

2021

ZOOLOGY — HONOURS

Third Paper

(Unit - I)

[Systematics, Evolutionary Biology and Animal Behaviour]

Full Marks : 50

*The figures in the margin indicate full marks.*

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

Answer **question no. 1** and **any one** question from **Group-A**, **two** questions from **Group-B** and **one** question from **Group-C**.

1. Answer **any five** questions : 2×5
- (a) What is hot dilute soup?
  - (b) What is kin selection?
  - (c) What is the evolutionary significance of genetic drift?
  - (d) What were the gases present in earth's primitive atmosphere?
  - (e) Distinguish between subspecies and sibling species.
  - (f) Define eusociality with example.
  - (g) Define coacervate.
  - (h) Define FAP with example.

**Group - A**

**(Systematics)**

2. Define species. What are the limitations in application of Biological Species Concept? Why is the concept called 'Biological'? Discuss the sources of variation in a population. 2+4+4
3. Write notes on (**any four**) : 2½×4
- (a) Role of premating isolations in evolution
  - (b) Neotype and Syntype
  - (c) Principle of DNA barcoding
  - (d) Parapetric and Peripetric speciation
  - (e) Phenetics and Cladistics
  - (f) Alpha and Gamma taxonomy.

**Please Turn Over**

**Group - B**  
**(Evolution and Adaptation)**

4. (a) Describe two features each of Miohippus, Merychippus and Equus.  
(b) What is orthogenesis in Horse evolution?  
(c) Mention the impact of dispersal on animal distribution. (2+2+2)+2+2
5. (a) Explain Hardy–Weinberg Equilibrium. Mention the effects of mutation on Hardy–Weinberg equilibrium.  
(b) Describe ‘RNA World’ hypothesis. (2+3)+5
6. Write notes on **any two** of the following : 5×2  
(a) Xeric adaptations in camel  
(b) Theories on origin of birds  
(c) Founder effect and Population bottleneck  
(d) Miller and Urey’s experiment.
7. Write notes on **any two** of the following : 5×2  
(a) Adaptive radiation in Darwin’s finches  
(b) Bathymetric and Discontinuous distribution  
(c) Synthetic theory  
(d) Physical barriers in evolution.

**Group-C**  
**(Animal Behaviour)**

8. What are the properties of instinct behaviour? Discuss the information conveyed by waggle dance in bees. What is latent learning and habituation? What is the evolutionary significance of selfishness? 2+3+3+2
9. (a) Write short notes on Hamilton’s Rule.  
(b) Define ‘jugdisposition’ and ‘zugunruhe’.  
(c) Mention ‘Doppler shift’ phenomenon in echolocation in bat. 5+(1½+1½)+2
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