UGC NET PAPER 2 DECEMBER 27, 2015 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. Which one of the following elements contributes maximum to the earth crust by weight ?
(1) Iron (2) Silicon (3) Oxygen (4) Carbon

2. The lowest temperature is observed in which layer of the atmosphere ?
(1) Troposphere (2) Stratosphere (3) Mesosphere (4) Thermosphere

3. Which of the following gases has the lowest residence time ?
(1) CO_2 (2) N_2O (3) CFCs (4) CH_4

4. Which of the following statement is **incorrect** ?
(1) Chromium (VI) is highly toxic
(2) Methyl mercury is most toxic mercury species
(3) Arsenic (III) is more toxic than arsenic (V)
(4) Cadmium is a criteria pollutant

5. The most abundant functional group present in fulvic acid, commonly found in soils, is :
(1) Peptide group (2) Carboxylate group
(3) Phenolic group (4) Amino group

6. The source of Stratospheric NO_x is :
(1) Atmospheric N_2 (2) Tropospheric N_2O
(3) Tropospheric NO (4) Tropospheric NO_2

7. In troposphere, which of the following processes does **not** generate hydroxyl radical ?
(1) $O(^1D) + H_2O$ (2) $O(^3P) + H_2O$ (3) $HCHO + h\nu$ (4) $HNO_2 + h\nu$

8. The most common form of lead present in pesticide is :
(1) Lead acetate (2) Lead arsenate (3) Lead azide (4) Lead telluride

9. Consider the following four statements about benzo[a]pyrene :
(a) It is a group 1 carcinogen
(b) It is a polycyclic aromatic hydrocarbon
(c) Its molecular formula is $C_{20}H_{12}$
(d) It has four benzene rings
Choose the **correct** code :
(1) (a) and (b) only (2) (a), (b) and (c) only
(3) (b), (c) and (d) only (4) (a), (b), (c) and (d)

10. Given below are two statements. One labelled as **Assertion (A)** and the other labelled as **Reason (R)** :
Assertion (A) : Radon is an inert gas and it is radioactive.
Reason (R) : All inert gases are radioactive.
Choose the **correct** answer :
(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are correct and **(R)** is not the correct explanation of **(A)**.
(3) **(A)** is true, but **(R)** is false.
(4) **(A)** is false, but **(R)** is true.

11. Most of Epiphytes are examples of type of biotic interactions called :
(1) Mutualism (2) Coevolution (3) Commensalism (4) Parasitism

12. Inhalation of airborne mold spore leads to disease in man such as :
(1) Bronchitis (2) Allergy
(3) Cardiac congestion (4) Eye irritation

13. Biological diversity is mainly a function of :
(a) Latitude
(b) Longitude
(c) Distance from sea
Choose the **correct** answer :
(1) (a) only (2) (a) and (b) only (3) (b) and (c) only (4) (a), (b) and (c)

14. The ability of a living system to be restored through secondary succession after a more severe disturbance is known as :
(1) Rehabilitation (2) Resistance (3) Resilience (4) Restoration

15. The characteristic feature of the background extinction is disappearance of a species at a :
(1) low rate (2) fast rate (3) lapse rate (4) intrinsic rate

16. Speciation means :
(1) Natural process of extinction of different species
(2) Artificial process of extinction of different species
(3) One species splits into two or more different species naturally
(4) Characterisation of different species

17. Topological modelling is a well organized cluster of functions in GIS to process :
(a) Spatial data
(b) Attribute data
(c) Physico - chemical data
(d) Species richness data
Choose the **correct** code :
(1) (a) and (b) only (2) (b) and (c) only
(3) (a), (b) and (c) only (4) (a), (b), (c) and (d)

18. A rock body or formation which may be porous enough to hold enough quantity of water but which by virtue of its other properties does not allow an easy and quick flow through it, is called :

(1) Aquitard (2) Aquifuge (3) Aquiclude (4) Aquifer

19. For many decades, geologists noted the high number of earthquakes and active volcanoes occurring around the rim of the Pacific Ocean basin. This is called :

(1) Volcanic ring (2) Ring of fire
(3) Earthquake zone (4) Volcanic hot spot

20. Inversion that occurs near Earth's Surface is called :

(1) Radiation inversion (2) Advectional inversion
(3) Subsidence inversion (4) Cold - air - drainage inversion

21. The radiation flux emitted per unit solid angle in a specified direction by a unit area of source is called :

(1) irradiance (2) radiance (3) exitance (4) radiant flux

22. Mean residence time of soil organic matter in an ecosystem is maximum in :

(1) Tropical rain forest (2) Boreal forest
(3) Temperate coniferous forest (4) Dry deciduous forest

23. Worst affected area by Indian Ocean Tsunami of December 2004 in India was :

(1) Andaman and Nicobar Islands (2) Tamil Nadu
(3) Andhra Pradesh (4) Odisha

24. Consider solar insolation of 400 W/m^2 incident on a single solar cell of area 100 cm^2. If only 15% of the photons cause electron - hole pairs and the average energy of incident photons is ~1 eV, the short circuit current of the cell is :

(1) 1.2 A (2) 1.5 A (3) 1.6 A (4) 1.8 A

25. For which of the following renewable resources of energy, sun is not directly responsible ?

(1) Wind (2) Biomass (3) OTEC (4) Tidal

26. In terms of the calorific value, identify the **correct** sequence :

(1) Methane > hydrogen > ethanol > methanol
(2) Hydrogen > methane > ethanol > methanol
(3) Methane > hydrogen > methanol > ethanol
(4) Hydrogen > ethanol > methane > methanol

27. At a given location the wind speeds are predominantly in the range 6 to 6.4 m/s. This location's wind power class will be termed as :

(1) Fair (2) Good (3) Excellent (4) Outstanding

28. Which of the following nuclides does not undergo fission with low energy (slow) neutrons ?
(1) 235 U (2) 238 U (3) 239 Pu (4) 233 U

29. According to CPCB standards, the annual average concentration of $PM_{2.5}$ should not exceed :
(1) 60 $\mu g\ m^{-3}$ (2) 40 $\mu g\ m^{-3}$ (3) 80 $\mu g\ m^{-3}$ (4) 100 $\mu g\ m^{-3}$

30. Which of the following is a secondary aerosol ?
(1) Pollens (2) Virus
(3) Sodium Chloride (4) Ammonium Sulphate

31. In the colorimetric determination of ambient SO_2 by WEST-GAEKE method, the absorbance of the colored complex should be measured at which of the following wavelengths ?
(1) 550 nm (2) 650 nm (3) 450 nm (4) 350 nm

32. A healthy human ear, before experiencing pain, can detect sound pressure levels as high as :
(1) 50 Pa (2) 100 Pa (3) 200 Pa (4) 1000 Pa

33. The resultant of two noise levels of 80 dB and 50 dB will be about :
(1) ~ 80 dB (2) ~ 82 dB (3) ~ 60 dB (4) ~ 130 dB

34. The half life of radioactive iodine -131 is :
(1) 30 years (2) 15 years (3) 5 years (4) 8 years

35. Which of the following best describes the function of the environmental management plan as a part of the environmental statement ?
(1) It describes the environmental impacts of the proposal.
(2) It describes the baseline environmental data.
(3) It describes the project proposal in detail.
(4) It describes the actions and auditing procedures needed.

36. India submitted its INDCs related to climate change to the UN recently. What does INDCs stand for ?
(1) Intended Nationally Devoted Contributions
(2) Intended Nationally Determined Contributions
(3) Intended Notified Decisive Contributions
(4) India's Nationally Determined Contributions

37. Formal EIA became an integral part of Environmental Management in India by a Notification for the first time in :
(1) 1988 (2) 1990 (3) 1992 (4) 1994

38. EIA is necessary because :
(a) Development is not good for environment
(b) Environmental impacts of development are in public interest
(c) There is growing interest in sustainability
Choose the **correct** answer :
(1) (a) only (2) (b) only (3) (b) and (c) only (4) (a), (b) and (c)

39. A moist air parcel at 24°C has a mixing ratio of 10 g per kg. Its virtual temperature is :
(1) ~ 25.81°C (2) ~ 20.68°C (3) ~ 31.25°C (4) ~ 28.12°C

40. The Vienna Convention is basically related to :
(1) International trade in endangered species
(2) Protection of O_3 layer
(3) Biodiversity conservation
(4) Preservation of cultural environment

41. According to Wildlife Protection Act in India, who is the authority to issue permission to hunt rogue animals ?
(1) Chief Minister of the State (2) Chief Wildlife warden
(3) Conservator of Forest (4) Deputy Commissioner

42. According to MOEF (now MOEFCC) notification of 1992, for labelling cosmetics as environment friendly product, the presence of fluoride (F) in tooth paste/powder should not exceed :
(1) 20 ppm (2) 50 ppm (3) 100 ppm (4) 10 ppm

43. Which one of the following methods converts decomposed liquid or solid hazardous organic waste effectively ?
(1) Open incineration (2) Plasma incineration
(3) Sanitory landfill (4) Bioremidiation

44. For a bi-variate sample, the correlation coefficient is 0.25 and it is found to be significantly different from zero at 5% level of significance. Given $t_{0.05} = 1.645$, what is the minimum size of the sample ?
(1) 43 (2) 50 (3) 55 (4) 63

45. Which one of the following is non-probability sampling ?
(1) Convenience probability (2) Stratified
(3) Cluster (4) Systemic

46. A parametric test generally used to compare sample variance to a theoretical population variance, is :
(1) F - test (2) Z - test (3) t - test (4) x^2 - text

47. From a random sample of 36 fish caught in a sample, the mean length $(\overline{X})$ and sample standard deviation (sd) were found to be 30 cm and 6 cm respectively. If at 95% confidence level z is 1.96, then the mean length of fish in this population is in the range :

(1) $27 < X < 33$ (2) $27.5 < X < 32.5$ (3) $24 < X < 36$ (4) $28.04 < X < 32$

48. One of the natural causes of occurrence of inland soil alkalinity is the presence of :

(1) Sodium hypochlorite (2) Potassium nitrate
(3) Sodium chloride (4) Sodium carbonate

49. The Supreme Court of India directed the government to implement environmental education in all educational institutions as compulsory subject in :

(1) 1976 (2) 2003 (3) 1988 (4) 2014

50. Organic wetland soils have :

(1) high cation capacity (2) high bulk density
(3) low porosity (4) high nutrient availability

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