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(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. Kettlewell's experiment was an evolutionary experiment that explained

- (a) beak variation in Darwin's finches ()
- (b) environmental pollution ()
- (c) industrial melanism ()
- (d) haemoglobin diseases ()

2. Which of the following is not predicted by Charles Darwin's theory of natural selection?

- (a) Common ancestry ()
- (b) Adaptation to environments ()
- (c) Use and disuse of body parts ()
- (d) The rise and fall of *Biston betularia carbonaria* ()

3. The largest animal during Cambrian Period was
 - (a) *Diplodocus* ()
 - (b) *Anomalocaris* ()
 - (c) *Opabinia* ()
 - (d) *Pikaia* ()
4. The extinction event which wiped out the dinosaurs is
 - (a) Ordovician-Silurian extinction ()
 - (b) Permian-Triassic extinction ()
 - (c) Triassic-Jurassic extinction ()
 - (d) Cretaceous-Tertiary extinction ()
5. Mitochondrial eve depends on the fact that
 - (a) mtDNA is inherited exclusively from mothers ()
 - (b) the undisputed oldest *Homo sapiens* fossil is in Africa ()
 - (c) mitochondria are universal powerhouses of the cells ()
 - (d) it is genetically related to Y-chromosomal Adam ()
6. Wallace line is an imaginary boundary that divides
 - (a) Palearctic and Neotropical ()
 - (b) Nearctic and Ethiopian ()
 - (c) Australasia and Oriental ()
 - (d) Ethiopian and Australasia ()
7. Infrasound is a communication employed by
 - (a) elephants ()
 - (b) chimpanzees ()
 - (c) bats ()
 - (d) dolphins ()
8. Nest-building behaviour by birds is an example of
 - (a) imprinting ()
 - (b) latent learning ()
 - (c) instinctive behaviour ()
 - (d) conditioned reflex ()

9. A hormone responsible for intimacy and childbirth is

- (a) estrogen ()
- (b) oxytocin ()
- (c) testosterone ()
- (d) melatonin ()

10. Male pregnancy is found in

- (a) seahorses ()
- (b) hyenas and wild dogs ()
- (c) octopuses ()
- (d) chickens ()

(SECTION : B—SHORT ANSWERS)

(Marks : 15)

Write short notes on the following :

3×5=15

UNIT—I

1. Point mutation in HBB gene

OR

2. Allopatric speciation

UNIT—II

3. Haldane's primordial soup theory

OR

4. Chicxulub crater

UNIT—III

5. Müllerian mimicry

OR

6. Y-chromosomal Adam

UNIT—IV

7. Role of infrasound

OR

8. Waggle dance

UNIT—V

9. Paternal care

OR

10. Functions of melatonin

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following :

10×5=50

UNIT—I

1. Describe the evolutionary adaptations in people living at high altitude.

OR

2. Explain the key concepts of the theory of natural selection. Discuss the evolutionary account of Darwin's finches.

UNIT—II

3. Explain prebiotic soup theory. Elaborate Miller's experiment with a neat diagram.

OR

4. Describe the concept of symbiogenesis based on *Mixotricha paradoxa* and *Angomonas deanei*.

UNIT—III

5. Explain the principle and major types of colouration in animals.

OR

6. Describe the hominin series leading to the origin of *Homo sapiens*.

UNIT—IV

7. Compare and contrast the fundamentals of imprinting and classical conditioning.

OR

8. What are the key features of altruism? Discuss how reciprocal altruism is benefitted by animals.

UNIT—V

9. How does predator-prey interaction give rise to evolutionary adaptations? Discuss two cases of such adaptations.

OR

10. Describe territoriality in animals. Give an account on the different types of territorial markers.

2023

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