

Total number of printed pages-8

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

2024

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.*

Contd.

OPTION-A

(*Biology of Insecta*)

Paper : ZOO-HE-6016

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

(i) Ommatidia are associated with—

- (a) locomotion
- (b) digestion
- (c) vision
- (d) flight

(ii) The cuticle is secreted by—

- (a) epidermis
- (b) basement membrane
- (c) dermis
- (d) molting gland

(iii) Plumose antennae are found in

- (a) Termite
- (b) Mosquito
- (c) Cockroach
- (d) Butterfly

(iv) Sponging mouthparts are found in

- (a) Housefly
- (b) Mosquito
- (c) Butterfly
- (d) Grasshopper

(v) Which part of the alimentary canal acts as a reservoir of food in insects?

- (a) Midgut
- (b) Illium
- (c) Gizzard
- (d) Crop

(vi) Which of the following is an Ametabolous insect?

- (a) Termite
- (b) Collembola
- (c) Silkworm
- (d) Dragonfly

(vii) Corpora cardiaca is a part of

(a) Respiratory system

(b) Endocrine system

(c) Excretory system

(d) Integumentary system

2. Answer the following questions :

2×4=8

(i) Name the different segments of an insect's leg.

(ii) What is an ommatidium?

(iii) What are the four main anatomical components of insect endocrine system?

(iv) What is hemimetabolous metamorphosis?

3. Answer the following questions : **(any three)**

5×3=15

(i) Describe the mouthparts of a mosquito.

(ii) Write briefly about excretion by Malpighian tubules.

(iii) What are haemocytes? Mention some of their functions.

(iv) Write about different types of receptors in insects.

(v) Draw a labelled diagram of ommatidium.

4. Answer the following questions : (**any three**)
10×3=30

(i) Describe the social organization and social life of any insect.

(ii) Describe different types of metamorphosis in insects.

(iii) How are insects attracted towards host plants? Describe how plants protect themselves from insects.

(iv) Mention some characters of insects of order Lepidoptera. Give some examples of insects of order Lepidoptera.

(v) Write about houseflies and mosquitoes as insect vectors.

(vi) Describe briefly the tracheal system of respiration in terrestrial insects.

OPTION-B

(Fish and Fisheries)

Paper : ZOO-HE-6026

1. Fill in the blanks : 1×7=7
- (a) Fish migration in search of food and water is known as _____.
 - (b) _____ is a soil sealant used for the treatment of porous soil in a fish farm.
 - (c) Common name of *Vallisacria* sp is _____.
 - (d) Tail and fin rot disease in fish is caused by _____.
 - (e) Brewaries use _____ made from swim bladder of sturgeon as filtering agent.
 - (f) A mixture of chorionic gonadotropin and mammalian pituitary extract is known as _____.
 - (g) _____ tubes are used to encourage plant growth in an aquarium.
2. Answer the following questions : 2×4=8
- (a) What are red bodies ?
 - (b) Write *two* advantages of polyculture.

(c) Write *two* causes of depletion of fishery resources.

(d) What is intensive culture of fish?

3. Write short notes on : **(any three)**

5×3=15

(a) Transgenic fish

(b) Fisheries law and regulations

(c) Mechanoreceptors

(d) Cage culture

(e) Classification of fishes based on feeding habits

4. What is bioluminescence? Give an account of bioluminescence in fishes with examples.

2+8=10

Or

Give an account of different scales of fishes with diagrams. How is scale of fish used for the determination of age?

8+2=10

5. What is bundh breeding? Describe briefly the method of hypophysation in carps.

3+7=10

Or

Explain the causative agent, symptoms and preventive measures of protozoan diseases in cultivable fishes. $3+5+2=10$

6. Write a note on the different fishing crafts and gears used in fishery. 10

Or

Describe the different methods of preservation techniques of harvested fishes.

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3 (Sem-6/CBCS) ZOO HC 2

2024

ZOOLOGY

(Honours Core)

Paper : ZOO-HC-6026

(*Evolutionary Biology*)

Full Marks : 60

Time : Three hours

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

1. Choose the correct option from the following questions : 1×7=7

(i) Which of the following is considered to be the first step of biochemical origin of life according to Oparin-Haldane theory ?

- (a) Cognogeny
- (b) Chemogeny
- (c) Biogeny
- (d) Biology

Contd.

(ii) Which of the following is the modern horse ?

- (a) Epihippus
- (b) Eohippus
- (c) Equus
- (d) Merychippus

(iii) The change in number of chromosomes leading to genetic variation is known as

- (a) Heteroploidy
- (b) Hybridisation
- (c) Aneuploidy
- (d) Gene mutation

(iv) A population has 49% of homozygous recessive genotype 'aa'. The frequency of allele 'a' is

- (a) 0%
- (b) 20%
- (c) 60%
- (d) 70%

(v) A monkey migrates to a new place and mates with another monkey of same species in the new population. What type of genetic change is described in this example ?

(a) Genetic drift

(b) Gene flow

(c) Mutation

(d) Genome

(vi) The speciation in which groups from an ancestral population evolve into separate species due to geographical separation is known as

(a) Allopatric speciation

(b) Sympatric speciation

(c) Parapatric speciation

(d) Stasipatric speciation

(vii) Which of the following had cranial capacity of 1300–1600 cubic centimetre ?

(a) Neanderthal man

(b) Cro-Magnon man

(c) Java Ape man

(d) *Homo habilis*

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

(i) What is 'molecular clock' ?

(ii) Distinguish between gene flow and genetic drift.

(iii) What do you mean by 'ring species' ?

(iv) What is a phylogenetic tree ?

3. Write short note on : (*any three*)

5×3=15

- (i) Biogeny
- (ii) Selection coefficient in population genetics
- (iii) Adaptive radiation
- (iv) Five major mass extinctions
- (v) The experiments that proved evidences against Lamarckism

4. Answer *any three* of the following questions :

10×3=30

- (i) Describe Darwin's theory of natural selection. Mention *four* basic objections to this theory.
- (ii) What do you mean by evolution? Describe the evolution of horse with respect to different geological periods.

1+9=10

- (iii) What is chromosomal aberration? Write the ways how it occurs in nature. Mention its significance in evolution.

1+7+2=10

- (iv) (a) What is Hardy-Weinberg law? Describe the evolutionary forces that upset Hardy-Weinberg equilibrium.

2+5=7

- (b) In a population of 500 dogs, the allele for black colour (B) is dominant over the allele for white colour (b). There are 420 black and 80 white dogs. What is the number of dogs with the genotype 'Bb'?

3

- (v) (a) Write about Biological Species Concept. Mention the limitations of this concept.

3+2=5

(b) What is the role of isolating mechanisms in the formation of new species? 5

(vi) Describe the evolution of man from *Dryopithecus* to *Homo sapiens*.
