

Aspita lala

2024

ENVIRONMENTAL SCIENCE — HONOURS

Paper : DSCC-2

(Principles of Ecology)

Full Marks : 75

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer the following questions :

1×10

- ✓(a) Define sere.
- ✓(b) Give an example of detritus food chain.
- ✓(c) Name two major terrestrial biomes of the world.
- ✓(d) What is habitat?
- ✓(e) How much energy is transferred from one trophic level to another in an ecosystem?
- ✓(f) The primary succession refers to the development of communities on a—
 - (i) Forest clearing after devastating fire.
 - (ii) Newly exposed habitat with no record of earlier vegetation.
 - (iii) Pond, freshly filled with water after dry phase.
 - (iv) All of the above.
- ⓐ Ecotone is a zone of vegetation which separates two different types of—
 - (i) Population
 - (ii) Community
 - (iii) Individuals
 - (iv) None of the above.
- ✓(h) The collection of individuals which belongs to the same species when they live together in a region is known as—
 - (i) Keystone species
 - (ii) Guild
 - (iii) Community
 - (iv) Population.

Please Turn Over

✓(i) What defines the ability of the community to return to its original state after being displaced?

- (i) Dispersed
- (ii) Clumped
- (iii) Resistance
- (iv) Resilience.

✓(j) Which model states — “Two different species cannot live for long duration in the same niche.”?—

- (i) Allen's Rule
- (ii) Gause's Principle
- (iii) Weisman's Theory
- (iv) Eltonian Niche Concept.

2. Answer **any five** questions :

2×5

- (a) “Species with narrow ecological amplitude are often good indicator species.” — Explain.
- ✓(b) Enumerate the significance of biogeochemical cycle.
- (c) What is rescue effect?
- ✓(d) Name two nitrifying bacteria.
- ✓(e) What do you mean by trophic efficiency?
- ✓(f) Differentiate between Birth and Natality in population growth of a species.
- ✓(g) Give two characteristic features of a Pioneer Species.

3. Write short notes on **any three** :

5×3

- ✓(a) Metapopulation
- ✓(b) Energy flow in Ecosystem
- (c) Age structure Pyramid
- (d) Connell-Slatyer Models of Ecological succession
- ✓(e) r- and k- selection.

4. Answer **any four** questions :

- (a) “The amount of energy moving through a food chain declines as trophic level increases.” — Explain. What is Liebig's Law of Minimum? How lentic ecosystem differs from lotic?
3+3+4
- (b) Explain Shelford's Law of Tolerance with a proper diagram. Discuss any two major terrestrial biomes.
5+5
- ✓(c) Explain in detail the Competitive Exclusion Principle. Briefly explain few strategies to conserve nutrients in agricultural system.
5+5

(3)

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- ✓(d) What is ecotone? How is it related to edge effect? Explain the Batesian and Mullerian Mimicry. 2+3+5
- ✓(e) Discuss the stages and mechanism of invasion by invasive species. Give the impact of invasive species on local population. 7+3
- ✓(f) Explain survivorship curve with appropriate diagram and examples. What is community stratification? 8+2
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2024

ENVIRONMENTAL SCIENCE — HONOURS

Paper : SEC-2

(Urban Environment Management)

Full Marks : 100

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer the following questions :

✓ 1×10

- ✓ (a) Write the full form of JNNURM.
- ✓ (b) What do you mean by Metro City?
- ✓ (c) What is carbon sequestration?
- ✓ (d) How many sustainable development goals are there?
- ✓ (e) Name the largest urban slum of Asia.
- ✓ (f) In which year Habitat II took place?
- ✓ (g) Why East Kolkata Wetland is called the kidney of Kolkata?
- ✓ (h) Name two plants used for green belt development.
 - (i) What do you mean by avenue trees?
- ✓ (j) State the objective of a sustainable development goal related to urban development.

2. Answer *any ten* questions :

2×10

- (a) What do you mean by urban area?
- ✓ (b) Explain any two effects of urban air pollution on human health.
- ✓ (c) State two significances of green building.
- ✓ (d) What do you mean by 'controlled nature'?
- ✓ (e) What is rural-urban migration?
- ✓ (f) Mention two basic problems of urban slums.
- ✓ (g) What is urban transformation?
- (h) What do you mean by commodification of nature?
- (i) What is first flush device in rainwater harvesting?
- ✓ (j) State the problems associated with waste transportation in urban areas.

Please Turn Over

- ✓(k) What do you mean by urban forest?
- ✓(l) What do you mean by 'urban sprawl'?
- ✓(m) What do you mean by sustainable consumption of resources?
- ✓(n) Mention the characteristic features of a smart city.

3. Write short notes on *any four* :

5×4

- ✓(a) Urban Heat Island
- ✓(b) Rainwater Harvesting
- ✓(c) GRIHA
- (d) Landfill in urban areas
- ✓(e) Habita I, 1976.
- (f) Green energy.

4. Answer *any five* questions :

- ✓(a) What are urban slums? Explain the causes for the prevalence and expansion of slums. Comment on the environmental problems associated with slums. 2+5+3
- (b) State the benefits of development of green belt. Discuss the ecological services of waterbodies to the urban environment. What is urban green space? 3+4+3
- ✓(c) What is urbanization? What are the drivers of urbanization? Discuss the impact of urbanization on local environment. 2+3+5
- ✓(d) Discuss an urban area as a sink of resources. How does urban sprawl help in urban resource distribution? State any two impacts of urban sprawl. 2+4+4
- (e) How to plan green spaces in urban ecosystem? State the role of government bodies in green planning. State the scenario of ecological resource consumption in a growing urban set-up. 3+3+4
- ✓(f) What is LEED certification? Explain the criteria associated with LEED certification. State the benefits of LEED certification. 2+4+4
- ✓(g) State the objectives, key themes and discussions of the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), 2016. 10
- (h) Discuss about the scopes and threats to natural habitat in city. State the keys to achieve sustainability goal in urban habitat. Mention the main features of urban planning according to NUPF, 2020. 3+3+4