

QPCODE

Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) - DISCIPLINE SPECIFIC ELECTIVE COURSE
FIFTH SEMESTER EXAMINATION

MG5DSEZGYA02: ADVANCED ECOLOGICAL CONCEPTS

(2024 ADMISSION ONWARDS)

Duration: 2 Hrs

Maximum Marks: 70

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

MCQ

Answer all questions

Each question carries **1** marks

1. Which ecological level is a mosaic of ecosystems? [U]
a) Biome [CO:1]
b) Biosphere
c) Landscape
d) Community

2. Who proposed the monocl原因 theory? [U]
a) Gleason [CO:1]
b) Clements
c) Elton
d) Tansley

3. Which method is most suitable for estimating population density of plants and sessile organisms? [An]
[CO:2]
- a) Capture-Mark-Recapture
 - b) Quadrat Method
 - c) Transect Method
 - d) Genetic Isolation
4. Which dispersion pattern is the most common in nature, where individuals aggregate in patches due to uneven resource distribution or social behavior? [An]
[CO:2]
- a) Uniform distribution
 - b) Random distribution
 - c) Clumped distribution
 - d) Fragmented distribution
5. Which type of competition involves direct prevention of another organism from using a resource? [An]
[CO:2]
- a) Exploitation competition
 - b) Interference competition
 - c) Resource partitioning
 - d) Character displacement
6. Which type of mutualism describes a relationship where both species are entirely dependent on each other for survival? [An]
[CO:2]
- a) Facultative mutualism
 - b) Obligate mutualism
 - c) Defensive mutualism
 - d) Dispersive mutualism
7. Which of the following is an example of climate change adaptation in biodiversity conservation? [S]
[CO:3]
- a) Increasing fossil fuel consumption
 - b) Promoting deforestation
 - c) Establishing wildlife corridors
 - d) Increasing greenhouse gas emissions
8. Which of the following is an ex-situ conservation method? [S]
[CO:3]
- a) Wildlife sanctuary
 - b) Biosphere reserve

- c) National park
d) Captive breeding
9. Project Tiger was launched in which year? [A]
[CO:4]
a) 1969
b) 1972
c) 1980
d) 1992
10. Which of the following states are major distribution areas of the greater one-horned rhinoceros in India? [A]
[CO:4]
a) Kerala, Tamil Nadu and Karnataka
b) Assam, West Bengal and Uttar Pradesh
c) Gujarat, Rajasthan and Punjab
d) Odisha, Goa and Maharashtra

[1x10 = 10]

Part B

Short Answer

Answer any **14** questions

Each question carries **2** marks

11. Define the term ecological niche. [U]
[CO:1]
12. Describe the major steps involved in the nitrogen cycle. [U]
[CO:1]
13. What is the importance of advanced ecological studies? [U]
[CO:1]
14. Name one technique used to estimate population density of mobile animals and briefly explain how it works. [An]
[CO:2]
15. Define character displacement and explain its role in coexistence. [An]
[CO:2]
16. A wildlife sanctuary has an estimated population of 2,400 elephants distributed across an area of 1,200 km². What is the population density of elephants in the sanctuary? [S]
[CO:2]

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| 17. | Mention any two causes of habitat fragmentation. | [An]
[CO:2] |
| 18. | What are the major density-dependent factors affecting population growth? | [An]
[CO:2] |
| 19. | Define the term iteroparity. | [An]
[CO:2] |
| 20. | What is the Simpson Index, and what does it measure in an ecological community? | [An]
[CO:2] |
| 21. | What is the role of GIS in landscape ecology? Mention any two applications of GIS in landscape analysis. | [An]
[CO:3] |
| 22. | What is landscape connectivity? Why is it important for wildlife? | [An]
[CO:3] |
| 23. | What are ecological simulation and modelling tools used in ecology? Explain the role of R in ecological modelling. | [An]
[CO:3] |
| 24. | What are biodiversity hotspots? Give two examples from India. | [An]
[CO:3] |
| 25. | How does climate change affect the distribution of species? | [An]
[CO:3] |
| 26. | How is bioacoustic monitoring used in wildlife conservation? | [A]
[CO:4] |
| | | [2x14 = 28] |

Part C

Short Essay

Answer any **8** questions

Each question carries **4** marks

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| 27. | Discuss the scope and importance of advanced ecological studies in understanding and conserving ecosystems and biodiversity. | [U]
[CO:1] |
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28. Discuss the role of competition in shaping species coexistence and community structure. [An]
[CO:2]
29. Explain the different types of mutualism in nature, including obligate, facultative, and dispersive mutualism, with suitable examples. [An]
[CO:2]
30. What are the three major groups of chemical defences in plants? Explain each with suitable examples. [An]
[CO:2]
31. Write an account of brood parasitism, explaining its types, adaptations. [An]
[CO:2]
32. Discuss habitat fragmentation and landscape connectivity, and explain how spatial patterns influence ecological processes in landscapes. [An]
[CO:3]
33. Discuss the concept of biodiversity hotspots, their characteristics, significance, and role in global biodiversity conservation. [An]
[CO:3]
34. Explain the major impacts of climate change on ecosystems and species. [An]
[CO:3]
35. Explain the basic sampling methods used in ecological studies, with reference to random, systematic, and stratified sampling. [An]
[CO:4]
36. Describe the objectives and major activities of Project Tiger in India. [An]
[CO:4]

[4x8 = 32]