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University of Mumbai

Model Answer Key S.Y.B.Sc Zoology P-I Semester-IV (Choice-based)Q.P.Code: 70500

Time: 03 Hours

Marks: 100

- Q.1 A) Fill in the blanks by choosing the correct options given below 05**
- a) Connecting links 01
 - b) Directional selection 01
 - c) Temporal 01
 - d) 1972 01
 - e) Council 01
- B) Match the columns I and II and rewrite 05**
- | Column I | Column II | |
|--|--|----|
| a) Diploblastic | : Organisms with two layers of tissues | 01 |
| b) Leonardo-da Vinci | : Founder of modern Paleontology | 01 |
| c) Bottleneck effect | : Genetic drift | 01 |
| d) Human blood groups | : Genetic polymorphism | 01 |
| e) Schedule Y of Drugs and Cosmetics Act | : 1998 | 01 |
- C) State whether True or False 05**
- a) True 01
 - b) True 01
 - c) False 01
 - d) True 01
 - e) False 01
- D) Answer the following in one sentence each: 05**
- a) **Compression:** It is the plant fossils in which the outline of thin carbon film of the internal structure of plant body is preserved in sedimentary rocks. 01
 - b) **CPCSEA:** Committee for the Purpose of Control And Supervision of Experiments on Animals 01
 - c) **Founder effect:** The founder effect is genetic drift that occurs when a small population colonizes a new area. 01
 - d) **Parapatric speciation:** Speciation with incomplete geographic isolation. A new species arises adjacent to the ancestral population where the ranges overlap. Gene flow is still possible. 01
 - e) **Research hypothesis:** it is a prognostic statement that connects an independent variable to a dependent variable and may be described as an 'educated guess'. 01
- Q.2 A) Mutation and Weismann's germplasm theories of evolution 10**
- 1. Introduction 03
 - 2. Explanation of Mutation theory 03
 - 3. Explanation of Weismann's germplasm theory 04

OR

- A) Anatomical evidences favouring organic evolution 10**
- 1. Introduction 01

2.	Explanation with illustration of homologous organs	03
3.	Explanation with illustration of vestigial organs	03
4.	Explanation with illustration of connecting links	03
B)	Explain any two from the following:	
a)	Neo-Darwinism	05
1.	Introduction	01
2.	Explanation	04
b)	Haldane & Oparin theory of organic evolution	05
1.	Introduction	01
2.	View of Oparin & Haldane & Explanation	04
c)	Vestigial organs	05
1.	Introduction	01
2.	Explanation with illustrations	04
d)	Embryological evidences in favour of organic evolution.	05
1.	Introduction	01
2.	Comparison of early stages of development	02
3.	Comparison of embryos of different animals	02
Q.3 A)	Hardy Weinberg's Law, Effect of mutation and Migration:	10
1.	Statement of Hardy Weinberg's Law of genetic equilibrium	02
2.	Description of effect of mutation and migration	08

OR

A)	Differences between allopatric and sympatric speciation	10
1.	Definition of Speciation	01
2.	Explanation of allopatric speciation with example	04
3.	Explanation of sympatric speciation with example; Differences from allopatric speciation	05
B)	Explain any two from the following:	
a)	ANY TWO patterns of macroevolution	05
1.	Introduction-What is macroevolution?	01
2.	Explanation of any two patterns with examples	04
b)	Post zygotic isolating mechanisms	
1.	Post-zygotic barriers-Definition, lead to reproductive isolation	01
2.	Explanation of types with one example each	04
c)	Concept of stabilizing selection with example	05
1.	Introduction-Definition of Stabilizing selection	01
2.	Explanation with example and graphical representation	04
d)	Sources of variations within a population	05
1.	Introduction	01
2.	Explanation of different sources of variations and their significance	04

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Q.4	A) Give an account of two broad approaches of scientific reasoning.	10
	1. Introduction	02
	2. Deductive reasoning	04
	3. Inductive reasoning	04
	OR	
	A) Define scientific research. Give an account on different types of research.	10
	1. Definition	01
	2. Introduction	02
	3. Types	07
	B) Explain any two from the following:	10
	a) Report writing	05
	1. Introduction	01
	2. Description	04
	b) Critical thinking	05
	1. Introduction	02
	2. Characteristics	03
	c) Process of approval for conducting research in protected areas	05
	1. Introduction	01
	2. Description of the process	04
	d) Ethics in clinical research Application of knowledge gained by Research.	05
	1. Introduction	01
	2. Description	04
Q.5	Write short notes on any four:	20
	a) Recapitulation theory	05
	1. Introduction	02
	2. Explanation with illustration	03
	b) Types of fossils	05
	1. Introduction	01
	2. Explanation of the different types	04
	c) Biological Species concept	05
	1. Introduction	02
	2. Characteristics, advantages, limitations	03
	d) Role of natural selection in evolution	05
	1. Introduction- What is Natural selection?	01
	2. Its role in evolution	04
	e) Informed consent in clinical research	05
	1. Need for Informed consent in clinical research	01
	2. Description of informed consent process	04
	f) Role of computers in research.	05
	1. Introduction	01
	2. Brief description	04