

**M.Sc. 2<sup>nd</sup> Year 1<sup>st</sup> Semester Examination 2023**

**Geography**

**Course Code: SC/GEOG/PG/DSE/TH/15-1B**

**Paper: Landscape Ecology (GEOG-DSE215T-1B)**

**Time: 2 Hours**

**Full Marks: 50**

**Answer one question from each unit**

**UNIT-I: Fundamentals of Landscape Ecology**

1. Trace the relationship between grain size and IFOV in landscape studies. How are political ecology and landscape ecology related? What is the significance of 'Gestalt Effect' in landscape assessment? 3+5+2
2. Briefly discuss the scope and content of landscape ecology. '*The real world is patchy*' – justify the statement. 6+4

**Unit-II: Patterns and Processes of Landscapes**

3. What are the major analytical components of a disturbance? Elucidate the 'intermediate disturbance hypothesis'. Explain the role of fire as an ecological disturbance in landscape development with suitable examples. 2+4+4
4. State the relationship between range of variability and spatial extent. Differentiate between boundary and border in landscape ecological context. Prepare an inventory of urban ecosystem services of Kolkata Metropolitan Area. 2+3+5

**Unit-III: Landscape Metrics and Models**

5. What are the major ecological functions of a corridor? Highlight the importance of the metapopulation theory in conserving biodiversity in a humanized landscape. How does the concept of dynamic metastable equilibrium explain the evolution of ecosystems? 2+5+3
6. Differentiate between functional niche and realized niche. What are the major density-independent determinants of population size? Establish the links between the neutral models and the island biogeography theory in context of land use and land cover change. 3+2+5

**Unit-IV: Applied Landscape Ecology**

7. Differentiate between habitat conservation and habitat restoration. How fractal geometry can be applied in assessing urban sprawl? Comment on the scope of passive restoration of natural landscape units in densely populated regions. 2+4+4
8. What is the utility of FRAGSTATS in the quantitative assessment of habitat fragmentation? How is habitat subdivision measured by the degree of landscape division (DIVISION)? How does the Core Area Index indicate patch geometry and habitat fragmentation? 2+4+4