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63/2 (SEM-3) ZOO 304

2021

(held in 2022)

**ZOOLOGY**

(Theory Paper)

Paper Code : ZOO-304 (New)

(Applied Entomology and Fishery)

Full Marks – 80

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

1. Answer the following multiple choice questions :  
1×6=6

(i) When a fish feeds by overtaking its prey through rapid swimming and thereby ramming water through its open mouth and operculae, such a feeding method is known as

- (a) Suction feeding    (b) Manipulation  
(c) Ram feeding        (d) Filter feeding.

[Turn over

(ii) Fishes which are characterised by their fleshy pectoral and pelvic (paired) fins that articulate with the pectoral (shoulder) and pelvic (hip) girdles via a single bone belongs to

- (a) Sarcopterygii
- (b) Actinopterygii
- (c) Holocephali
- (d) Elasmobranchi.

(iii) Which one of the following is the most important species of marine capture fisheries of India ?

- (a) *Rastrelliger kanagurta*
- (b) *Harpodon nehereus*
- (c) *Sardinella longiceps*
- (d) All of the above.

(iv) Which of the following is a passively operated fishing gear ?

- (a) Gill net
- (b) Drag net
- (c) Seines
- (d) Cast net

(v) 'Wiggler' is called

- (a) Pupal stage of mosquito
- (b) Larval stage of mosquito
- (c) Adult stage of mosquito
- (d) None of the above

(vi) 'Float' is present in the pupal stage of which mosquito species ?

- (a) Anopheles species
- (b) Culex species
- (c) Aedes species
- (d) None of the above.

2. Answer any five of the following short questions :  
2×5=10

- (a) Distinguish between entognathous and ectognathous mouth parts.
- (b) How are hemimetabolous insects different from holometabolous insects ? Give examples.
- (c) What are morphometric measurements and meristic traits used in fish taxonomic studies ?

- (d) Differentiate between ceratotrichia and lepidotrichia types of fins in fish.
- (e) Briefly explain 'rigor mortis' in fish and its significance.

3. Answer any six of the following questions :

5×6=30

- (a) Draw a labeled diagram of a typical insect antenna. Distinguish between apposition and superposition image in insect. 2+3=5
- (b) Explain the piercing and sucking types of mouthparts in insects using suitable diagram.
- (c) Write the location and function of the following :  
Coxa, Ommatidium, Spiracle, Pollen Basket, Johnston's organ.
- (d) Describe social life of hymenopteran insects in detail.
- (e) Describe the structure and function of different types of scales in fish and their modifications.
- (f) Explain in detail the different types of swimming methods found in fish.

- (g) What are the effects of dams on fish and their behaviour ? Explain the concept of fish ways or fish pass in mitigating this effect. 2+3=5

(h) Write a short note on estuarine and riverine fisheries resources of India.

(i) What is meant by transgenic fish ? Write in detail about crypreservation of gametes and its significance.

4. Answer the following long answer type questions (any two) : 10×2=20

- (a) What are the signs and symptoms of malaria fever ? Mention about the preventive measure of malaria. Describe the life cycle of vector Anopheles mosquito that are responsible for causing malaria. 2+4+4=10
- (b) Describe the role of insects as biological control agents by giving examples. Describe the external morphology and life cycle of bedbugs. 5+5=10
- (c) Explain in detail the length and weight relationship in fish. What is condition factor and explain its significance ? 5+5=10

5. Answer the following very long type questions  
(any one):  $14 \times 1 = 14$

- (a) Describe the morphology, life cycle and medical importance of *Pediculus humanus*.  
Add a note on its control measures.

$10 + 4 = 14$

- (b) Explain the morphological and physiological adaptations found in hill stream fishes. What are the biophysical characteristics of cold water? Describe briefly the cold water fishery in India. Name the exotic and endemic cold water fish species found in India.

$5 + 2 + 4 + 3 = 14$