

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2416 **F-4** **Your Roll No.....**

Unique Paper Code : 2232601

Name of the Course : **B.Sc. (Hons.) Anthropology / Botany : Allied Course**

Name of the Paper : Evolutionary Biology (Zoology)

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **FIVE** questions including Question No. 1 which is compulsory.
3. Attempt all the parts of the same question in continuation.

1. (a) Define the following terms :

- (i) Protocells
- (ii) Adaptation
- (iii) Species
- (iv) Allopolyploidy
- (v) Coprolites (5)

(b) Differentiate between the following :

- (i) Founder's effect and Bottleneck effect
- (ii) Mass extinction and Periodic extinction
- (iii) Autozygosity and Allozygosity
- (iv) Missense mutation and Nonsense mutation
- (v) Anagenesis and Cladogenesis (10)

(c) State the contribution(s) of the following scientists :

- (i) T. Dobzhansky
- (ii) E. Dubois
- (iii) J.B.S. Haldane
- (iv) H.B.D. Kettlewell (4)

-P.T.O.

- (d) Complete the following statements :
- (i) Another term for random matings _____ .
 - (ii) Fossils of Neanderthal man were obtained from _____ .
 - (iii) A group of organisms which resemble one another but cannot interbreed _____ .
 - (iv) A connecting link between reptiles and birds is _____ . (4)
- (e) Justify the following statements :
- (i) Natural selection acts on the phenotype of an organism.
 - (ii) Deleterious alleles never get eliminated from the population. (4)
2. (a) What are coacervates and microspheres ? How did they facilitate the origin of life on earth ? (6)
- (b) How do organic variations contribute to the evolutionary process ? (6)
3. (a) Explain evolution in the light of *Descent with modification* with suitable examples. (6)
- (b) Explain Directional selection with the help of a suitable example. (6)
4. (a) Define 'fossil'. State the various processes of fossilization, and the importance of fossils in the evolutionary studies. (8)
- (b) Trace the phylogeny of horse with the help of a flowchart. (4)
5. (a) Explain the pre-requisites for the Hardy-Weinberg equilibrium to operate in a population. Does it operate in natural populations ? Why/why not ? (8)
- (b) Discuss the Sewall Wright effect. (4)
6. Discuss the various isolating mechanisms and their role in speciation. (12)
7. Write short notes on **Any Three** of the following :
- (a) Endosymbiotic theory
 - (b) Role of duplications in evolution
 - (c) Causes of mass extinction
 - (d) Biological species concept
 - (e) Australopithecines (4,4,4)