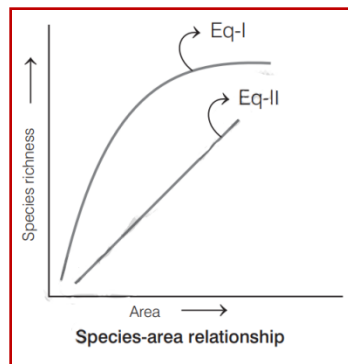


BIODIVERSITY AND ITS CONSERVATION

1. Three levels of biodiversity are
 - (A) genetic diversity, species diversity and ecological diversity
 - (B) species diversity, ecological diversity and habitat diversity
 - (C) geographical diversity, genetic diversity and habitat diversity
 - (D) ecological diversity, species diversity and community diversity
2. The medicinal plant, Rauwolfia vomitoria, growing in Himalayan ranges shows variation in terms of the potency and concentration of the chemical(reserpine), that it produces. It is an example of
 - (A) species diversity
 - (B) ecological diversity
 - (C) genetic diversity
 - (D) None of the above
3. Ecological diversity exists at community level and is of three types. Select the correctly matched option for ecological diversity.
 - (A) Alpha diversity – Diversity between communities
 - (B) Beta diversity – Diversity of organisms within same community
 - (C) Gamma diversity – Diversity of organisms over the entire geographical area
 - (D) None of the above
4. Biodiversity is affected by
 - (A) latitudinal gradients and species-area relationship
 - (B) species-area relationship and longitudinal gradients
 - (C) Both(A) and(B)
 - (D) latitudinal and longitudinal gradients
5. Tropics(23.5°N to 23.5°S) have species as compared to temperate or polar regions. The most appropriate word to fill the blank is
 - (A) less
 - (B) equal
 - (C) more
 - (D) None of these
6. Alexander von Humboldt observed that, within a region species richness..... with increasing explored area. The most appropriate word to fill the blank is

- (A) increased
- (B) decreased
- (C) increased up to a limit
- (D) decreased up to a limit

7. The great German naturalist and geographer Alexander von Humboldt observed that within a region species richness increased with increasing explored area, but only up to a limit. In fact, relation between species richness and area for a wide variety of taxa(angiosperm plants, birds, bats, freshwater fishes) turns out to be rectangular hyperbola. Now find out correct equations shown in the graph.



- (A) I - $S = CAZ$; II- $\log S = \log C + Z \log A$
 - (B) I - $\log S = \log C + Z \log A$; II - $S = CAZ$
 - (C) I- $S = CAZ + \log C$; II- $\log S = \log C + Z \log A$
 - (D) I - $S = CAZ + \log A$; II - $\log S = \log C + Z \log A$
8. The relationship between the species richness and the area for a wide variety of taxa appears as
- (A) straight line
 - (B) sigmoid curve
 - (C) rectangular hyperbola
 - (D) None of these
9. The value of 'Z' lies in the range of regardless of the taxonomic group or the region. The most appropriate value to fill the blank is
- (A) 0.5 to 0.7
 - (B) 0.3 to 0.7
 - (C) 0.2 to 0.3
 - (D) 0.1 to 0.2

10. Communities with more species tend to be more stable than those with less species. This was confirmed by
- (A) Alexander von Humboldt
 - (B) David Tilman
 - (C) Paul Ehrlich
 - (D) Edward Wilson
11. Anthropogenic extinction is called
- (A) fifth mass extinction
 - (B) fourth mass extinction
 - (C) sixth mass extinction
 - (D) seventh mass extinction
12. The term 'The Evil Quartet' is related with
- (A) Four major causes of forest loss
 - (B) Four major causes of population explosion
 - (C) Four major causes of air pollution
 - (D) Four major causes of biodiversity losses
13. Which of the following is responsible for biodiversity loss?
- (A) Habitat loss and fragmentation
 - (B) Alien species invasions
 - (C) Coextinctions
 - (D) All of the above
14. Many species like Steller's sea cow and passenger pigeon have been driven to the brink of extinction. Which of the following describes this situation?
- (A) Overexploitation by humans
 - (B) Pollution
 - (C) Habitat loss
 - (D) Competition from introduced species
15. Water hyacinth(*Eichhornia crassipes*) was introduced in Indian water to reduce pollution. It is an example of
- (A) disturbance and degradation
 - (B) coextinctions
 - (C) alien species invasions
 - (D) overexploitation

16. More than 25% of the drugs are derived from the plants. What benefit does this describe?
- (A) Aesthetic value
 - (B) Ethical value
 - (C) Indirect economic value
 - (D) Direct economic value
17. What is the sustainable use of resources?
- (A) Protected strips of the land that allows organisms to migrate from one wilderness area to another
 - (B) A law that makes it illegal to do harm to the species that are listed as endangered or threatened
 - (C) The ability to use natural resources in a way that helps people to protect the ecosystem
 - (D) The study of the methods which help to protect biodiversity
18. Conservation in the natural habitat is
- (A) in situ
 - (B) ex situ
 - (C) zoo
 - (D) botanical garden
19. Which one of the following areas in India, is a hotspot of biodiversity?
- (A) Eastern Ghats
 - (B) Gangetic plain
 - (C) Sunderbans
 - (D) Western Ghats
20. Conservation of hotspots are best described as
- (A) conserving islands that are experiencing high rates of extinction
 - (B) conserving areas where native species are being replaced with introduced species
 - (C) conserving areas where the people are active supporters of the biological diversity
 - (D) conserving areas with the large members of endemic species that are disappearing rapidly
21. What is the approximate percentage of the earth covered by terrestrial hotspots?
- (A) 1.5%(less than 2%)
 - (B) 2.5%

- (C) 3.5%
 - (D) 4.5%
22. Which one of the following is not a method of in situ conservation of biodiversity?
- (A) Wildlife sanctuary
 - (B) Botanical garden
 - (C) Sacred grove
 - (D) Biosphere reserve
23. Biosphere reserves differ from the national parks and wildlife sanctuaries because in the former
- (A) human beings are not allowed to enter
 - (B) people are an integral part of the ecosystem
 - (C) plants are paid greater attention than the animals
 - (D) living organisms are brought from all over the world and preserved for posterity
24. In your opinion, which is the most effective way to conserve genetic diversity of the plant of an area?
- (A) By tissue culture method
 - (B) By creating biosphere reserve
 - (C) By creating botanical garden
 - (D) By developing seed bank
25. Sacred groves in India are related with
- (A) aesthetic pleasure
 - (B) the place where threatened species are protected
 - (C) the place where only artificial plant breeding is allowed
 - (D) forest patches around the places of worship
26. Sacred groves in India are found in
- (A) Jaintia hills of Karnataka
 - (B) Western Ghat regions of Tamil Nadu
 - (C) Aravalli hills of Meghalaya
 - (D) Bastar areas of Madhya Pradesh
27. Which one of the following is not used for ex situ plant conservation?
- (A) Field gene banks
 - (B) Seed banks
 - (C) Shifting cultivation

(D) Botanical gardens

28. One of the most important function of botanical gardens is that
- (A) one can observe tropical plants there
 - (B) they allow ex situ conservation of the germplasm
 - (C) they provide the natural habitat for wildlife
 - (D) they provide a beautiful area for recreation
29. In which one of the following, both pairs have correct combination?
- (A) In situ conservation/National park Ex situ conservation/Botanical garden
 - (B) In situ conservation/Cryopreservation Ex situ conservation/Wildlife sanctuary
 - (C) In situ conservation/Seed bank Ex situ conservation/National park
 - (D) In situ conservation/Tissue culture Ex situ conservation/Sacred groves
30. Where was the World Summit on Sustainable development held ?
- (A) South Africa
 - (B) USA
 - (C) South Korea
 - (D) UK

ANSWERS

1	(A)	2	(C)	3	(C)	4	(A)	5	(C)
6	(A)	7	(A)	8	(C)	9	(D)	10	(B)
11	(C)	12	(D)	13	(D)	14	(A)	15	(C)
16	(C)	17	(C)	18	(A)	19	(D)	20	(D)
21	(A)	22	(B)	23	(B)	24	(B)	25	(D)
26	(D)	27	(C)	28	(B)	29	(A)	30	(A)

HINTS & EXPLANATIONS

- 3(C) Option(C) contains the correctly matched pair for ecological diversity. Rest of the options are incorrectly matched and can be corrected as
- Alpha diversity occurs within the same community.
 - Beta diversity exists between different communities.
- 6(A) Alexander von Humboldt was a German naturalist and geographer who described species-area relationship for the first time. He did extensive explorations in the wilderness of South American forests and observed that within a region, species richness increases with increasing explored area, but up to a certain limit.
- 8(C) The relationship between the species richness and the area for a wide variety of taxa(angiosperm plants, birds, bats, freshwater fishes) appears as a rectangular hyperbola.
- 9(D) Ecologists have discovered that the value of Z lies in the range of 0.1 to 0.2, regardless of the taxonomic group or the region whether it is the plants in Britain, birds in California or molluscs in New York state, the slopes of the regression line are amazingly similar.
- 14(A) Many species like Steller's sea cow and passenger pigeon have been driven to the brink of extinction. This is due to overexploitation of a species by humans, which reduces the size of its population and it becomes vulnerable to extinction. Many marine fishes like whales population is also declining around the world because of overharvesting.
- 17(C) Sustainable use of resources is the ability to use natural resources such as forests and wildlife, water, soil, etc., in a way that helps people to protect the ecosystem. These resources are for future generations.
- 19(D) Western Ghats is a hotspot of biodiversity in India. Hotspots are areas that are extremely rich in species diversity in its natural habitat, have high endemism and are under constant threat. In India, three hotspots are found extending into neighbouring countries. The Western Ghats/Sri Lanka, the Indo-Burma region and the Himalayas.
- 20(D) Conservation of hotspots are best defined as conserving areas with the large members of endemic species which are disappearing rapidly. Eminent conservationists identified these areas(regions) with very high levels of species richness and high degree of endemism(i.e. species confined to that region and not found anywhere else) for maximum protection. Initially, the number of biodiversity hotspots were 25, but now it has increased up to 34.
- 22(B) Botanical garden is not a method of in situ conservation of biodiversity. It is a type of ex situ or off site conservation in which rare plants are conserved in

places outside their natural habitat. Rest all are methods of in situ conservation of biodiversity.

- 23(B) Biosphere reserves differ from the national parks and wildlife sanctuaries in that people are an integral part. But it is not the case in national parks and wildlife sanctuaries, where flora and fauna are separately conserved.
- 24(B) Biosphere reserve comes under in situ conservation method. Hence, it is the most effective way among the four, for preserving genetic diversity of the plants by protecting wild population, traditional and domesticated plant genetic resources.
- 25(D) Sacred groves are forest patches around the places of worship, which are held in high esteem by tribal communities. These are found in several parts of India, e.g. Karnataka, Maharashtra, Rajasthan(Aravalli), Madhya Pradesh(Sarguja, Chanda and Bastar), Kerala, Meghalaya. In Meghalaya, sacred groves are found in Jaintia and Khasi hills.
- 27(C) Shifting cultivation is not used for ex situ plant conservation. It results into deforestation. On the other hand, botanical gardens, seed banks and field gene banks are used as ex situ methods for conservation of plants.
- 28(B) A botanical garden is the collection of various types of living plants. Ex situ conservation means the conservation of plants or animals in the artificial habitats, which are quite similar to the normal habitats of these organisms. In this way, botanical gardens provide ex situ conservation of the germplasm.
- 29(A) The option with correct combination is(A) In situ conservation–National park Ex situ conservation–Botanical garden Rest of the options are incorrect and can be corrected as
- Wildlife sanctuary, national park and sacred groves are in situ method of biodiversity conservation.
 - Cryopreservation, seed bank and tissue culture are ex situ methods of biodiversity conservation.
- 30(A) The world summit on sustainable development was held in 2002 in Johannesburg, South Africa.