Geography · GS - I

Identify and discuss the factors responsible for diversity of natural vegetation in India. Assess the significance of wildlife sanctuaries in rain forest regions of India.

EXAM YEAR	PAPER	SUBJECT
2023	GS - I	Geography

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Link vegetation diversity with temperature, rainfall, seasonality, soil, altitude, relief and latitude; explain major forest types; assess rain-forest sanctuaries through biodiversity conservation, habitat protection, ecological services and community livelihoods; highlight threats and conservation needs.

Model Answer

Introduction

India's vast geographical extent, varied relief and climatic conditions have produced exceptional diversity in natural vegetation. From tropical rainforests to alpine vegetation, different ecological conditions support distinct plant communities.

Body

Factors Responsible for Vegetation Diversity

Temperature:

Variation from tropical heat to sub-zero alpine conditions determines the distribution of vegetation.

Rainfall:

High rainfall supports evergreen forests, while lower and seasonal rainfall favours deciduous, thorn and scrub

vegetation.

Seasonality:

The duration of dry periods strongly influences forest structure and species composition.

Soil:

Alluvial, lateritic, black, red and mountain soils provide different nutrient and moisture conditions.

Relief and altitude:

Mountains create vertical ecological zones, resulting in changes from tropical forests at lower elevations to temperate and alpine vegetation at higher altitudes.

Latitude:

India's north-south extent produces variations in temperature and growing conditions.

Significance of Wildlife Sanctuaries in Rainforest Regions

Rainforests of the Western Ghats, Northeast India and the Andaman and Nicobar Islands contain high biodiversity and many endemic species.

Wildlife sanctuaries:

Conserve biodiversity: They protect threatened and endemic species and maintain genetic diversity.

Protect habitats: They preserve forest ecosystems against fragmentation and destructive land-use change.

Maintain ecological services: Rainforests regulate water cycles, soil conservation, carbon storage and climate.

Support research: Protected areas provide opportunities for ecological and scientific research.

Promote livelihoods and tourism: Responsible ecotourism can generate local employment and conservation awareness.

However, habitat fragmentation, infrastructure expansion, invasive species, climate change and human-wildlife conflict threaten these ecosystems. Conservation must therefore incorporate local communities and sustainable resource management.

Conclusion

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India's vegetation diversity reflects the interaction of **climate, soil, relief, altitude and latitude**. Wildlife sanctuaries in rainforest regions are crucial not only for protecting species but also for maintaining ecological resilience and ecosystem services. Their long-term success requires science-based conservation combined with community participation.

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