

**2022/TDC (CBCS)/EVEN/SEM/  
EESHCC-401T/100**

**TDC (CBCS) Even Semester Exam., 2022**

**ECOLOGY AND ENVIRONMENTAL SCIENCE  
( Honours )**

**( 4th Semester )**

**Course No. : EESHCC-401T**

**( Systematics and Biogeography )**

Full Marks : 50

Pass Marks : 20

**Time : 3 hours**

*The figures in the margin indicate full marks  
for the questions*

**SECTION—A**

**Answer any ten of the following questions :**

**2×10=20**

- 1. Define systematics. Who coined the term?**
- 2. What is herbarium? Elucidate.**
- 3. What is phytochemistry and its taxonomic importance?**

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4. What is meant by operational taxonomic unit (OTU)?
5. What are paraphyly and polyphyly?
6. What is cladogram?
7. Define mutation. Who coined the term 'mutation'?
8. What is Allen's rule? Cite an example.
9. What is meant by genetic drift?
10. What is speciation? What are its types?
11. What is meant by convergent evolution? Explain briefly with an example.
12. How does ecological diversification result into speciation?
13. What is biosphere reserve? Name two biosphere reserves of Assam.
14. Name the Indian remote sensing satellites and years of their launching.
15. What is GPS? Elucidate.

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## SECTION—B

Answer any five of the following questions :  $6 \times 5 = 30$ 

16. Enumerate the rules of nomenclature. What are taxonomic keys? Briefly explain.  $3+3=6$
17. Write short notes on the following :  $3+3=6$ 
  - (a) Palynology
  - (b) Taxonomy databases
18. What is phylogenetic tree? How is it constructed? What are rooted and unrooted types of phylogenetic trees? Explain briefly.  $1+2+3=6$
19. (a) Write a short note on DNA barcoding as a taxonomic tool.
- (b) Differentiate between homology and analogy with suitable examples.  $3+3=6$
20. What is meant by natural selection? Describe briefly the types of natural selection. What is Huxley's rule?  $1+4+1=6$
21. (a) Describe briefly the geographical limits and faunal characteristics of Ethiopian realm.
- (b) Write a note on geographical and ecological variations. 6

- 22.** What are barriers to dispersal of plants and animals? Discuss different types of barriers to migration. 1+5=6
- 23.** (a) What is adaptive radiation? Explain the phenomena in relation to limb structure of eutherian mammals.
- (b) What is parallel evolution and its role in speciation? (1+2)+3=6
- 24.** What is remote sensing? What are its types? Give a brief description of application of remote sensing in conservational planning. 1+2+3=6
- 25.** Write short notes on the following : 3+3=6
- (a) Geographic information system (GIS)
- (b) Approaches to landscape conservation in N-E India

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