

University of Mumbai

Model Answer Key S.Y.B.Sc Zoology P-I Semester-IV (Choice-based) Q.P.Code: 70498

Time: 03 Hours 3

Marks: 100

- Q.1**
- A) Fill in the blanks by choosing the correct options given below** **05**
- a) Petrification 01
 - b) Directional 01
 - c) Macroevolution 01
 - d) Translational 01
 - e) Analytical 01
- B) Match the columns I and II and rewrite** **05**
- | Column I | Column II | |
|----------------------------|------------------------------------|----|
| a) Phylogenetic trees | : DNA sequencing | 01 |
| b) Weismann | : Germ plasm theory | 01 |
| c) Hybrid breakdown | : Post zygotic isolating mechanism | 01 |
| d) Habitat isolation | : Prezygotic isolating mechanism | 01 |
| e) Discovery of Penicillin | : Alexander Fleming | 01 |
- C) State whether True or False** **05**
- a) True 01
 - b) False 01
 - c) True 01
 - d) True 01
 - e) False 01
- D) Answer the following in one sentence only.** **05**
- a) **Endosymbiosis:** It is a symbiotic association seen in prokaryotic cells by which a eukaryotic cell is formed as one of the organism becomes a permanent 'guest' in another 'host' organism and eventually evolve as a single lineage. **01**
 - b) **Connecting link:** Animals or Plants which possess characters of two different successive groups of organisms are known as connecting links. 01
 - c) **Gene pool:** Each population has a gene pool, which includes all the alleles for all the loci present in the population. 01
 - d) **Allele frequency:** Allele frequency is the proportion of a specific allele of a given genetic locus in the population. 01
 - e) **Dissertation:** A dissertation is a formal document highlighting an arguable view which presents principles and concepts learnt during the study and not merely the facts. 01
- Q.2**
- A) Mutation theory and Weismann's Germ plasm theory of evolution.** **10**
- 1. Introduction 02
 - 2. Explanation of main features of Mutation theory 03
 - 3. Description of Germ plasm theory 02
 - 4. Explanation of the Germ plasm theory. 03

OR

- A) Origin of Eukaryotic cell & geographical evidences in favour of organic** **10**

2

evolution.	
1. Introduction	02
2. Description of origin of Eukaryotic cell	03
3. Explanation & role of endosymbiosis	03
4. Explanation of geographical evidences favouring organic evolution	02
B) Explain any two from the following:	10
a) Darwinism	05
1. Introduction	01
2. Explanation with illustration	04
b) Chemical evolution with Haldane & Oparin theory	05
1. Introduction	01
2. View of Oparin & Haldane and its explanation	04
c) Homologous Organs	05
1. Introduction	01
2. Explanation with examples	04
d) Vestigial Organs:	05
1. Introduction	01
2. Explanation with examples	04
Q.3 A) Role of genetic drift and natural selection in evolution	10
1. Role of genetic drift –Definition, types and role with examples	05
2. Role of natural selection- Definition and role with example	05
OR	
A) Sources of genetic variation within a population	10
1. What is genetic variation?	02
2. Explanation of different sources of genetic variations and their significance	08
B) Explain any two from the following:	
a) Adaptive radiation with examples	05
1. Introduction-What is adaptive radiation?	01
2. Explanation with suitable example	04
b) Biological species concept	05
1. Introduction-Biological species concept	02
2. Advantages and limitations	03
c) Parapatric speciation	05
1. Introduction	02
2. Explanation with example	03
d) How migration disrupts Hardy Weinberg equilibrium in a population	05
1. Introduction- What is migration?	02
2. Explanation – Effect of migration on Hardy Weinberg equilibrium	03
Q.4 A) Give an account of two broad approaches of scientific reasoning.	10

3

1. Introduction 02
2. Deductive reasoning 04
3. Inductive reasoning 04

OR

- A) Give a brief account of approval from forest department to conduct research in protected area. 10**
1. Introduction 02
 2. Types of research based on duration 02
 3. Description of the process 06
- B) Explain any two from the following: 10**
- a) Review paper writing 05**
1. Introduction 01
 2. Brief information on general sections of review paper 04
- b) Critical thinking 05**
1. Definition 01
 2. Description 04
- c) Scientific research: Definition & characteristics 05**
1. Definition 01
 2. Characteristics 04
- d) Popular report 05**
1. Introduction 01
 2. Features 04

Q.5 Write short notes on any four:

- a) Neo-Darwinism 20**
1. Introduction 05
 2. Explanation 01
- b) Recapitulation theory 05**
1. Statement 01
 2. Development of frog & Herdmania 04
- c) Sympatric speciation 05**
1. Introduction-What is speciation? 01
 2. Explanation of sympatric speciation 02
 3. Illustration with a suitable example 02
- d) Role of geographical isolation in speciation 05**
1. Introduction -Definition and examples 02
 2. Role in Speciation 03
- e) Application of knowledge gained by research 05**
1. Introduction 01
 2. Description 04

3

f) Informed consent in clinical research	05
1. Need for Informed consent in clinical research	01
2. Description of informed consent process	04
