

B.Sc. 6th Semester (Honours) Examination, 2023 (CBCS)

Subject : Zoology

Course : CC-XIV

(Evolutionary Biology)

Time: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

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

Group – A

1. Answer *any five* questions of the following: 2×5=10
- (a) Explain 'chemogeny'.
 - (b) Mention the steps involved in the process of evolution of eukaryotic cells from prokaryotic cells.
 - (c) Mention the different Eras of Phanerozoic Eon.
 - (d) Distinguish between microevolution and macroevolution with suitable examples.
 - (e) Differentiate between symplesiomorphy and synapomorphy.
 - (f) What is 'ring species'? Give example.
 - (g) What do you mean by evolutionary intermediacy?
 - (h) What do you mean by 'polytypic species'?

Group – B

2. Answer *any two* of the following questions: 5×2=10
- (a) If all of the Hardy-Weinberg assumptions are met, allele frequencies stay constant and genotype frequencies are in Hardy-Weinberg proportion. Which of the H-W assumption, when violated, allows allele frequencies to change but leaves the genotype frequencies in H-W proportion? Which of the assumptions when violated does not change allele frequencies but causes a deviation from H-W proportions? Explain each case. 2.5+2.5
 - (b) Who proposed the Modern Synthetic Theory of evolution? Briefly describe different types of natural selection as explained in the synthetic theory. 1+4
 - (c) What is the first evidence of bipedalism? Describe briefly about the major adaptations for bipedalism. 1+4
 - (d) Differentiate between background extinction and mass extinction with suitable examples. 5

Group – C

3. Answer *any two* of the following questions: 10×2=20
- (a) Compare and contrast founder effect and bottle neck phenomenon with suitable examples. Write in brief the consequences of genetic drift. 5+5
 - (b) “Genetic variation does not always produce fitness variation”— justify the statement in light of the natural theory of evolution. What is Kimura evolution theory? Why divergent evolution is called adaptive radiation? 6+2+2
 - (c) Write short notes on: 5+5
 - (i) Phyletic gradualism
 - (ii) Punctuated equilibrium
 - (d) Briefly describe the isolating mechanisms leading to speciation. What is parapatric speciation? Mention the overlapping area of Biological species concept and Phylogenetic species concept. 5+2+3
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