

**Or**

(b) What is an aquarium ? Write briefly preparation and maintenance of fish aquarium. 5+5=10

5. (a) What are the types of fish culture ? Describe extensive and intensive fish culture. Write disadvantages of extensive and intensive fish culture. 2+4+4=10

**Or**

(b) Describe the application of Remote Sensing (RS) and Geographic Information System (GIS) in fisheries. 5+5=10

6. (a) Describe the causes of depletion of fishery resources. 10

**Or**

(b) Give an account of different types of scales in fish. Write briefly the uses of scales and its significance in taxonomy. 5+5=10

Total number of printed pages-8

**3 (Sem-6/CBCS) ZOO HE 1/2**

**2023**

**ZOOLOGY**

(Honours Elective)

**Answer the Questions from any one Option.**

**OPTION-A**

**(Biology of Insecta)**

Paper : ZOO-HE-6016

**OPTION-B**

**(Fish and Fisheries)**

Paper : ZOO-HE-6026

Full Marks : 60

Time : Three hours

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

**OPTION-A**

**(Biology of Insecta)**

Paper : ZOO-HE-6016

1. Choose the correct option :  $1 \times 7 = 7$

(i) Microbial chamber in insect gut is present in

- (a) Foregut
- (b) Midgut
- (c) Hindgut
- (d) None of the above

(ii) Crop is completely separated as a lateral diverticulum in the alimentary canal of

- (a) Cockroach
- (b) Beetle
- (c) Housefly
- (d) Termite

(iii) Insects living in large communities and have equal wings belong to order

- (a) Diptera
- (b) Hymenoptera
- (c) Isoptera
- (d) Lepidoptera

(iv) Antenna of butterfly is

- (a) Moniliform
- (b) Pectinate
- (c) Clavate
- (d) Capitate

(v) Which insect is considered as an important pollinator for plants ?

- (a) Butterflies
- (b) Moths
- (c) Honey bees
- (d) Thrips

(vi) Apterygotes like silverfishes are

- (a) Hemimetabolous
- (b) Holometabolous
- (c) Hypermetabolus
- (d) Ametabolous

(vii) Legs of predatory insects modified for capturing prey is

- (a) Saltatorial leg
- (b) Natatorial leg
- (c) Raptorial leg
- (d) None of the above

2. Answer the following questions :  $2 \times 4 = 8$

- (i) What are the different types of metamorphosis in insects ?
- (ii) What is plastron in insects ? Mention its function.
- (iii) Write *two* important functions of haemolymph in insect.
- (iv) Write the role of juvenile hormone (JH) in insect growth and development.

3. Answer the following questions : **(any three)**  
 $5 \times 3 = 15$

- (i) Write about the central nervous system (CNS) of insect with diagram.
- (ii) Write about the mechanism of respiration in terrestrial insects.
- (iii) Describe the male reproductive system in insect along with diagram.
- (iv) What are the different excretory products in insects ? Write briefly about the mechanism of excretion in insects.
- (v) Write about the different groups of social insects focussing their social behaviour.

4. (a) Describe different types of mouth along with feeding habit in insects with labelled diagram. 10

**Or**

(b) What do you mean by digestion ? How does it take place in insect ? Describe the mechanism of digestion and absorption.

5. (a) Describe the host selection behaviour of phytophagous insects and describe the mechanism by which plants protects themselves from insect attack. 10

**Or**

(b) Give an account of respiration in aquatic and endoparasitic insects.

6. (a) Give an outline classification of class insecta giving examples from each order. 10

**Or**

(b) Write an essay on general features, distribution and success of insects on Earth.

**OPTION-B**

**(Fish and Fisheries)**

Paper : ZOO-HE-6026

1. Fill in the blanks :  $1 \times 7 = 7$

- (a) Gill rot is a \_\_\_\_\_ disease.
- (b) Gyrodactylosis is caused by a fish parasite \_\_\_\_\_.
- (c) \_\_\_\_\_ is an example of catadromous fish.
- (d) Parental care in Hippocampus is \_\_\_\_\_.
- (e) The ornamental fishes are also called \_\_\_\_\_.
- (f) Swim bladder or air bladder is main characteristic of \_\_\_\_\_ fishes.
- (g) In aquarium to remove ammonia used \_\_\_\_\_.

2. Answer the following questions :  $2 \times 4 = 8$

- (a) What are the functions of electric organ in fishes ?
- (b) Write difference between transgenic fish and hybrid fish.

(c) What is oceanodromous fish, give example.

(d) Write the disadvantages of natural spawn collection system.

3. Answer the following questions : **(any three)**  
 $5 \times 3 = 15$

- (a) Write notes on the by-products of fishing industry.
- (b) Write briefly about different types of feeding habits in fish with example.
- (c) Write notes on advantages and disadvantages of induced breeding.
- (d) Define fish migration. Write briefly about different types of migration.
- (e) What is aquaculture ? Mention elaborately types of aquaculture.

4. (a) What is polyculture ? What are the basic principles of polyculture ? Write briefly about the advantages of polyculture.  
 $2+4+4=10$