

Biodiversity and Conservation — Assignment 2

Class 12 Biology · Higher-difficulty challenge set + integrated problems · Answer key included · Narayan Gurukul Academy

Instructions: (1) Attempt all questions; start with the topic-wise challenge set, then attempt the integrated (multi-topic) problems.
(2) Give all answers with correct SI units. $g = 10 \text{ m/s}^2$ unless stated.
(3) A final answer key is provided at the end — try the full set before checking it.

Part A — Topic-wise challenge questions

What is Biodiversity?

1. What is biodiversity?
2. Name the levels of biodiversity.
3. Describe the levels of biodiversity.

Patterns of Biodiversity

1. What is the species–area relationship?
2. Explain the latitudinal gradient of biodiversity.
3. Describe the patterns of biodiversity.

Importance of Biodiversity

1. What is the 'Rivet Popper Hypothesis'?
2. Give two reasons for conserving biodiversity.
3. Explain the importance of biodiversity.

Loss of Biodiversity

1. What is the 'Evil Quartet'?
2. What is habitat fragmentation?
3. Describe the causes of biodiversity loss.

Biodiversity Hotspots

1. What is a biodiversity hotspot?
2. Name two biodiversity hotspots in India.
3. Explain biodiversity hotspots with examples.

Conservation Strategies — In Situ and Ex Situ

1. Differentiate between in situ and ex situ conservation.
2. How does a national park differ from a sanctuary?
3. Describe the strategies of in situ and ex situ conservation.

International Efforts and Summary

1. What is the Ramsar Convention?
2. What is the Convention on Biological Diversity?
3. Describe international efforts for biodiversity conservation.

Part B — Integrated problems (multi-topic)

1. Describe the levels and patterns of biodiversity.
2. Describe the causes of biodiversity loss and the importance of conservation.
3. Describe the conservation strategies with examples.
4. Explain the latitudinal gradient and its causes.
5. Explain the 'Evil Quartet' with examples.
6. Describe the international efforts for biodiversity conservation.

Answer Key

What is Biodiversity?

Variety and variability of life; levels are genetic, species and ecological diversity.

Patterns of Biodiversity

Latitudinal gradient (highest at the equator) and the species–area relationship (richness increases with area).

Importance of Biodiversity

Ecological stability (Rivet Popper Hypothesis), economic benefits, and ethical/aesthetic value.

Loss of Biodiversity

The 'Evil Quartet': habitat loss and fragmentation, over-exploitation, alien species invasion and co-extinction.

Biodiversity Hotspots

Regions of high endemism and high threat; 36 globally; Western Ghats and Eastern Himalayas in India.

Conservation Strategies — In Situ and Ex Situ

In situ: biosphere reserves, national parks, sanctuaries; ex situ: zoos, seed banks, botanical gardens.

International Efforts and Summary

Ramsar Convention (wetlands), Convention on Biological Diversity (Rio), and the importance of Silent Valley.

Integrated problems

1: Genetic, species, ecological; latitudinal gradient and species–area. 2: Evil Quartet and value of conservation. 3: In situ vs ex situ with examples. 4: More time, energy and stable climate in the tropics. 5: Habitat loss, over-exploitation, alien species, co-extinction. 6: Ramsar and CBD.