

2024

(CBCS)

(3rd Semester)

ZOOLOGY

THIRD PAPER

(Evolution and Ethology)

Full Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks for the questions***(SECTION : A—OBJECTIVE)**

(Marks : 10)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. The phrase 'survival of the fittest' was coined by

- (a) Charles Darwin ()
(b) Jean-Baptiste de Lamarck ()
(c) Herbert Spencer ()
(d) J. B. S. Haldane ()

2. Kettlewell's experiment was a demonstration of natural selection in

- (a) Tibetan adaptation () (b) *Biston betularia* ()
(c) bacteria () (d) *Plasmodium vivax* ()

3. The term 'RNA World' was coined by

- (a) Thomas Cech () (b) Carl Woese ()
(c) Stanley Miller () (d) Walter Gilbert ()

4. The only chordate animal in the Cambrian period was

- (a) *Pikaia* () (b) *Anomalocaris* ()
(c) *Opabinia* () (d) *Hallucigenia* ()

5. Aposematism is used as
- (a) sexual attractant ()
 - (b) aggressive mechanism ()
 - (c) defence mechanism ()
 - (d) predatory mechanism ()
6. Use of fire was invented by
- (a) *Homo habilis* ()
 - (b) *Homo erectus* ()
 - (c) *Australopithecus africanus* ()
 - (d) *Australopithecus sediba* ()
7. Waggle dance of bees is for
- (a) signalling the position of the sun ()
 - (b) swarming to leave a hive ()
 - (c) warning from enemies ()
 - (d) foraging or locating food ()
8. Echolocation is based on a physical principle called
- (a) electromagnetism ()
 - (b) ultrasound ()
 - (c) CT scan ()
 - (d) sonar ()
9. Pavlov's dog experiment is an example of
- (a) imprinting ()
 - (b) innate behaviour ()
 - (c) learned behaviour ()
 - (d) fixed action pattern ()
10. Melatonin is a peptide hormone that regulates
- (a) gestation (childbirth) ()
 - (b) mammary gland secretion ()
 - (c) sleep-wake cycle ()
 - (d) secondary sexual characters ()

(SECTION : B—SHORT ANSWERS)

(Marks : 15)

Write short notes on the following :

3×5=15

UNIT—I

1. Allopatric speciation

OR

2. Lamarckism

UNIT—II

3. RNA World hypothesis

OR

4. Prebiotic soup theory

UNIT—III

5. Concept of continental drift

OR

6. Camouflage

UNIT—IV

7. Concept of behaviour

OR

8. Imprinting

UNIT—V

9. Role of adrenaline

OR

10. Role of steroids

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following questions :

10×5=50

UNIT—I

1. Describe the theory of natural selection with reference to the correlation between malaria and sickle-cell disease. 10

OR

2. Systematically narrate the rise and fall of industrial melanism.

UNIT—II

3. Define symbiogenesis. Describe the theory of symbiogenesis with examples. 2+8=10

OR

4. Give an account on the phenomenon of the Cambrian explosion and the animal life during the period. 10

UNIT—III

5. Who is Mitochondrial Eve? Discuss the concept of the 'Out of Africa' theory. 2+8=10

OR

6. Define mimicry. Compare and contrast Batesian mimicry and Müllerian mimicry with appropriate examples. 2+8=10

UNIT—IV

7. Illustrate the innate and learned behaviours on the basis of natural examples. 10

OR

8. Write a short note on infrasound and dancing in bees.

UNIT—V

9. How do higher animals maintain their territories? 10

OR

10. Explain the queen mandibular pheromone. How is the division of labour maintained in a bee society? 5+5=10

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