2013

M.Sc. Part–I Examination

ZOOLOGY

PAPER—I

Full Marks : 100

Time : 4 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer any *eight* questions.

Group—A

Answer any *four* questions taking *two* from each unit.

Unit—I

[Non-Chordates]

1. Define Larva Classify aquatic larvae based on resource utilisation and habitat preference. Briefly discuss the diversity of larva in Protostome.

$2\frac{1}{2}+4+6$

2. Discuss the stomal modification in free living nematodes. Explain pumping cycle in the digestive process in nematoda with suitable model. Add a note on the ecological role of nemetodes. $5+4+3\frac{1}{2}$

3. What is mastax. Describe the modification of mastax in Rotifera. Discuss the roles of environmental stimuli determining the reproduction in Rotifera. $2+5+5\frac{1}{2}$

4. Write short notes (any *three*) : $4+4+4\frac{1}{2}$

(a) Syncitial mode of Metazoan evolution.

(b) Coelom and its modifications in Metazoa.

(c) Feeding structures in Ectoprocta.

(d) Keystone species.

(e) Strategies on Non-Chordate Conservation.

Unit—II
[Chordates]

5. (i) Give suitable two examples of the following fish orders.

(a) Siluriformes;

(b) Lomniformes;

(c) Lepidosireniformes;

(d) Chepliformes;

(e) Syngnathiformes;

(f) Mugiliformes.

(ii) Write identifying characters (*3 each*)

(a) Cypriniformes;

(b) Baloniformes. $6+6\frac{1}{2}$

6. (i) Briefly discuss on migration of fishes.

(ii) Highlight the significance of osmoregulation on fishes. $7+5\frac{1}{2}$

7. (i) Describe in detail on the fine structure of an endostyle found in Urochordata.

(ii) Write about iodine cycle in protochordata.

(iii) Briefly discuss on the synthesis and release of Thyroxine hormone. $5+4+3\frac{1}{2}$

8. Write short notes from the following (any *three*):

(i) Echolocation in bats.

(ii) Migration of Birds.

(iii) Origin of *Homo sapiens*.

(iv) α, β, γ taxonomy.

(v) Significance of Jaw Suspension. $4+4+4\frac{1}{2}$

Group—B

Answer any *four* questions taking *two* from each unit.

Unit—I

[Applied Zoology]

1. Classify insects based on the orientation of mouth parts in the head. Draw a labelled diagram mentioning different sutures in insect's head. Briefly discuss the modification of insect's wings and evolutionary significance. $2\frac{1}{2}+4+6$

2. Highlight the relationship between moulting and metamorphosis in insects. Discuss neuro-endocrine integration determining metamorphosis in insects. Add a note on physical chemical proprieties of Chitin. $2\frac{1}{2}+7+3$

3. Briefly discuss the constrains in propagating mulbery sericulture in South-West Bengal. Mention the strategies for overcoming it. Mention the advantages of vermicompost over other organic manures. $4+3+5\frac{1}{2}$

4. Write short notes (any *three*) : $4+4+4\frac{1}{2}$
   (a) Significance of midgut of Insects.
   (b) Filter chamber.
   (c) Economic Injury and Threshold Levels.
   (d) Merits and demerits of Biological Control.
   (e) Ecological impact of introduced Exotic fishes.

Unit—II

[Biosystematics]

5. (i) Discuss about the different rules of zoological nomenclature.
   (ii) Add a note on "International Commission on Zoological Nomenclature".
   (iii) Mention the importance of nomenclature in taxonomy. $6\frac{1}{2}+3+3$

6. (i) Define Species Concept.
   (ii) Mention the importance of Biological Species Concept.
   (iii) Give an idea about allopatric speciation.
   (iv) Add a note on Linnaean hierarchy. $2+3+4\frac{1}{2}+3$

7. (a) Define Linnean hierarchy. $2\frac{1}{2}$
   (b) How many categories were proposed by Linnaeus ? 2
   (c) State the factors which necessitated the erection of new categories after Linnaeus. 2
   (d) How do you refer and explain the following situations (any *three*) : 2×3
      (i) A genus which was described in 1846 with a single species is still without any further species in it.

(ii) A species 'x' which has been described from India in 2001 is now found to be taxonomically same to a species 'Y' described earlier from China in 1994.

(iii) If two different valid taxa of the same rank (subspecies and above) are given the identical names.

(iv) The type specimens designated by the original author are lost and now replaced by specimens collected from the type locality.

8. Write Short Note (any three) :

(i) 'Type Concept'.

(ii) Discuss about the role of taxonomy in agriculture.

(iii) Add a note on dichotomous key concept in classification.

(iv) Biochemical Taxonomy.

(v) Animal taxonomy and Quarantine.

$4\frac{1}{2}+4+4$