UGC NET PAPER 2 DECEMBER 28, 2014 SHIFT 1 ENVIRONMENTAL SCIENCES QUESTION PAPER

Note : This paper contains **fifty (50)** objective type questions of **two (2)** marks each. **All** questions are compulsory.

1. Thermal stratification of aquatic ecosystems takes place in

(A) tropical lakes
(B) temperate lakes
(C) glacier lakes
(D) meandering rivers

2. The scale length of pressure variations in atmosphere in vertical direction is about

(A) 3 km
(B) 4.8 km
(C) 7 km
(D) 12 km

3. Which radioactive element is considered as an indoor pollutant ?

(A) Oxygen – 18
(B) Nitrogen – 15
(C) Carbon – 13
(D) Radon

4. In a closed thermodynamic system, across its boundaries

(A) no transfer of heat is possible.
(B) no transfer of work is possible.
(C) transfer of heat is possible but not of work.
(D) transfer of heat and work is possible.

5. In an urban area, moist air at 27 °C has a mixing ratio of 50 gm per kg. Its virtual temperature is

(A) 33.69 °C
(B) 38.15 °C
(C) 36.15 °C
(D) 32.30 °C

6. Under aerobic biodegradation of DDT, which of the following compound is formed ?

(A) DDD
(B) DDE
(C) DDN
(D) DDS

7. Among the following heavy metals, which has highest concentration in earth's crust ?

(A) Chromium
(B) Copper
(C) Nickel
(D) Zinc

8. Composition-wise halons are related to

(A) CFCs
(B) Halides
(C) Hydrocarbons
(D) Peptides

9. Which of the following gases has highest absorption co-efficient for solubility in water ?

(A) Hydrogen
(B) Nitrogen
(C) Oxygen
(D) Carbon dioxide

10. Quantity of glucose (MW 180) required to prepare 1000 ml of 5% solution is

(A) 5 g
(B) 50 g
(C) 900 g
(D) 9000 g

11. Endemic species are

(A) Uniformly distributed across the landscape
(B) Widely distributed
(C) Restricted to a particular area
(D) Continuously distributed globally

12. Which of the following is the in-situ biodiversity conservation site ?

(A) Arboretum
(B) Botanical garden
(C) Biosphere reserve
(D) Orchidarium

13. The largest unit of climax communities representing well defined climatic zone is referred to as

(A) Biosphere
(B) Biome
(C) Biota
(D) Landscape

14. An active, adaptive control process which is able to maintain the overall balance is known as

(A) Bohr's Hypothesis
(B) Miller Hypothesis
(C) Gaia Hypothesis
(D) Kepler's Law

15. Niche of an organism is

(A) Address
(B) Profession
(C) Location
(D) Range

16. Out of the total fresh water volume of the frozen form constitutes

(A) 60 %
(B) 70 %
(C) 80 %
(D) 50 %

17. If Q = stream flow, P = precipitation, E = evapotranspiration, ΔS = net change in storage and ΔT = net underground transfers, then the basic water balance equation is

(A) $Q = (P + E) - (\Delta S + \Delta T)$
(B) $Q = (P - E) - (\Delta S + \Delta T)$
(C) $Q = (P - E) + (\Delta S + \Delta T)$
(D) $Q = (P - E) - (\Delta S - \Delta T)$

18. Particles with a diameter smaller than 0.002 mm are classed as

(A) Cobble
(B) Pebble
(C) Silt
(D) Colloids

19. Water storage capacity of which soil is maximum ?

(A) Sandy loam
(B) Loam
(C) Clay loam
(D) Heavy clay

20. Which among the following is not a hot desert ?

(A) Sahara
(B) Kalahari
(C) Thar
(D) Gobi

21. In an ideal MHD power generator, the maximum power P output varies with the velocity (u) of conducting fuel as

(A) $P_{max} \propto u$
(B) $P_{max} \propto u^2$
(C) $P_{max} \propto u^3$
(D) $P_{max} \propto u^{3/2}$

22. Which is the most efficient energy source for producing electricity ?

(A) Nuclear power
(B) Hydro power
(C) Wind power
(D) Solar power

23. Which of the following types of coal has highest water content ?

(A) Anthracite

(B) Bituminous coal

(C) Lignite

(D) Subbituminous coal

24. Energy intensity is the amount of energy

(A) produced per unit gross domestic product

(B) consumed per unit gross domestic product

(C) produced per year per unit area of the country

(D) consumed per year per unit area of the country

25. Which is the cleanest fuel for power generation ?

(A) Coal

(B) Uranium

(C) Hydrogen

(D) Water

26. The mountain that rises a kilometre or more above the surrounding sea floor is called

(A) Oceanic island

(B) Atoll

(C) Seamount

(D) Island arc

27. Which form of As is most toxic ?

(A) As^{+3}

(B) As^{+2}

(C) As^{+6}

(D) As^{+4}

28. Noise climate is represented by

(A) $L_{10} - L_{90}$

(B) L_{eq}

(C) L_{50}

(D) $(L_{10} - L_{90})^2 / 60$

29. The classical smog is mainly composed of

(A) NO_x and smoke particulates

(B) O_3 and SO_2

(C) SO_2 and NO_x

(D) SO_2 and smoke particulates

30. According to National Ambient Air Quality Standards the annual average concentration of SPM in a residential area should not exceed

(A) 80 $\mu g/m^3$

(B) 100 $\mu g/m^3$

(C) 140 $\mu g/m^3$

(D) 200 $\mu g/m^3$

31. "Blue baby syndrome" is caused due to intake of water high in

(A) Ammonia

(B) Nitrates

(C) Sulphates

(D) Sulphides

32. EIA of mining activities involve impact assessment on

I. Geological Environment

II. Biological Environment

III. Aerial Environment

Codes :

(A) I only

(B) II and III only

(C) I and III only

(D) I, II and III

33. Accreditation of Environmental Consultant Organizations in India is done by

(A) Ministry of Environment, Forest and Climate Change

(B) Central Pollution Control Board

(C) Ministry of Earth Sciences

(D) Quality Council of India

34. Life Cycle Assessment (LCA) does not include

(A) Life Cycle Inventory of the product

(B) Quantitative improvement in the process of the product

(C) Life Cycle Impact Analysis

(D) Emergency Preparedness Plan

35. A developmental project requires both environmental clearance as well as approval under

(A) Water Act, 1974

(B) Forest (Conservation) Act, 1980

(C) National Environmental Tribunal Act, 1995

(D) Air Act, 1981

36. The best practice of disposal of construction and demolition (C & D) debris is

(A) Incineration

(B) Recycling

(C) Land fills

(D) Solidification

37. Pyrolysis of Solid Waste refers to

(A) High temperature aerobic incineration

(B) High temperature anaerobic distillation of waste for energy generation

(C) Ambient aerobic distillation

(D) Ambient anaerobic distillation

38. Kyoto Protocol of 1997 introduced the concept of carbon trading in the year of

(A) 2000

(B) 2004

(C) 2001

(D) 2002

39. Citizen's Charter on Environment in the Constitution of India is embodied in

(A) Article 48

(B) Article 48A

(C) Article 49A

(D) Article 51A

40. United Nation's Conference on Environment and Development was held in

(A) December, 1993

(B) June, 1992

(C) December, 1995

(D) November, 1996

41. The geometric mean of the numbers 4, 6 and 9 is

(A) 6 (B) 8

(C) 5 (D) 7

42. A complete enumerate of all items in the population is

(A) Unrestricted sampling

(B) Non-probability sampling

(C) Census

(D) Sample survey

43. The term 'parameter' is an attribute associated with the data pertaining to

(A) sample (B) population

(C) descriptive statistics (D) sampling technique

44. A solar cell of surface area = 5 cm^2 delivers a current of 0.1 A at 0.6 V. If the intensity of solar radiation impinging on the solar cell is 1.0 kW/m^2, the efficiency of the solar cell is

(A) 6 % (B) 3 %

(C) 30 % (D) 12 %

45. **Assertion (A) :** Living systems exposed to drought salinity and freezing show enhanced levels of osmolytes.

Reason (R) : Drought, salinity and freezing stress induce water deficit.

In the context of the two statements, which one of the following is correct ?

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

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

(C) (A) is true, but (R) is false.

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

46. UN Decade of Education for Sustainable Development is

(A) 2000 – 2009
(B) 2005 – 2014
(C) 2010 – 2019
(D) 2020 – 2031

47. Two kinds of the values distinguished in environmental ethics are

(A) Instrumental value and intrinsic value
(B) Direct use values and social values
(C) Social values and existence value
(D) Indirect use value and aesthetic value

48. The natural sources of methyl bromide in the atmosphere is

(A) Ocean
(B) Volcanoes
(C) Landslide
(D) Vegetation

49. The part of an actual resource which can be developed profitably in the future is

(A) Non-renewable resources
(B) Potential resources
(C) Reserved resources
(D) Stock resources

50. Trophic state index of aquatic ecosystem is determined by the concentration of

(A) Chlorophyll-a
(B) NO_3^-
(C) PO_4^{-3}
(D) NO_2^-