

B.Sc. 6th Semester (Honours) Examination, 2022 (CBCS)

Subject: Zoology

Paper:CC-14

(Evolutionary Biology)

Full Marks: 40

Time: 2 Hrs.

The figures in the right hand margin indicate full marks.

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

Group - A

1. Answer any *five* questions of the following: $2 \times 5 = 10$

- a) Name the Epochs of Tertiary Period. Which Period is designated as ‘Age of Amphibians’?
- b) Mention the drawbacks of RNA World Hypothesis.
- c) Mention two distinct characters each of *Australopithecus africanus* and *Australopithecus robustus*.
- d) What is ‘Insular dwarfism’? Give an example in relation with human evolution.
- e) Define adaptive radiation.
- f) Distinguish between convergent and divergent evolution with suitable examples.
- g) What is Darwinian fitness?
- h) Explain the C-value Paradox.

Group - B

2. Answer any *two* questions of the following: $5 \times 2 = 10$

- a) “Neanderthals are not our ancestors.”- Explain the statement in view of Neutral Theory of molecular evolution. 5
- b) Compare and contrast different types of natural selection with suitable examples. 5
- c) Why is ‘genetic drift’ considered as one of the major evolutionary forces? Comment on bottleneck phenomenon. 5

- d) What is ‘punctuated equilibrium’? What are the cardinal characteristics of ‘Adaptive Radiation’? 2+3

Group - C

3. Answer any **two** questions of the following: 10×2=20
- a) What do you mean by synonymous and non-synonymous substitution? Give examples. What is the necessary criterion for positive selection so that duplicated gene may evolve? “The Neutral Theory of molecular evolution provides a framework for molecular clock.”- Give suitable example in support of this statement. 3+2+5
- b) What do you mean by microevolution and macroevolution? Give examples. Elucidate the Darwin’s Theory of Natural Selection based on the study of Galapagos Finches. Mention the limitations of Darwin’s Theory of Natural Selection 3+5+2
- c) Mention different types of isolating mechanisms with suitable examples. Comment on drawbacks of biological species concept. 6+4
- d) Briefly elucidate the significance of bipedalism to the evolution of modern humans. Compare and contrast the characteristic features of the Peking man and Cro-Magnon man. What is ‘ulnar opposition’? 5+4+1
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