

2021

ZOOLOGY

PAPER-I

Time Allowed — 3 Hours

Full Marks — 200

If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.

Answer may be given either in English or in Bengali but all answer must be in one and same language.

Group-A

1. Attempt any ten questions.

4×10=40

- (a) Discuss salient features and affinities to justify hemichordates as a phylum.
- (b) State the structure and function of septal nephridium in Annelids.
- (c) Compare the aortic arches between urodeles and mammals.
- (d) 'Axolotl' is a neotenic larva—Justify.
- (e) Evaluate termites are eusocial insects.
- (f) Define conjugation. State its significance in Ciliate.
- (g) Discuss the role of air-sacs in avian respiration.
- (h) Distinguish between ecological efficiency and ecological equivalent.
- (i) What is Ozone Problem? State its effects.
- (j) Distinguish between primary and secondary pollutants.
- (k) Characterize the biodiversity hot-spots in India.
- (l) State the principle of aerodynamics in avian flight.
- (m) Elaborate the concept of 'Goodness of fit'.

Group-B

Attempt any four questions.

20×4=80

2. Distinguish between:

5×4

- (a) Horns and Antlers
- (b) Barrier reef and Fringing reef
- (c) Progressive and Retrogressive metamorphosis
- (d) Polypoid and Medusoid Zooids.

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(2)

3. Write notes on the followings: 4x5
- (a) Polymorphism in siphonophore and its significance
 - (b) Pseudopodial movement in Protozoa
 - (c) Feeding and digestion in Branchiostoma
 - (d) Poison apparatus in snake
 - (e) Castes mechanism in a bee-colony and its significance
4. (a) Classify Amphibia upto living orders with salient features and examples. 10
(b) State anatomical peculiarities and affinities of *Limulus* to comment on its systematic position. 10
5. (a) Describe the structure and function of hair in mammals. 8
(b) Briefly discuss the mechanism of formation of Coral-reef. Add a note on its conservation strategies. 8+4
6. (a) Describe retrogressive metamorphosis in *Ascidia*. State its evolutionary significance. 8+4
(b) Discuss the structure and functions of osphradium in *Pila*. 8
7. (a) Give a comparative account of hearts between an amphibian and a mammal. 8
(b) Describe structure and function of Malpighian tubules in an insect. 7
(c) What are pleopods? State its function. 5

Group-C

Attempt any four questions.

20x4=80

8. Write notes on: 5x4
- (a) Type concept
 - (b) Biosphere reserve
 - (c) Age pyramid
 - (d) ANOVA
9. Distinguish between: 4x5
- (a) Taxonomy and Systematics
 - (b) Mean deviation and Standard deviation
 - (c) *Ex situ* and *in situ* conservation strategies
 - (d) Point and Non-point sources of pollution
 - (e) Autogenic and Allogenic succession

10. (a) Distinguish between Primary and Secondary succession. 4
(b) Give an explanatory note on hydrosere. 8
(c) Discuss density-independent factors involved with population regulation. 8
11. (a) What are Greenhouse gases? State their sources and effects on man and biosphere. 3+7
(b) What do you mean by ICZN? Delineate four major rules of ICZN. 2+8
12. (a) Discuss cooperative behaviour of animals. State its advantages in group living. 8+2
(b) What is 10% rule in ecology? Discuss the universal model of energy-flow in the ecosystem. 3+7
13. (a) State the basic differences between 't' test and chi-square test. 4
(b) What is life-table and how it is constructed? State its significance. 6+2
(c) Discuss modern management strategies in relation to tiger conservation. 8
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