DEPT. OF HIGHER EDUCATION, GOVT. OF ODISHA

TEST BOOKLET

Subject Code **20**

Subject **ENVIRONMENTAL SCIENCE**

Time Allowed : **90 Minutes**

Full Marks : **70**

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. You have to enter your **Hall Ticket No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.

3. YOU ARE REQUIRED TO FILL UP & DARKEN HALL TICKET NO. & TEST BOOKLET NO. IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET SERIAL NO. & ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.

4. This Test Booklet contains 70 items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose ONLY ONE response (answer) for each item (question).

5. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by **using BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.

6. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There is no negative marking**.

7. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the Test Booklet, after completion of the examination, for your reference.

8. Sheets for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

XL – 29/8

(Turn over)

1. Out of the followings, which green house gas has highest global warming potential ?

    (A) CH_4

    (B) N_2O

    (C) CO_2

    (D) CFCs

2. The four major layers (from ground surface upwar(d) of Atmosphere are :

    (A) Stratosphere, thermosphere, mesosphere and troposphere

    (B) Mesosphere ,troposphere ,stratosphere and thermosphere

    (C) Thermosphere, mesosphere, stratosphere and troposphere

    (D) Troposphere, stratosphere, mesosphere and thermosphere

3. Functional unit of ecology is :

    (A) Organism

    (B) Biosphere

    (C) Ecosystem

    (D) Population

4. Electromagnetic radiation with maximum wave length is :

    (A) Ultraviolet

    (B) Radio wave

    (C) X-ray

    (D) Infrared

5. Planktons in water bodies belongs to which group ?

    (A) Plants

    (B) Animals

    (C) Both Plants and Animals

    (D) None of the above

6.   Two water samples A and B show pH of 6 and 3 respectively. How many times the Hydrogen Ion Concentration of B is more than A ?

(A)   3

(B)   10

(C)   100

(D)   1000

7.   Which of the following chemical is used to disinfect water ?

(A)   Alum

(B)   Chlorine

(C)   Benzene

(D)   Ammonia

8.   World Earth Day is celebrated every year on :

(A) 22nd April

(B) 5th June

(C) 10th June

(D) 24th October

9.   Organisms that mineralizes organic matter in an ecosystem are called :

(A)   Producers

(B)   Consumers

(C)   Decomposers

(D)   Carnivores

10.   Which pair of gases are primary pollutants ?

(A)   Nitric Oxide and Hydrocarbons

(B)   Ozone and CO

(C)   Nitric acid and SO_2

(D)   Methane and Ozone

11. One calorie is equal to _____ joules.

(A) 3.186

(B) 4.184

(C) 5.184

(D) 6.186

12. Symbiotic nitrogen fixation is associated with the bacteria :

(A) Pseudomonas

(B) Rhizobium

(C) Nitrosomonas

(D) Nitrobacter

13. The first law of thermodynamics is correctly represented by the equation _____.

(A) $\Delta Q = E - W$

(B) $\Delta W = Q - E$

(C) $\Delta E = Q - W$

(D) $\Delta E = Q + W$

14. Radioactive substance emits :

(A) Only α-rays

(B) Only β-rays

(C) α and β rays

(D) α, β and γ-rays

15. A biological community is :

(A) Collection of species

(B) Collection of animals

(C) Collection of plants

(D) Collection of families

16. Energy in the Sun is generated mainly by :

(A) Fusion of hydrogen atoms

(B) Fission of helium atoms

(C) Fusion of radio active material

(D) Chemical reactions

17. The powerful eye irritant present in the smog is :

(A) Ozone

(B) Nitric oxide

(C) Peroxyacetyl nitrate

(D) Sulphur dioxide

18. Isotopes of an element have the same :

(A) Number of protons in the nucleus

(B) Number of nucleons

(C) Number of neutrons

(D) Atomic weights

19. The nitrogen from the atmosphere is absorbed by plants in the form of :

(A) Nitrates

(B) Nitrogen gas

(C) Nitrites

(D) Urea

20. Acidity in rain water is due to :

(A) HCl and H_2SO_4

(B) H_2SO_4 and HNO_3

(C) H_2SO_4 and H_3CO_3

(D) H_2SO_4, HNO_3 and H_3CO_3

21. In the explosion of atom bomb, energy is released due to :

(A) Conversion of mass into energy

(B) Conversion of momentum into energy

(C) Conversion of velocity into energy

(D) Conversion of molecules into atoms

22. Noise pollution is measured in :

(A) Ohm

(B) Mho

(C) Joule

(D) Decibel

23. Which one of the following is a major pollutant in aluminum smelter plants ?

(A) Mercury

(B) Chloride

(C) Lead

(D) Fluoride

24. A hydroelectric station generates electricity by utilizing :

(A) Potential energy of water

(B) Chemical energy of water

(C) Heat energy of water

(D) Magnetic energy of water

25. One example of metamorphic rock is :

(A) Granite

(B) Shale

(C) Marble

(D) Feldspar

26. Major source of water used by the plants is :

(A) Capillary water

(B) Hygroscopic water

(C) Gravitational water

(D) Combined water

27. In centrifugation the migration of a compound away from the centre of axis depends on :

(A) Molecular size

(B) Effective radius of the rotor head

(C) Angular velocity

(D) All of the above

28. The direct change from solid to gaseous state is referred to as :

(A) Evaporation   (B) Vaporization

(C) Sublimation   (D) Condensation

29. Plants that grow in saline soils are called :

(A) Epiphytes

(B) Hydrophytes

(C) Mesophytes

(D) Halophytes

30. Aerosol means :

(A) Finely divided solid particles of microscopic size

(B) Finely divided liquid particles of microscopic size

(C) Finely divided solid and liquid particles of microscopic size

(D) None of the above

31. The book authored by Rachel Carson is :

(A) Silent Spring

(B) Hot Spring

(C) Wings of the Fire

(D) Ignited Mind

32. An ore is composed of :

(A) Ore minerals

(B) Metallic minerals

(C) Ore minerals and gangue minerals

(D) Economic minerals

33. Remote sensing can be performed in :

(A) Active mode

(B) Passive mode

(C) Both active and passive mode

(D) None of the above

34. Of a frequency distribution, the median is 21 and arithmetic mean is 22. What is the value of mode ?

(A) 20   (B) 19

(C) 18   (D) 17

35. A climax community is associated with :

(A) High net production   (B) Low stability

(C) High diversity index   (D) None of the above

36. Food web is :

   (A) Food Chain

   (B) Oversimplified version of the reality of feeding relationship

   (C) Pictorial representation of the feeding relationship between organisms in an ecosystem

   (D) Annual energy flow passes

37. Which of the following species is extinct ?

   (A) Pygmy hog

   (B) White rhinos

   (C) Ganges Shark

   (D) Dodo

38. Gram molecular weight is the weight of :

   (A) One molecule of a substance

   (B) 6.02×10^{23} atoms of the element

   (C) 100 molecules of a substance

   (D) 6.02×10^{23} molecules of a substance

39. The green house gas which is responsible for causing about 60% of the green house effect in Earth System is :

   (A) Carbon monoxide

   (B) Methane

   (C) NOx

   (D) Carbon dioxide

40. What is the value of Mean Deviation of the data : 1, 2, 3, 4, 8, 10, 12, 18, 20, 22 ?

   (A) 5   (B) 6.4

   (C) 5.4   (D) 6

41. When an artificial Satellite revolves round the Earth in circular orbit, which quantity remains constant ?

(A) Angular Momentum

(B) Linear Velocity

(C) Angular Displacement

(D) Linear Displacement

42. A radioactive element has half-life period 1600 years. After 6400 years what amount of the element will remain ?

(A) 1/2

(B) 1/8

(C) 1/16

(D) D.1/4

43. If N is the population density, t is time, r is intrinsic rate then the formula for exponential growth curve is :

(A) dN x rN = dt

(B) dN/dt = rN

(C) rN/DN = dt

(D) dt/dN = rN

44. Eagles predating Fish that eat algae belongs to :

(A) Trophic level I

(B) Trophic level II

(C) Trophic level III

(D) Trophic level IV

45. The basal zone of an Ocean is known as the :

(A) Littoral zone

(B) Neritic zone

(C) Bathyal zone

(D) Abyssal zone

46. The magnitude of an earthquake is measured in units of :

(A) Joules

(B) Ergs

(C) Richter

(D) Decibel

47. The minimum forest required under National Forest Policy of India is :

(A) 20% (B) 25%

(C) 33% (D) 40%

48. A molar solution is prepared by :

(A) Dissolving 1g of a substance in 100cc of water

(B) Dissolving 1mole of a substance in 100ml of water

(C) Dissolving 1mole of a substance in 1000ml of water

(D) Dissolving 1g of a substance in 100ml of water

49. Which one of the following is a sedimentary cycle ?

(A) Carbon

(B) Hydrogen

(C) Nitrogen

(D) Phosphorous

50. Bacteria that derive both energy and material from soil are called :

(A) Archaebacteria

(B) Photoautotrophs

(C) Chemolithotrophs

(D) Photolithotrophs

51. National Environmental Engineering Research Institute in India is situated at :

(A) Nagpur (B) Dehradun

(C) Delhi (D) Kolkata

52. GIS stands for :

(A) Geological Information System

(B) Geographical Information System

(C) Geographical Information Science

(D) All of the the above

53. Which type of coal has coking properties ?

   (A) Anthracite

   (B) Bituminous

   (C) Sub-bituminous

   (D) Lignite

54. Bhopal Gas tragedy was due to :

   (A) Ethyl Isocyanate

   (B) Methyl Isocyanate

   (C) Methyl Cyanate

   (D) Methyl Carbide

55. An example of in- situ conservation is :

   (A) Captive breeding   (B) Zoos

   (C) Sanctuaries   (D) Seed Bank

56. A body spends 20 Joule of energy in 5 seconds. What is its power ?

   (A) 100 w   (B) 2 w

   (C) 5 w   (D) 4 w

57. Conversion of nitrate into ammonium salts is called :

   (A) Nitrification   (B) Denitrification

   (C) Ammonification   (D) None of the above

58. The Stockholm Conference on Human Environment was held in the year :

   (A) 1972   (B) 1962

   (C) 1982   (D) 1992

59. According to which theory the human population will out run food supply :

   (A) Elton theory

   (B) Malthusian theory

   (C) Altrosian theory

   (D) Gausian theory

60. Organisms which can tolerate narrow range of temperature are called :

    (A) Wullar lake

    (B) Stenothermal

    (C) Oligothermal

    (D) Eurythermal

61. Association of organisms where one is benefitted and the other one is neither benefitted nor harmed is called :

    (A) Proto-Co-operation

    (B) Mutualism

    (C) Commensalism

    (D) Competition

62. Cause of Rainbow formation is :

    (A) Refraction, Reflection and Dispersion

    (B) Refraction and Dispersion only

    (C) Refraction and Scattering

    (D) Diffraction and Reflection

63. Kanchanjunga biosphere reserve is situated in the state of _____.

    (A) Arunachal Pradesh   (B) Sikkim

    (C) Mizoram   (D) Himachal Pradesh

64. Maximum carbon in the world is found in :

    (A) Oceans   (B) Coal mines

    (C) Antarctica   (D) Forests

65. The most important reason for decrease in biodiversity is :

    (A) Habitat destruction

    (B) Introduction of exotic species

    (C) Over exploitation

    (D) Habitat pollution

66. Which one of the following areas in India is a hotspot of biodiversity ?

    (A) Sunderbans

    (B) Western Ghats

    (C) Eastern Ghats

    (D) Gangetic Plains

67. Why Ramsar Convention is famous for ?

    (A) Wetland Conservation

    (B) Forest Conservation

    (C) Desert Conservation

    (D) Biodiversity Conservation

68. The one-horned rhinoceros is specific to which of the following sanctuary ?

    (A) Bandipur

    (B) Corbett Park

    (C) Kaziranga

    (D) Simlipal

69. Growing grass to check soil erosion is known as :

    (A) Agrobiology

    (B) Agrostology

    (C) Agronomy

    (D) Agrosilvipasture

70. Population growth of a country depends on :

    (A) Birth rate

    (B) Death rate

    (C) Net Migration rate

    (D) All of the above

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