SmartKalike

CBSE Class 12 · Biology

Biodiversity and Conservation

10 most probable questions for Boards 2027

Q1. 1 mark · Multiple choice

According to the IUCN figure cited in the textbook, slightly more than how many plant and animal species had been described, while the total number on Earth remained uncertain? (1 mark)
(A) 150,000
(B) 1.5 million
(C) 7 million
(D) 50 million

Answer

(B) 1.5 million — the IUCN recorded slightly more than 1.5 million plant and animal species.

Q2. 2 marks · Short answer

State Robert May's estimate of global species diversity and the range of extreme estimates. Briefly explain how biologists extrapolate from temperate–tropical species-richness comparisons to estimate total diversity.

Answer

Robert May estimated global species diversity at about 7 million; extreme estimates range from 20 to 50 million. Biologists compare temperate–tropical species richness in an exhaustively studied insect group, then extrapolate the ratio to other animal and plant groups.

Q3. 3 marks · Medium answer

Give three reasons why tropical regions have greater species richness than temperate regions.

Answer

1. Speciation is generally a function of time. Tropics remained relatively undisturbed for millions of years, allowing longer evolutionary time for diversification than glaciated temperate regions.
2. Tropical environments are less seasonal, more constant and predictable, promoting niche specialisation and greater diversity.
3. Greater solar energy increases productivity and may indirectly support diversity.

Q4. 4 marks · Multiple choice

Select the correct statement about the slope Z in the species–area relationship. This multiple-choice item is worth 4 marks.
(A) Z is generally 0.1–0.2 for many taxa and regions, but is about 0.6–1.2 for very large areas such as continents.
(B) Z is generally 0.6–1.2 for all regions and taxa, including small areas.

(C) Z is always zero, regardless of the area studied.
(D) Z is generally 1.2–2.0 for small regions and 0.1–0.2 for continents.

Answer

(A) Z is generally 0.1–0.2 for many taxa and regions, but is about 0.6–1.2 for very large areas such as continents — the slope is steeper for species–area relationships across very large areas.

Q5. 9 marks · Very long answer

Describe the characteristics of a stable biological community. Summarise Tilman's findings on species richness, biomass variation and productivity, and explain the rivet popper hypothesis, including why the loss of key species may be especially serious.

Answer

A stable biological community maintains ecosystem functioning despite changes and disturbances.
1. A stable community shows little year-to-year variation in productivity. It resists or recovers from occasional natural or human-made disturbances and resists invasion by alien species.
2. In long-term outdoor-plot experiments, David Tilman found that plots with more species showed less year-to-year variation in total biomass.
3. Tilman also found that increased species diversity contributed to higher productivity, showing that species richness can support ecosystem functioning.
4. The rivet popper hypothesis compares an ecosystem to an aeroplane and its species to rivets. Removing a few rivets may not immediately cause failure, but each loss weakens the system.
5. Losing a key species, like a critical rivet in a wing, may cause disproportionate damage because other species and ecosystem processes depend on it; the system may ultimately fail.
Thus, conserving species richness helps protect ecosystem stability, productivity and resilience.

Q6. 1 mark · Very short answer

Approximately what proportion of recorded species are animals, and what is the maximum proportion comprising plants?

Full answer on SmartKalike: https://smartkalike.com/cbse/class-12/biology/biodiversity-and-conservation

Q7. 2 marks · Short answer

Describe the general latitudinal pattern of species diversity, comparing the tropics with temperate and polar regions.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-12/biology/biodiversity-and-conservation

Q8. 3 marks · Medium answer

State two consequences of biodiversity loss in a region, and name the four major causes known as the 'Evil Quartet'.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-12/biology/biodiversity-and-conservation

Q9. 1 mark · Very short answer

According to the textbook, strict protection of biodiversity hotspots could reduce ongoing mass extinctions by approximately what percentage?

Full answer on SmartKalike: https://smartkalike.com/cbse/class-12/biology/biodiversity-and-conservation

Q10. 2 marks · Short answer

What is the principal cause of the rapid decline in Earth’s biological wealth? Compare current species-extinction rates with pre-human rates and state the textbook’s projection if present trends continue.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-12/biology/biodiversity-and-conservation



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