

Environmental Science

1. Assertion (A): Biosphere constitutes an excellent life-support system which is sustainable and can fulfil all human needs.

Reason (R): The size and productivity of the Biosphere is limited by availability of water, nutrients and environmental conditions.

Identify the correct code:

Codes:

(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.

Answer: (D)

2. Geostrophic wind occurs when pressure gradient force balances

(A) Coriolis force

(B) Frictional force

(C) Centripetal force

(D) Coriolis and frictional force together

Answer: (A)

3. Scales of Meteorology are in the following order starting from the least

(A) Macro –, Micro –, Meso –

(B) Macro–, Meso–, Micro–

(C) Meso–, Macro–, Micro–

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(D) Micro-, Meso-, Macro –

Answer: (D)

4. When the full potential of physical, chemical and biological factors, a species can use if there is no competition, it is called

(A) Fundamental niche

(B) Ecological niche

(C) Realized niche

(D) Competitive exclusion

Answer: (A)

5. The uppermost zone of atmosphere of earth, where shortwave ultraviolet radiations are absorbed, is

(A) Troposphere

(B) Stratosphere

(C) Mesosphere

(D) Thermosphere

Answer: (D) www.netugc.com

6. which of the following oxides of nitrogen is the major air pollutant released from automobile exhausts?

(A) NO

(B) N₂O

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(C) NO₂

(D) N₂O₃

Answer: (A)

7. Match List – I with List – II which contains pollutant gases and their threshold (safe limit) values as per WHO standards:

List – I

List – II

(Pollutant gas)

(Thresholds)

a. CO

i. 2 ppm

b. SO₂

ii. 50 ppm

c. NO

iii. 0.08 ppm

d. PAN

iv. 25 ppm

Identify the correct code:

Codes:

a b c d

(A) ii iii i iv

(B) iv ii i iii

(C) ii i iv iii

(D) iii iv ii i

Answer: (C)

8. The band labelled as UV-C which is lethal to micro-organisms is

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(A) 0.29 – 0.32 m

(B) 0.2 – 0.29 m

(C) 0.17 – 0.2 m

(D) 0.07 – 0.21 m

Answer: (B)

9. Which of the following species in the atmosphere is called atmospheric detergent?

(A) Chlorine radical

(B) Hydroxyl radical

(C) Methyl radical

(D) Ozone radical

Answer: (B)

10. The POH of a 0.001 M solution of HCl is

(A) 12

(B) 10

(C) 11

(D) 13

Answer: (C)

11. Identify the pair (element-health effect) which is correctly matched:

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- (A) Lead – Methaemoglobinemia
- (B) Arsenic – Kidney damage
- (C) Mercury – Nervous disorder
- (D) PAN – Hypoxemia

Answer: (D)

12. Which of the following organisms can act as primary consumer, secondary consumer, tertiary consumer or scavenger in different types of food chains?

- (A) Raven
- (B) Tiger
- (C) Snake
- (D) Phytoplanktones

Answer: (A)

13. The tendency of biological systems to resist change and to remain in a state of equilibrium is called

- (A) Homeostatis
- (B) Feedback mechanism
- (C) Ecological efficiency
- (D) Carrying capacity

Answer: (A)

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14. If different categories of threatened species are written in a sequence, what is the correct order?

- (A) Extinct-> Vulnerable -> Rare -> Endangered
- (B) Vulnerable -> Rare -> Endangered -> Extinct
- (C) Vulnerable -> Rare -> Extinct -> Endangered
- (D) Rare -> Vulnerable -> Endangered -> Extinct

Answer: (B)www.netugc.com

15. Which of the following is not a type of ex situ conservation method?

- (A) Botanical garden
- (B) Zoological park
- (C) Wildlife sanctuaries
- (D) Gene banks

Answer: (C)

16. As a consequence of succession the P/B ratio (Gross production /

Standing crop biomass) is changed. It is

- (A) High during developmental stages and low at mature stage.
- (B) Low during developmental stages and high at mature stage.
- (C) > 1 or < 1 at developmental stages and approximately 1 at mature stage.
- (D) Remaining unchanged at all stages.

Answer: (A)

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17. Preparation of hazard-zoning map in case of landslide prone regions involves comprehensive investigation of

- (A) Details of structural and lithological settings.
- (B) Geomorphic features relating to instability of slopes.
- (C) Seismicity pattern of the region.
- (D) all of the above.

Answer: (D)

18. If a_p = specified value of peak acceleration, N = mean rate of occurrence of earthquake per year, t_{ep} = time interval of consideration (exposure period) and F_{ap} = probability that an observed acceleration is less than or equal to a_p , then the cumulative probability distribution of peak acceleration for epoch – dependent seismic hazard map is given by which formula ?

- (A) $F_{max t_{ep}} = \exp \{-Nt(1 - F_{ap})\}$
- (B) $F_{max} = \exp \{-Nt(1 - F_{ap})\} \cdot t_{ep}$
- (C) $F_{max t_{ep}} = \exp \{-t(1 - F_{ap})N\}$
- (D) All of the above

Answer: (A)

19. Assertion (A): In oceans, Na has the longest residence time, within an order of magnitude of the age of the oceans.

Reason (R): The long residence time of Na reflects a lack of reactivity of sodium in the marine environment by not being readily incorporated in the common sedimentary minerals, nor being removed by biological reactions.

Identify the correct code:

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Codes:

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(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.

Answer: (A)

20. According to Goldieh the decreasing order of stability of following minerals of igneous rocks towards weathering is

(A) Muscovite > Quartz > Potash feldspar > Biotite

(B) Biotite > Potash feldspar > Muscovite > Quartz

(C) Quartz > Muscovite > Potash feldspar > Biotite

(D) Potash feldspar > Quartz > Muscovite > Biotite

Answer: (C)

21. In universal polar stereographic coordinate system the eastings and northings are computed using which projection method?

(A) Polar aspect stereographic projection

(B) Non-polar aspect stereo graphic projection

(C) Polar aspect Mercator projection

(D) Non-polar aspect Mercator projection

Answer: (A)

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22. Pitchblende is an ore of

- (A) Nickel
- (B) Chromium
- (C) Molybdenum
- (D) Uranium

Answer: (D)

23. Copper (Cu) is classified according to its geochemical affinity as

- (A) Siderophile element
- (B) Chalcophile element
- (C) Lithophile element
- (D) Atmophile element

Answer: (B)

24. If 'a' is the fractional wind speed decrease at the wind turbine, the maximum extraction of power from the wind occurs when 'a' is equal to

- (A) $1/2$
- (B) $1/3$
- (C) 1
- (D) $3/5$

Answer: (B)

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25. in the following fusion energy reaction

$D + T = {}^4_2\text{He} + X$ identify X

- (A) Li
- (B) H₂
- (C) He₃
- (D) He₄

Answer: (D)

26. Assertion (A): Natural gas is a very attractive eco friendly fuel.

Reason (R): It produces few pollutants and less carbon dioxide per unit energy than any other fossil fuel on combustion.

Identify the correct answer:

Codes:

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- (C) (A) is true but (R) is false.
- (D) (A) is false but (R) is true.

Answer: (A) www.netugc.com

27. Assertion (A): Solar photovoltaic cells are expensive.

Reason (R): Solar photovoltaic cells are fabricated from crystalline silicon and operate only at 10-12% efficiency.

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Identify the correct answer:

Codes:

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

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

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

Answer: (A)

28. Human activities add 7-9 gigatons of CO₂ per annum into the atmosphere. Major contributor to this CO₂ is

(A) Burning of fossil fuels

(B) Clearing of forests for agriculture

(C) Fermentation industries

(D) Cement industries

Answer: (A)

29. According to WHO, maximum permissible level of chlorides in drinking water is

(A) 100 mg/L

(B) 200 mg/L

(C) 600 mg/L

(D) 800 mg/L

Answer: (C)

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30. Wilting coefficient of a loam represents

(A) The minimum water content of the soil at which plants can no longer obtain water

(B) Water holding capacity

(C) Capillary water

(D) Field capacity

Answer: (A)