

2019

ZOOLOGY

( Major )

Paper : 6.2

( **Evolution and Adaptation** )

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. Choose the correct answer : 1×7=7

(a) Hugo de Vries proposed the mutation theory based on his experiment conducted on

- (i) *Pisum sativum*
- (ii) *Drosophila melanogaster*
- (iii) *Oenothera lamarckiana*
- (iv) *Althea rosea*

(b) Which of the following phenomena supports Darwin's concept of natural selection in organic evolution?

- (i) Production of 'Dolly' sheep by cloning
- (ii) Development of organs from stem cells for organ transplantation
- (iii) Development of transgenic animals
- (iv) Prevalence of pesticide-resistant insect

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- (c) Evolution is studied on
- (i) individual
  - (ii) species
  - (iii) population
  - (iv) cells
- (d) What is the most important factor for the success of animal population?
- (i) Unlimited food
  - (ii) Natality
  - (iii) Interspecific activity
  - (iv) Adaptability
- (e) Which of the following shows common origin of man and chimpanzee?
- (i) Dental formula
  - (ii) Binocular vision
  - (iii) Similar cranial capacity
  - (iv) Banding patterns in chromosome numbers 3 and 6
- (f) Earliest fossil form in the phylogeny of horse is
- (i) Mesohippus
  - (ii) Equus
  - (iii) Eohippus
  - (iv) Merychippus

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- (g) Macroevolution is known as
- (i) genetic drift
  - (ii) random selection
  - (iii) adaptive radiation
  - (iv) bottleneck's effect
2. Write short notes on the following :  $2 \times 4 = 8$
- (a) Cryptic colouration in mimicry
  - (b) Microevolution and megaevolution
  - (c) Drawbacks of Darwin's theory
  - (d) Major zoogeographical regions of the world
3. Answer/Write short notes on any *three* of the following :  $5 \times 3 = 15$
- (a) Give an account on the fossil history of man.
  - (b) Typical fauna of Oriental region and Australian region
  - (c) Protective and aggressive mimicry
  - (d) Primary and secondary aquatic adaptation
  - (e) Characteristic feature of Mesozoic era
4. (a) Give an account on the nature and formation process of fossils. Enumerate the methods for the determination of age of fossils. How are fossils significant in the study of evolution?  $4 + 4 + 2 = 10$

Or

- (b) Outline the different postulates of Lamarckism. How does it explain the elongation of neck of giraffe and absence of limbs in snakes and other burrowing animals? Mention the most controversial part of Lamarck's law of evolution. 5+3+2=10

5. (a) What was the view of A. I. Oparin for origin of life? Describe the Urey-Miller experiment. Discuss the importance of coacervates in the origin of life. 2+5+3=10

Or

- (b) "Without isolation there is no speciation." Justify this statement. Explain the role of geographic and genetic isolation in speciation. 2+4+4=10

6. (a) Give an account of geological periods and indicate the group of animals characteristic of these periods. 10

Or

- (b) Define adaptation. Show briefly how the organization of bird is adapted to meet the requirement of its life. Discuss evolutionary significance of adaptation. 2+6+2=10

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