

ENVIRONMENTAL SCIENCE

1. Water coexists in all its three phases in equilibrium at a temperature of 273.16K at a pressure of :
 - (A) 0.004 atm
 - (B) 0.005 atm
 - (C) 0.006 atm
 - (D) 0.007 atm
2. Which radioactive substance is used for determining the age of organic material in the age group of 100 to 1,00,000 years ?
 - (A) C^{14}
 - (B) Rb^{87}
 - (C) K^{40}
 - (D) U^{238}
3. During which epoch of the tertiary period did the modern birds appear on the earth ?
 - (A) Eocene
 - (B) Palaeocene
 - (C) Oligocene
 - (D) Miocene
4. The effectiveness of water as a chemical weathering agent may be enhanced by :
 - (A) local climate
 - (B) chemical stability of the rock
 - (C) both (A) and (B)
 - (D) None of the above

5. More than half of the world human population occupies only about :
- (A) 5% of the land
 - (B) 10% of the land
 - (C) 15% of the land
 - (D) 20% of the land
6. The iron catastrophe was a critical moment in the evolutionary history of earth when iron located in one of the following depths got liquefied. The depth was :
- (A) Surface layer of the earth
 - (B) 100-400 km
 - (C) 200-500 km
 - (D) 400-800 km
7. Which of the following measures is used to tackle soil erosion by water as well as wind ?
- (A) Netting
 - (B) Terracing
 - (C) Contour ploughing
 - (D) All of the above
8. On an average the residence time of water in atmosphere is :
- (A) 2-4 days
 - (B) 8-10 days
 - (C) 4-6 days
 - (D) 6-7 days

9. In the context of human population, the number of persons per unit area of agricultural (arable) land available within a country is known as its :
- (A) Arithmetic density
 - (B) Physiological density
 - (C) Agricultural density
 - (D) None of the above
10. Which one of the following is *not* a polyester ?
- (A) Dacron
 - (B) Vycron
 - (C) Vycra
 - (D) All the three are polyesters
11. Bakelite is a condensation polymer of :
- (A) Phenol and Formaldehyde
 - (B) Phenol and Acetaldehyde
 - (C) Formaldehyde and Benzoic acid
 - (D) Ethylene glycol and Formaldehyde
12. The total carbon content stored in the oceans is about 3197×10^{15} mol C. Of this major portion is in the form of :
- (A) Soluble organic carbon
 - (B) Carbonates and bicarbonates
 - (C) Biomass
 - (D) All the components are of equal importance

13. Which of the following is *not* a polysaccharide ?
- (A) Amylopectin
 - (B) Amylose
 - (C) Cellobiose
 - (D) All the above are polysaccharides
14. Fibrous proteins are *not* present in :
- (A) Fibrinogen
 - (B) Myosin
 - (C) Collagen
 - (D) Keratin
15. Heating of C_6H_5ONa at about 400 K with CO_2 under pressure followed by acetylation results in the formation of :
- (A) N-Acetyl-p-phenatidine
 - (B) N-Acetyl-p-aminophenol
 - (C) Phenyl salicylate
 - (D) Acetyl-salicylic acid
16. Which of the following heavy metals reacts directly with the red blood cell membrane, causing it to become fragile and more susceptible to hemolysis that may lead to anemia ?
- (A) Cadmium
 - (B) Lead
 - (C) Chromium
 - (D) Nickel

17. Which of the following statements is/are true according to Plate Tectonics ?
- (A) The outer portion of the earth, called lithosphere, is composed of large rigid units called plates
 - (B) The plates move in response to the flow of the heat-softened liquid outer core
 - (C) Both (A) and (B)
 - (D) None of the above
18. The contribution of the ground water resource of the world (which is approximately 7 million km³) to the global hydrological cycle is about :
- (A) 0.1%
 - (B) 0.5%
 - (C) 1.0%
 - (D) 1.2%
19. Dehydrogenation of isocitric acid results in the formation of oxalosuccinic acid and the latter on decarboxylation forms :
- (A) Succinyl-CoA
 - (B) Succinic acid
 - (C) α -Ketoglutaric acid
 - (D) None of the above

20. Which of the following is used as an anti-inflammatory medicine ?
- (A) Butazolidine
 - (B) Aspirin
 - (C) Both (A) and (B)
 - (D) None of the above
21. The adverse health effects caused by the ingestion or inhalation of cadmium include :
- (A) Renal tubular dysfunction
 - (B) High blood pressure
 - (C) Both (A) and (B)
 - (D) None of the above
22. The largest reservoir within the phosphorus cycle is the earth's crust, where the total quantity of phosphorus stored (in 10^{15} mol P) is about :
- (A) 6.78
 - (B) 3.78
 - (C) 1.78
 - (D) 9.78
23. Conversion of Citric acid to Isocitric acid through the sequence Citric Acid \rightarrow cis-aconitic acid \rightarrow Isocitric acid requires the enzyme :
- (A) Isocitrate dehydrogenase
 - (B) Aconitase
 - (C) Aconitase followed by Isocitrate dehydrogenase
 - (D) Isocitrate dehydrogenase followed by Aconitase

24. Natural rubber is obtained from the plant :
- (A) *Crotalaria juncea*
 - (B) *Hevea brasiliensis*
 - (C) Both (A) and (B)
 - (D) None of the above
25. Pushm (pashmina) wool is obtained from :
- (A) *Moschus moschiferus*
 - (B) *Panthelops hodgsoni*
 - (C) *Ovis ammon*
 - (D) *Capra siberica*
26. Which one is the correct sequence of transformation of Fructose-6-phosphate during Blackman's reaction ?
- (A) \rightarrow Erythrose-4-phosphate \rightarrow 1, 7-Sedoheptulose diPO₄ \rightarrow Sedoheptulose-7-PO₄ \rightarrow Ribose-5-PO₄
 - (B) \rightarrow 1, 7-Sedoheptulose diPO₄ \rightarrow Erythrose-4-phosphate \rightarrow Sedoheptulose-7-PO₄ \rightarrow Ribose-5-PO₄
 - (C) \rightarrow 1, 7-Sedoheptulose diPO₄ \rightarrow Sedoheptulose-7-PO₄ \rightarrow Ribose-5-PO₄ \rightarrow Erythrose-4-phosphate
 - (D) \rightarrow Sedoheptulose-7-PO₄ \rightarrow 1, 7-Sedoheptulose-diPO₄ \rightarrow Ribose-5-PO₄ \rightarrow Erythrose-4-phosphate

27. Which of the below mentioned plants is listed as endangered by the IUCN ?
- (A) *Papaver somniferum*
 - (B) *Limum usitatissimum*
 - (C) *Aconitum heterophyllum*
 - (D) None of the above
28. Major soil types found in Maharashtra are :
- (A) Black and alluvial
 - (B) Alluvial and laterite
 - (C) Black and red
 - (D) Red and alluvial
29. The light energy utilized by green plants for photosynthesis forms :
- (A) Less than 10% of the total light incident on earth
 - (B) Less than 5% of the total light incident on earth
 - (C) Less than 2% of the total light incident on earth
 - (D) Less than 1% of the total light incident on earth
30. Buffer capacity of water is large in :
- (A) Strongly acidic and strongly basic solution
 - (B) Strongly acid and weakly basic solution
 - (C) Weakly acidic and strongly basic solutions
 - (D) Solutions of intermediate pH

31. The unconsolidated products of mechanical and chemical weathering that cover almost all of the earth's land surface are called :
- (A) Regolith
 - (B) Xenolith
 - (C) Lopolith
 - (D) Batholith
32. Soil erosion rates are highest in areas with :
- (A) fine-grained soils and periodic intense rainfall
 - (B) steep slopes and periodic intense rainfall
 - (C) fine-grained soils, steep slopes and periodic intense rainfall
 - (D) None of the above
33. Which of the following rivers is connected with the Bay of Bengal ?
- (A) Chambal
 - (B) Betwa
 - (C) Both (A) and (B)
 - (D) None of the above
34. The markhor, which has been designated as an endangered animal as per the Jammu and Kashmir Wildlife Act, is zoologically known as :
- (A) *Capra capra*
 - (B) *Capra falconeri*
 - (C) *Capra siberica*
 - (D) *Procapra picticaudata*

35. Hirakud dam is associated with :
- (A) Godavari river system
 - (B) Mahanadi river system
 - (C) Krishna river system
 - (D) Tapi river system
36. Coastal belt across India is mainly characterized by :
- (A) Laterite soil
 - (B) Desert soil
 - (C) Alluvial soil
 - (D) Red soil
37. Majority of the trace elements are :
- (A) *s*-block elements
 - (B) *d*-block elements
 - (C) Both (A) and (B)
 - (D) None of the above
38. For predicting the best value of X for given Y, we make use of :
- (A) Regression equation of Y on X
 - (B) Regression equation of X on Y
 - (C) Means of X and Y series
 - (D) None of the above

39. The correlation coefficient between two variables is 0.8, then the coefficient of determination is :
- (A) 0.64
 - (B) 0.89
 - (C) 0.80
 - (D) 1.00
40. Leh district is situated between the east longitudes of :
- (A) $75^{\circ} 45'$ and $85^{\circ} 20'$
 - (B) $70^{\circ} 45'$ and $76^{\circ} 20'$
 - (C) $78^{\circ} 45'$ and $86^{\circ} 20'$
 - (D) $75^{\circ} 45'$ and $80^{\circ} 20'$
41. Slipped tendon disease (Perosis) in the chicken has been related with the deficiency of :
- (A) Cobalt
 - (B) Manganese
 - (C) Mercury
 - (D) Cadmium
42. The main problem associated with the release of Nitrogen oxides into the stratosphere is the :
- (A) production of acid rain
 - (B) production of photochemical smog
 - (C) depletion of ozone
 - (D) All of the three

43. Diarrhial diseases are infections of intestinal tract and are mainly caused by :
- (A) *Salmonella* spp., *Treponema pallidum*, *Yersinia pestis* and *Shigella* spp.
 - (B) *E. coli*, *Vibrio cholerae*, *Salmonella* spp. and *Shigella* spp.
 - (C) *E. coli*, *Vibrio cholerae*, *Treponema pallidum* and *Yersinia pestis*
 - (D) *E. coli*, *Salmonella* spp., *Treponema pallidum* and *Yersinia pestis*
44. Most of the iron ore deposits in India are found in :
- (A) Peninsular India
 - (B) Himalayan Belt
 - (C) Northern India
 - (D) None of the above
45. The first bioherbicide developed in 1981 for controlling the growth of milk weed was mycoherbicide based on the fungus :
- (A) *Rhizopus nigricans*
 - (B) *Puccinia recondita*
 - (C) *Phytophthora palmivora*
 - (D) None of the above

46. Which of the following regions has Himalayan as well as Karakoram Mountain ranges ?
- (A) Jammu
 - (B) Kashmir
 - (C) Ladakh
 - (D) None of the above
47. Which of the following microbes has been genetically engineered so as to use it for the production of human insulin, interferons, interleukin, etc. :
- (A) *Escherichia coli*
 - (B) *Pseudomonas putida*
 - (C) *Rhizobium meliloti*
 - (D) *Pseudomonas fluorescence*
48. The product of two regression coefficients is :
- (A) > 1
 - (B) 1
 - (C) < 1
 - (D) None of the above

49. The presence of *Escherichia coli* and/or *Aerobacter aerogenes* in a water body is an indication of the entry of :
- (A) contaminated wastes from industrial units into it
 - (B) organic wastes from human settlements into it
 - (C) Both (A) and (B)
 - (D) None of the above
50. Weil's disease, is associated with :
- (A) Air pollution
 - (B) Water pollution
 - (C) Both (A) and (B)
 - (D) None of the above
51. GGU and GGC codons code for the amino acid :
- (A) Glutamic acid
 - (B) Glycine
 - (C) Alanine
 - (D) None of the above
52. Globally anthropogenic output of sulphur dioxide gas, produced mainly as a result of fossil fuel burning, accounts for :
- (A) $1.6 \times 10^{12} \text{ mol S a}^{-1}$
 - (B) $2.6 \times 10^{12} \text{ mol S a}^{-1}$
 - (C) $3.6 \times 10^{12} \text{ mol S a}^{-1}$
 - (D) None of the above

53. The fish *Neoceratodus* is a characteristic feature of which of the following zoogeographical realms ?
- (A) African
 - (B) Australian
 - (C) Nearctic
 - (D) Neotropical
54. In a simultaneous throw of two dice, the probability of getting a total of 6 is :
- (A) $2/36$
 - (B) $3/36$
 - (C) $4/36$
 - (D) $5/36$
55. *Alligator* is present in which of the following zoogeographical realms ?
- (A) Palaearctic
 - (B) Nearctic
 - (C) Both (A) and (B)
 - (D) None of the above
56. Among the various types of coal the least carbon content is found in :
- (A) Anthracite coal
 - (B) Bituminous coal
 - (C) Lignite coal
 - (D) Brown coal

57. Most commonly used green manure in India is :
- (A) Cluster bean
 - (B) Berseem
 - (C) Both (A) and (B)
 - (D) None of the above
58. Human disease caused by protozoans includes :
- (A) Trichomoniasis
 - (B) Meningitis
 - (C) Both (A) and (B)
 - (D) None of the above
59. Incubation period in case of malarial parasite, *Plasmodium vivax*, is :
- (A) 2-4 days
 - (B) 10-17 days
 - (C) 30-40 days
 - (D) None of the above
60. Which of the following bacteria has been successfully used as a microbial insecticide ?
- (A) *Bacillus thuringiensis*
 - (B) *Bacillus buschlii*
 - (C) *Beggiatoa mirabilis*
 - (D) *Bacillus coli*