

# Biodiversity and Conservation

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## Assertion & Reason Type Questions

consists of two statements, one is Assertion (A) and the other is Reason (R). Select the correct answer to these questions from the codes a, b, c and d as given below.

- a. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- b. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c. Assertion is true but Reason is false.
- d. Assertion is false but Reason is true.

**Q 1. Assertion (A):** The rate of extinction of organisms has increased in recent years.

**Reason (R):** Human activities like deforestation, industrialisation, etc. have destroyed the natural habitat of plants and animals.

**Answer :** (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

**Q 2. Assertion (A):** Species diversity decreases as we ascend towards high mountains.

**Reason (R):** Due to drop in temperature, no seasonal variability occurs in high mountains.

**Answer :** (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

**Q 3. Assertion (A):** Communities with more species tend to be more stable than those with less species.

**Reason (R):** Communities with more species is not able to resist occasional disturbances.

**Answer :** (c) Assertion is true, but Reason is false.

**Q 4. Assertion (A):** Dodo, Passenger pigeon, Steller's sea cow have become extinct due to over exploitation.

**Reason (R):** Excessive exploitation of a species, whether animal or plant reduces size of its population so that it becomes vulnerable to extinction.

**Answer :** (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion. Excessive exploitation of species, whether a plant or animal reduces the size of its population, so it becomes vulnerable to extinction. Such as Dodo and Passenger pigeon have become extinct due to over exploitation by humans.

**Q 5. Assertion (A):** Many endemic species are seen to flourish in sacred forests.

**Reason (R):** Sacred forests are undisturbed forest patches and biodiversity rich areas.

**Answer :** (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

**Q 6. Assertion (A):** Buffer zone surrounds the core area and limited human activities like resource use strategies, research and education are allowed here.

**Reason (R):** There is no biotic interference except in buffer zone.

**Answer :** (c) Assertion is true, but Reason is false.

**Q 7. Assertion (A):** Alpha diversity refers to species diversity present in a given community or habitat.

**Reason (R):** Alpha diversity is expressed by species richness and species evenness in a community or habitat.

**Answer :** (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

**Q8. Assertion:** Alpha diversity is said to be higher if the dissimilarity between communities is higher.

**Reason:** Alpha diversity is a measure of diversity between the communities.

**Q9. Assertion:** The species diversity present in a given community or habitat is referred to as alpha diversity.

**Reason:** Alpha diversity is usually expressed by species richness and species evenness in that community habitat.

**Q10. Assertion:** Diversity observed in the entire geographical area, is called gamma diversity.

**Reason:** Bio-diversity decreases from high altitude to low altitude.

**Q11. Assertion:** A biosphere reserve is a specified area.

**Reason:** No restriction on human activities has been imposed in biosphere reserve.

**Q12. Assertion:** In tropical rain forests. O-horizon and A-Horizon of soil profile are shallow and nutrient-poor.

**Reason:** Excessive growth of micro-organisms in the soil depletes its organic content. [AIIMS 2006]

**Q13. Assertion:** Communities that comprise of more species tend to be more stable.

**Reason:** A higher number of species results in less animal variation in total biomass. [AIIMS 2017].

**Q14. Assertion:** Community with more species tends to be more stable than those with less species.

**Reason:** More will be the species, less will be year to year variation in total biomass.

**Q15. Assertion:** A stable community should not show too much variation in productivity from year to year.

**Reason:** A stable community must be resistant to invasions by the alien species.

**Q16. Assertion:** Decrease in species diversity occurs as we ascend a high mountain.

**Reason:** Decrease in species diversity occurs with increase in altitude due to rise in temperature.

**Q17. Assertion:** Most common forest type in India is tropical dry deciduous forests.

**Reason:** They are common in West Bengal.

**Q18. Assertion:** Tropical latitudes have greater biological diversity than temperate latitudes.

**Reason:** Tropical regions remain relatively undisturbed for millions of years.

**Q19. Assertion:** If the species-area relationships are analyzed among very large areas like the entire continents, the value of Z i.e., slope of line lies in the range of 0.1 to 0.2.

**Reason:** The value of Z i.e., slope of line of species area relationships lies in the range of 0.6 to 1.2 when analysis is done among small areas.

**Q20. Assertion:** Speciation is a function of time and tropical regions had got a long evolutionary time for species diversification as compared to temperate regions.

**Reason:** Temperate regions have undergone frequent glaciations in the past whereas tropical regions have remained relatively undisturbed for millions of years.

**Q21. Assertion:** Taiga is also called North coniferous forest.

**Reason:** The ground flora is absent in Taiga.

**Q22. Assertion:** Temperate deciduous forest is two – storeyed forest.

**Reason:** Two stories are formed of soft wood and hard wood trees.

## **ANSWER KEY 8 to 22**

**Q8 :** (d) Alpha diversity (within-community diversity) refers to the diversity of organisms sharing the same community/ habitat. A combination of species richness and equitability/evenness is used to represent diversity within a community or habitat. Generally, greater the species richness, greater is the species diversity. Species frequently change when habitat or community changes. The rate of replacement of species along a gradient of habitats or communities is called beta diversity between-community diversity. Higher the heterogeneity in the habitats in a region or greater the dissimilarity between communities, higher is the beta diversity. Diversity of the habitats over the total landscape or geographical area is called gamma diversity.

**Q9 :** (a) Alpha diversity within community diversity is species diversity in a given community or habitat. It is dependent upon species richness and species evenness/equitability. There is a lot of competition, adjustments and interrelationships amongst members of the same community. The number of species per unit area is called species richness. Number of individuals of different species represent species evenness or species equitability.

**Q10 :** (c) Biodiversity is not uniform on the earth. It varies with change in latitude or altitude. Biodiversity increase, when we move from high to low latitude (i.e. from the poles to the equator).

**Q11 :** (c)

**Q12 :** (c) O-horizon occupies the topmost soil and is rich in mineral and decomposed organic matter (humus). A-horizon is dark coloured and has abundant minerals mixed with humus.

**Q13 :** (a) Communities with higher number of species are more stable as it can resist occasional disturbances. A stable community should show less variation in productivity from year to year and resistance towards alien species.

**Q14 :** (a) Communities with more species tend to be more stable than those with less species. It is able to resist occasional disturbance . A stable community should not show too much variation in productivity from year to year; it must be resistant to invasions by alien species. David Tilman's long term experiments showed the plots with more species, experience less year to year variation in total biomass.

**Q15 :** (b) A stable community should not show too much variation in productivity from year to year; it must be either resistant or resilient to occasional disturbances (natural or man-made), and it must also be resistant to invasions by alien species.

**Q16 :** (c) Barring arid/semiarid and aquatic habitats, biodiversity shows a latitudinal and altitudinal gradient. A decrease in species is observed as we ascend a high mountain due to drop in temperature (lapse temperature being 6.5°C for 1 km or 1000 m) and greater seasonal variability.

**Q17 :** (c) The tropical monsoon deciduous forests are found in areas receiving an annual rainfall of 100 to 200cms in India, with a distinct dry and rainy season and minimum temperature. The south western ghats moist deciduous forests are a tropical moist broad leaf forest ecoregion of southern India. It covers the southern portion of the Western Ghats range and the Nilgiri Hills between 250 and 1000 meters elevation in Kerala, Karnataka and Tamil Nadu states.

**Q18 :** (a) Tropical latitudes have greater biological diversity. It is quite true. Ecologists and evolutionary biologists have proposed various hypothesis in support of this. Speciation is generally a function of time and unlike temperate regions, subjected to frequent glaciations. In the past, tropical latitudes remained undisturbed for millions of years, where species continued to flourish.

**Q19 :** (d)

**Q20 :** (a) Speciation is a function of time. Temperate regions have undergone frequent glaciations in the past, due to which many species had been killed. However, tropical latitudes have remained relatively undisturbed for millions of years and thus, had a long evolutionary time for species diversification.

**Q21 :** (c)

**Q22 :** (d)