

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

**Subject : Zoology**

**Course : CC-XIV**

**(Evolutionary Biology)**

**Full Marks: 40**

**Time: 2 Hours**

*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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