(6 Pages)

Reg. No. : .....

Code No. : 5712 **Sub. Code : ZZOM 24**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Second Semester

Zoology — Core

EVOLUTION

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Theory of natural selection was proposed by

   (a) Lamarck (b) Darwin

   (c) Haeckel (d) De Vries

2. _____ occurs when an animal engages in self-sacrificial behaviour that benefits the genetic fitness of its relatives.

   (a) Kin selection (b) Altruism

   (c) Both (a) and (b) (d) Group selection

3. _____ occurs when a species separates into two separate groups which are isolated from one another.

   (a) Allopatric speciation

   (b) Sympatric isolation

   (c) Parapatric isolation

   (d) Temporal isolation

4. The model of evolution that involves a slow progressive change at a more or less constant rate is

   (a) Gradualism

   (b) Punctuated equilibrium

   (c) Both (a) and (b)

   (d) Equilibrium

5. The main disadvantage of maximum likelihood methods is

   (a) mathematically less folded

   (b) mathematically less complex

   (c) computationally lucid

   (d) computationally intense

6. _____ is a method for the inference of phylogeny.

(a) Maximum likelihood

(b) Parsimony

(c) Both (a) and (b)

(d) Distance method

7. Northern blotting is performed for

(a) Determining the size of DNA

(b) Determining the size of RNA

(c) Quantification of RNA

(d) Sequencing of RNA

8. _____ is used to known the phylogeny.

(a) mRNA (b) rRNA

(c) DNA (d) All of the above

9. _____ is the study of genetic variation or allele frequencies across space and time.

(a) Population genetics

(b) Migration

(c) Both (a) and (b)

(d) Metapopulation

10. A _____ is a group of spatially separated populations of the same species which interact at same level.

(a) metapopulation

(b) fragment habitat

(c) population dynamics

(d) Both (a) and (b)

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Give an account on evolutionary theory of Lamarck.

Or

(b) Write a note on altruism

12. (a) Write a short note on punctuated equilibrium.

Or

(b) Mention the role of gene in evolution.

13. (a) Give an account on distance method of phylogeny.

Or

(b) Comment on immunological techniques.

14. (a) Write a short note on molecular clocks.

Or

(b) What are the advantages in using proteins and nucleic acids to determine phylogenies?

15. (a) List out the loss of genetic variation.

Or

(b) Why small populations are most at risk of extinction?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Write an essay on evolutionary time scale.

Or

(b) Give a detailed account on stages of primate evolution.

17. (a) Describe evolution of gene families.

Or

(b) Comment on major trends in the origin of higher categories.

18. (a) Outline the key features of the parsimony and maximum likelihood methods of tree reconstructions.

Or

(b) How to construct phylogenetic analysis? Explain.

19. (a) Comment on nucleic acid phylogenies based on restriction enzyme site.

Or

(b) Give a detailed account on nucleic acid phylogenies based on DNA-DNA hybridizations.

20. (a) Write an essay on invirto artificial evolution.

Or

(b) Describe the conservation of genetic resources in diverse taxa.

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