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( NEP—2020 )

( 1st Semester )

**ZOOLOGY (MAJOR)**

**( Systematics and Fundamental Concepts )**

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 foundation of animal classification and nomenclature is mostly based on the book

- (a) *Species Plantarum* ( )
- (b) *Systema Naturae* ( )
- (c) *History of Animals (Historia Animalium)* ( )
- (d) *On the Origin of Species* ( )

2. *Agathis montana*, a name for both a wasp and a conifer tree, is an example of

- (a) homonymy ( )
- (b) priority ( )
- (c) synonymy ( )
- (d) validity ( )

3. The first types of Archaea discovered were called
- (a) acidophiles ( )
  - (b) archaeobacteria ( )
  - (c) methanogens ( )
  - (d) thermophiles ( )
4. George Gaylord Simpson is associated with
- (a) binomial nomenclature and ICZN ( )
  - (b) discovery of Archaea and domain system ( )
  - (c) sympatric speciation and four-kingdom classification ( )
  - (d) evolutionary species concept and taxonomic hierarchy ( )
5. A diagram that shows branching relationships of organisms based on common ancestry is called
- (a) phylogenetic tree ( )
  - (b) cladogram ( )
  - (c) molecular clock ( )
  - (d) scala naturae ( )
6. An evolutionary concept of 'scala naturae' was introduced by
- (a) Carl Linnaeus ( )
  - (b) Aristotle ( )
  - (c) Jean-Baptiste Lamarck ( )
  - (d) Ramon Llull ( )
7. A vegetative theory, which states that microbes originate by decomposition from inorganic substances, was postulated by
- (a) Johann Friedrich Meckel ( )
  - (b) John Needham ( )
  - (c) Francesco Redi ( )
  - (d) Francis Galton ( )

8. According to Charles Darwin, heredity is due to the inheritance of organic bodies called
- (a) germplasm ( )
  - (b) gametes ( )
  - (c) gonads ( )
  - (d) gemmules ( )
9. The term 'protozoa' was coined by
- (a) Ernst Haeckel ( )
  - (b) Georg Goldfuss ( )
  - (c) Richard Owen ( )
  - (d) Robert Whittaker ( )
10. The discovery that Archaea are distinct group of prokaryotes was based on the sequencing of
- (a) mRNA ( )
  - (b) DNA ( )
  - (c) 16S rRNA ( )
  - (d) mitochondrial DNA ( )

**( SECTION : B—SHORT ANSWERS )**

( Marks : 15 )

Write notes on *five* of the following, taking at least *one* from each Unit : 3×5=15

UNIT—I

1. The principle of priority
2. Key features of binominal nomenclature

UNIT—II

3. Salient features of Archaea
4. Contributions of Carl Woese

UNIT—III

5. Charles Bonnet's great chain of being
6. Cladogram

UNIT—IV

7. Redi's experiment
8. Weismann's experiment

**( SECTION : C—DESCRIPTIVE )**

( Marks : 50 )

Answer *five* questions, taking at least *one* from each Unit :

10×5=50

UNIT—I

1. Describe the principles of Linnaean classification and taxonomic hierarchy.
2. Write an account on the concept of kingdom in biology and discuss the major developments in kingdom classification.

UNIT—II

3. What do you understand by species? Compare the different species concepts.
4. Narrate an account on the contributions made by Aristotle in zoology.

UNIT—III

5. Define speciation. Explain the types of speciation giving suitable examples.
6. Discuss the fundamental concepts of proteins and nucleic acids in molecular phylogeny.

UNIT—IV

7. Describe the contributions of Lazzaro Spallanzani and Louis Pasteur in debunking the theory of spontaneous generation.
8. Compare and contrast the features of recapitulation theory and Von Baer's law.

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