richness of biodiversity in India is due to a wide variety of climatic and altitudinal conditions.

- ☒ (A) Both [A] and [R] are true and [R] is correct explanation of [A].
- (B) [A] is false, but [R] is true.
- (C) [A] is true, but [R] is false.
- (D) Both [A] and [R] are true, but [R] is not the correct explanation of [A].
- (E) Answer not known

150. Which of the following best describes genetic diversity?

- ☒ (A) Variation in genes within a species across its range
- (B) Number of species in a forest
- (C) Variety of ecosystems in a country
- (D) Interaction between species in a habitat
- (E) Answer not known

151. Habitat fragmentation leads to biodiversity loss mainly because :

- (A) It creates more water bodies for aquatic life
- ☒ (B) It isolates populations, making reproduction and gene flow difficult
- (C) It increases competition and food supply
- (D) It promotes species mixing and hybrid vigor
- (E) Answer not known

152. Which of the following tiger subspecies is listed as extinct according to the IUCN Red list?

- | | |
|---|---|
| (A) Bengal Tiger | ☒ (F) Siberian Tiger |
| ☒ (C) Bali Tiger | (D) White Tiger |
| (E) Answer not known | |

153. Assertion [A] : In C_4 plants, Carbon dioxide is initially fixed in the mesophyll cells to form four – carbon compounds.

Reason [R] : The enzyme Rubisco catalyzes the fixation of CO_2 with phosphoenol pyruvate (PEP) in C_4 plants.

(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, but [R] is true.

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

(E) Answer not known

154. Assertion [A] : Diazotrophs improve soil fertility and support plant growth.

Reason [R] : They fix atmospheric nitrogen into ammonia, which can be used by plants for synthesizing proteins.

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

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

155. Match the following soil moisture terms with their correct descriptions :

Terms	Descriptions
(a) Gravitational water	1. Water held very tightly by soil particles, unavailable to plants
(b) Capillary water	2. Water that drains quickly through large pores due to gravity
(c) Hygroscopic water	3. The soil moisture condition after drainage when water is most available to plants
(d) Lento capillary point	4. Water held in small pores, retained by surface tension and available to plants

- | | | | | |
|----------------|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) | 2 | 4 | 1 | 3 |
| (B) | 2 | 4 | 3 | 1 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 1 | 2 | 4 | 3 |
| (E) | Answer not known | | | |

156. The hydroxylated products of phase-I are converted to soluble metabolites by coupling with polar agents in phase-II of detoxification reactions by a process called conjugation. Which of the following is not a conjugating agent?

- (A) Active sulfate
- (B) Active Glucuronate
- (C) Active Methionine
- ~~(D)~~ Active Bicarbonate
- (E) Answer not known

157. _____ is an enzyme used as biomarker of effect of lead exposure in blood.

- (A) Alanine aminotransferase
- ☒ (B) Levulinate dehydratase
- (C) β_2 – microglobulin
- (D) N – acetylglucosaminidase
- (E) Answer not known

158. Match the following :

- | | |
|----------------|---|
| (a) Carcinogen | 1. Affect the DNA in a developing fetus |
| (b) Mutagens | 2. Uncontrolled growth of cells |
| (c) Teratogens | 3. Inheritable changes in the DNA |

- | | (a) | (b) | (c) |
|--------------------------------------|------------------|-----|-----|
| ☒ (A) | 2 | 3 | 1 |
| (B) | 2 | 1 | 3 |
| (C) | 1 | 2 | 3 |
| (D) | 1 | 3 | 2 |
| (E) | Answer not known | | |

159. Coenzyme for cytochrome P 450 system is

- (A) NAD
- (B) FAD
- ☒ (C) NADPH
- (D) FMN
- (E) Answer not known

160. A compound is used to detoxify the cd-poisoning through chelation therapy is

- (A) S aminolevulinic acid dehydratase
- ☒ (B) $\text{Na}_2 \text{Ca (edta)}$
- (C) Mg Ca (edta)
- (D) Pb - BAL complex
- (E) Answer not known

161. Under which of following conditions the bioaccumulation of a toxicant is the maximum in aquatic animals?

- ☒ (A) Higher the body weight of the organism
- (B) Lower the body weight of the organism
- (C) Water body with high temperature and low salinity
- (D) Toxic species is near the surface water
- (E) Answer not known

162. At the upper limit tolerance of toxicant exposure

- (A) NO organism can survive
- (B) 25% total organism can survive
- ☒ (C) 50% total organism can survive
- (D) 100% total organism can survive
- (E) Answer not known

163. _____ is a polycyclic aromatic hydrocarbon which have high carcinogenic activity.

- | | |
|---------------------------|---|
| (A) Benzene | (B) Pentacene |
| (C) 3,4, benzphenanthrene | ☒ (D) Benzo- α - pyrene |
| (E) Answer not known | |

164. Which of the following is not a standard for testing the biodegradability under different specified conditions?
- (A) The American Society for Testing and Material (ASTM)
 - (B) International Organization for Standardization (ISO)
 - (C) Draft of International Standard (DIS)
 - ☒ (D) World Health Organisation (WHO)
 - (E) Answer not known
165. In the absence of oxygen, anaerobic microorganisms carry out degradation many xenobiotic compound. This process is
- ☒ (A) Reductive Degradation
 - (B) Oxidative Degradation
 - (C) Photo Degradation
 - (D) Bio Concentration
 - (E) Answer not known
166. The End products are secreted by fungi. Which is known as
- (A) Plant enzyme
 - (B) Animal enzyme
 - (C) Co enzyme
 - ☒ (D) Endo enzyme
 - (E) Answer not known
167. The Biocontrol agent of Trichoderma belongs to which plant group?
- ☒ (A) Fungi
 - (B) Algae
 - (C) Nematodes
 - (D) Lichen
 - (E) Answer not known

168. Match the following :

- | | |
|--------------------------------|----------------|
| (a) Amino acids | 1. Sucralose |
| (b) Artificial sweetness | 2. Amino acids |
| (c) Building blocks of protein | 3. Glycine |
| (d) Zero calorie sugar | 4. Aspartame |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 1 | 2 | 3 | 4 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 4 | 1 | 2 | 3 |
| ☒ (D) | 3 | 4 | 2 | 1 |
| (E) | Answer not known | | | |

169. Citric acid is commercially produced by which type of Fermentation?

- | | |
|------------------------------|--|
| (A) Solid state fermentation | ☒ (B) Submerged fermentation |
| (C) Anaerobic fermentation | (D) Batch fermentation |
| (E) Answer not known | |

170. Which of the following biofertilizers of symbiotic is responsible for N_2 fixing biofertilizer?

- | | |
|-----------------------------|--|
| (1) Rhizobium, Frantia | |
| (2) Rhizobium, Azospirillum | |
| (3) Rhizobium, Pencillium | |
| (4) Rhizobium, Anabena | |
| (A) (1) and (2) are correct | (B) (2) only correct |
| (C) (3) and (4) are correct | ☒ (D) (1) only correct |
| (E) Answer not known | |

171. All of the following statements about fermentation are true except
- (A) The process begins with glycolyses and ends with ethiulla products
 - (B) The process begin with glycolyses and end with ethanol products
 - ☒ (C) It is glycolyses process takes place in the cytoplasm
 - (D) It is process that turns glucose into acid lactic or ethanol
 - (E) Answer not known
172. Toxic metabolite found in contaminated nuts and stored grains is called
- (A) Amptoxin
 - ☒ (B) Aflatoxin
 - (C) Tetanus toxin
 - (D) Glycotoxin
 - (E) Answer not known
173. The contaminated liquid is draining from the landfill is called as
- (A) Land drops
 - ☒ (B) Leachates
 - (C) FYM
 - (D) Liquid gold
 - (E) Answer not known
174. Botulinum toxin is a potent neurotoxin because it.
- ☒ (A) Inhibits the exocytosis and release neuro transmitter acetylcholine
 - (B) Inhibits the enzymes acetylcholinesterase
 - (C) Stimulate the release of glutamate at the synapse
 - (D) Increase the permeability neural membrane to sodium irony
 - (E) Answer not known

175. Choose the correct statements given below :

1. Streptococcal pneumonia is gram negative bacterium.
2. The symptoms of pneumonia are chilling breathing difficulty and chest pain.
3. It affects the digestive system.
4. It is diagnosed by X-ray and Bacterium culture.

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

176. Match the following :

Pathogen	Disease caused
(a) <i>Claviceps purpurea</i>	1. Late Blight
(b) <i>Xanthomonas citri</i>	2. Phyllody
(c) Phytoplasmas	3. Canker
(d) <i>Phytophthora Infestans</i>	4. Ergot

- | | | | | |
|--------------------------------------|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) | 4 | 2 | 3 | 1 |
| (B) | 3 | 4 | 1 | 2 |
| ☒ (C) | 4 | 3 | 2 | 1 |
| (D) | 3 | 1 | 4 | 2 |
| (E) | Answer not known | | | |

177. Choose the right matches among the following :

- | | | | |
|----|-------------------|---|--------------------|
| 1. | Angular leaf spot | – | Bacterial Disease |
| 2. | Green scurf | – | Mycoplasma Disease |
| 3. | Blast | – | Fungal Disease |
| 4. | Phyllody | – | Algal Disease |

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

178. Yellow plastic bag containing biomedical waste are treated by

- | | |
|--|-------------------|
| ☒ (A) Autoclaving | (B) Micro oving |
| (C) Inertization | (D) Encapsulation |
| (E) Answer not known | |

179. Streptococci produce two type of haemolysis which is known as

- | | |
|---|--------------------------|
| ☒ (A) Streptolysin O and S | (B) Streptolysin H and S |
| (C) Streptolysin O and H | (D) Streptolysin Suger |
| (E) Answer not known | |

180. *Vibrio cholerae* was cultured for the first time by

- | | |
|--|--------------------------|
| (A) Louis Pasteur | (B) Allison Gengan |
| ☒ (C) Robert Koch | (D) Christopher Columbus |
| (E) Answer not known | |

181. Why ocean “dead zones” are considered as a major environmental concern?
- (A) They have extremely cold water that freezer marine organism
 - (B) They contain toxic gases that immediately kill marine life
 - ☒ (C) They have very low oxygen levels, making it hard for most marine life to survive
 - (D) They are too deep for sunlight, presently photosynthesis
 - (E) Answer not known
182. Which of the following is does NOT contributor to marine pollution?
- (A) Tanker operation
 - (B) Dry docking
 - (C) Tanker accidents
 - ☒ (D) Ocean currents
 - (E) Answer not known
183. Why does cultural eutrophication occur in aquatic systems?
- (A) Natural accumulation of sediments
 - (B) Decrease in aquatic plant growth
 - ☒ (C) Anthropogenic increase in nitrogen and phosphorous
 - (D) Climate change and rising temperatures
 - (E) Answer not known
184. How do carbamates act as broad spectrum pesticides?
- (A) By blocking photosynthesis
 - ☒ (B) By inhibiting Acetyl cholinesterase
 - (C) By Disrupting DNA synthesis
 - (D) By acting as a barrier
 - (E) Answer not known

185. Why are protected areas regarded one of the most effective tools for biodiversity conservation?

- (A) They exclude all human activity
- (B) They promote rapid industrial development
- ☒ (C) They integrate ecological, cultural and social considerations
- (D) They focus only on endangered animals
- (E) Answer not known

186. Only one of the following does not match correctly, which one is it

- | A | B |
|--|-------------------------------|
| (A) Gulf of Mannar marine biosphere reserve | – Tamil Nadu |
| (B) Mahatma Gandhi marine national park | – Andaman and Nicobar Islands |
| (C) Sundarbans marine sanctuary | – West Bengal |
| ☒ (D) Karwar community reserve | – Kerala |
| (E) Answer not known | |

187. Why is a storm surge hazardous during a cyclone?

- (A) Causes permanent sea level rise
- (B) Brings strong coastal winds
- ☒ (C) Triggers sudden coastal flooding and heavy damage
- (D) Lowers sea water salinity
- (E) Answer not known

188. The release of hatching reared young marine organisms into specific marine habitats to enhance natural populations for commercial or conservation purposes is known as
- (A) Mariculture
 - ☒ (B) Restocking
 - (C) Sea ranching
 - (D) Aquaculture
 - (E) Answer not known
189. Pulicat Lake is categorized and utilized as IUCN category IV due to its characteristics
- (A) It allows no human access
 - (B) It preserves large natural landscapes
 - ☒ (C) It focuses on species and habitat management
 - (D) It protects unique geological features
 - (E) Answer not known
190. Identify the best way to describe meroplankton
- (A) Spend their entire life cycle as plankton
 - (B) Always benthic and never drift on plankton
 - ☒ (C) Spend only part of their life cycle as plankton
 - (D) Photosynthetic plankton
 - (E) Answer not known

191. Find out if there are incorrect statement about deep sea organisms.

- (A) Animals feed on suspended solids found in the deep sea
- (B) Few animals are passive suspended feeders
- (C) Many deep sea animals are associated with chemosynthetic bacteria
- ☒ (D) The abundance of the benthic organism such as barnacles and common sponges increases with depth
- (E) Answer not known

192. The following statements about ocean zones are correct :

1. The euphotic zone allows enough light for photosynthesis
 2. The aphotic zone receives no sunlight at all
 3. The neritic zone is found over the continental shelf near the coast
 4. The oceanic zone refers to deep waters beyond the continental shelf
- ☒ (A) 1, 2 and 3 are correct
 - (B) 1 and 4 only correct
 - (C) 2, 3 and 4 are correct
 - (D) 1 and 2 only correct
 - (E) Answer not known

193. The following shows the correct sequence of the five key elements of disaster management.

1. Response and Relief → Preparedness → Mitigation → Rehabilitation → Prevention
2. Prevention → Mitigation → Preparedness → Response and Relief → Rehabilitation
3. Mitigation → Prevention → Response and Relief → Preparedness → Rehabilitation
4. Preparedness → Mitigation → Response and Relief → Rehabilitation → Prevention

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

194. How do sessile filter feeders benefit the sea grass ecosystem?

- (A) They consume sea grass leaves directly
(B) They anchor the sea grass to the sediment
☒ (C) They filter particles from the water, improve water clarity
(D) They assist in pollinating the sea grass flowers
(E) Answer not known

195. Chemosynthetic bacteria obtain their primarily source of energy from
- (A) Breaking down glucose in aerobic conditions
 - (B) Using solar radiation to power photosynthesis
 - ☒ (C) Oxidising inorganic molecules like hydrogen sulfide
 - (D) Consuming plant matter in soil environments
 - (E) Answer not known
196. CRD gives accurate information if all the experimental units present in the experiment are
- ☒ (A) Homogeneous
 - (B) Heterogeneous
 - (C) Finite
 - (D) Infinite
 - (E) Answer not known
197. What does the F test in ANOVA for CRD indicate?
- (A) The difference between individual treatment means
 - ☒ (B) The overall difference between the treatments
 - (C) The variance within each treatment group
 - (D) The correlation between the treatments
 - (E) Answer not known

198. Let the attribute A have 5 categories and attribute B have 4 categories. Then in order to test their independence chi-square test is used for which error degrees of freedom will be equal to
- (A) 20
 - ☒ (B) 12
 - (C) 15
 - (D) 16
 - (E) Answer not known
199. Two means are compared using t-test to assess the statistical significance of the difference between two samples. Size of the first sample is 17 and the size of the second sample is 13. How many degrees of freedom are associated with the critical t-value?
- (A) 32
 - (B) 31
 - (C) 29
 - ☒ (D) 28
 - (E) Answer not known
200. Which of the following is not a measure of central tendency?
- (A) Mean
 - (B) Median
 - ☒ (C) Standard deviation
 - (D) Mode
 - (E) Answer not known
-