

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. Answer any ten questions:

4×10=40

- (a) What do you mean by marsipobranch animal?
- (b) Classify Phylum Porifera up to subclass.
- (c) What are chloragogen cell and its function?
- (d) State the occurrence and function of Tiedemann's body.
- (e) What is the difference between ophisthogyphous and solenglyphous types of teeth?
- (f) Define Biological Hot Spot with example.
- (g) What is resource partitioning?
- (h) Define altruism with suitable example.
- (i) Mention the importance and significance of honeybee dance.
- (j) Mention the difference between Hatschek nephridia and Septal nephridia.
- (k) What are Diploe and Melon? Mention their significance.
- (l) Name a poisonous mammal with comment.

Group-B

Answer any four questions.

2. Write concise notes on any three of the following in about 200 words each:

5×4=20

- (a) Symmetry in non-chordates
- (b) Life history of *Obelia*
- (c) General features of Monotremata
- (d) Digital tips in vertebrates

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3. (a) Describe Torsion and Detorsion in Mollusca. 10+10=20
 (b) What is metamerism? Describe its importance in Invertebrate evolution.
4. Write brief notes on the following: 6+7+7=20
 (a) Migration of Fish
 (b) Social behaviour of *Apis*
 (c) Parental care in Amphibia
5. Why Onychophorans are considered as Living Fossils? What do you mean by Minor Phyla? Mention the systematic position and affinities of *Balanglossus*. Comment on the ciliary mode of feeding in Cephalochordates. 4+3+5+8=20
6. Write short notes: 5×4=20
 (a) Development of scale in Fish/Neuromast organ in fish
 (b) Structure of atypical feather in bird
 (c) Echolocation in Bat
 (d) Structure of gill in elasmobranch and bony fish
7. Distinguish between: 5×4=20
 (a) Ommatidia and Ocelli
 (b) Ephyra and Scyphistoma
 (c) Filopodia and Reticulopodia
 (d) Porocyte and Choanocyte
8. Write short notes: 4×5=20
 (a) Foraminiferan Ooze
 (b) Darwin Dana Subsidence theory
 (c) Arrhenotoky
 (d) Leuconoid canal system
 (e) Genes involved in Polymorphism in Siphonophora

Group-C

Answer *any four* questions.

9. What do you mean by Biological species concept? Define Allopatric and sympatric species. Mention the factors that contribute in speciation. What are Cladistics and Phenetics? State the significance of Biopiracy. 4+4+4+4+4=20

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10. (a) Explain K-T mass extinction and its biological consequences.
(b) With suitable example, discuss adaptive radiation in the Finches in Galapagos Island.
(c) Outline man-ape differences. What advantages could bipedalism have offered to early hominids? 5+7+8=20
11. Distinguish between: 5×4=20
(a) Hydrosere and Xerosere
(b) Antibiosis and Symbiosis
(c) Ecotone and Edge effect
(d) Eutrophy and Dystrophy
12. Comment on the following: 5×4=20
(a) Species dominance in community
(b) Sympatric isolating mechanism operative before and after fertilisation
(c) Interspecific competition in natural communities
(d) Trends towards increasing efficiency of energy and nutrient utilization during autogenic succession
13. State Hutchinson's proposition of niche concept. Explain the term Guild and Ecological equivalence with example. What do you mean by holotype, syntype, lectotype and neotype? 5+7+8=20
14. Point out the clues involved during parental investment in fish. Why β diversity is regarded as a vector entity? State the main anthropogenic sources of important greenhouse gases. Distinguish between Bioaccumulation and Biomagnification. What is umbrella species? 7+3+4+4+2=20

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