

2025

M.Sc. 3rd Semester Examination
ZOOLOGY

PAPER : ZOO-306A/B/C/D

Full Marks : 25

Time : One Hour

The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.

ZOO-306A

(Fish Taxonomy, Anatomy and Biology)

Answer any *two* questions : $2 \times 2 = 4$

1. Give scientific names of one each from the Orders Siluriformes and Perciformes.
2. How does keratin structure support the classification of fish?
3. How does leptobasic pituitary gland differ from the platybasic pituitary gland? Cite examples. $1+1$
4. Distinguish between the osmoregulatory challenges faced by freshwater and marine teleost fishes.

Answer any *two* questions : $4 \times 2 = 8$

5. "Fish gut is a site of diversity of microbes" — justify.

P.T.O.

(2)

6. Explain the hormonal regulation of osmoregulation in teleost fishes with suitable examples.
7. How do you demonstrate the fish heterophiles in an Indian Major Carp (IMC)? State the functions of any two of them.
8. Why are 'Hassell's Corpuscles' marked as the graver within the thymus gland of fish?

Answer any *one* question : 8×1=8

9. Describe the impact of indiscriminate antibiotic use on aquaculture sustainability. Discuss possible alternatives to reduce antibiotic dependence. 5+3
10. Classify different types of exogenous feed applicable for commercial aquaculture. Describe the ecological significance of live food over the use of exogenous feed in fish dietetics. Mention major criteria to be considered while formulating the fish feed. 2+4+2

Internal Assessment : 5 marks

(3)

ZOO-306B

(Biodiversity and Conservation Ecology)

Answer any *two* questions : $2 \times 2 = 4$

1. Cite instance of 'Social Forestry' in West Bengal. What are NTFPs? $1+1$
2. Why is IUCN considered as barometer of life?
3. Which are the common illegally traded species in India?
4. How many Endemic birds dwell in India? Give examples from West Bengal. $1+1$

Answer any *two* questions : $4 \times 2 = 8$

5. (a) How can GIS and remote sensing help in Biodiversity Conservation? Briefly comment on 'Reintroduction'. $3+1$
6. What is the trend of wildlife trafficking since last decade? Enlist the important approaches to combat wildlife crime. $2+2$
7. How many hotspots are there in India? State the criteria for an area to be considered as a biodiversity hotspot. $2+2$
8. How are habitat fragmentation and degradation linked?

Answer any *one* question : $8 \times 1 = 8$

9. (i) Compare the features of the core and buffer zones of a biosphere reserve. Name two biosphere reserves of eastern India.

P.T.O.

(4)

- (ii) Enlist the names and locations of the national parks and tiger reserves of West Bengal. (3+1)+4
10. (i) Mention the various benefits of biodiversity. Explain the levels of biodiversity.
- (ii) Highlight the primary Sustainable Development Goals and their interlinkage. (2+2)+4

Internal Assessment : 5 marks

(5)

ZOO-306C

(Genetics and Molecular Biology)

Answer any *two* questions : $2 \times 2 = 4$

1. Mention one protein molecule which prevent mitochondrial outer membrane permeabilization (MOMP) and one protein which promote MOMP.
2. What will be the fate of a XY human having a duplication of WNT4 region?
3. Explain the effect of tra mutation in XX *Drosophila*.
4. Why DAX1 is considered as most puzzling loci in the catalog of sex determining genes in human?

Answer any *two* questions : $4 \times 2 = 8$

5. Summarize how Bcl-2 family proteins regulate apoptosis.
6. How chromatin remodelling is involved in regulating transcriptional activity in Dosage compensation in *Drosophila*?
7. Draw and describe the apoptotic pathway of *Caenorhabditis elegans*.
8. State the function of the proteins involved in bridging between the 5' and 3'-ends of the intron in a yeast commitment complex.

P.T.O.

(6)

Answer any *one* question :

8×1=8

9. Discuss the model for signalling of apoptosis via ligand.
10. How the primary transcript of the double sex gene (*Dsx*), sex specific lethal gene (*Sxl*) and transformer gene (*tra*) are processed in a sex specific manner in sex determination in *Drosophila*?

Internal Assessment : 5 marks

(7)

ZOO-306D

(Diversity and Biology of Parasite)

Answer any *two* questions : $2 \times 2 = 4$

1. What are hyperparasite and aberrant parasite? Give example of each.
2. Explain sparganosis.
3. Write the symptoms and treatment of Trichodiniasis.
4. Draw the structure of scolices found in the following order :

(i) Diphyllidea

(ii) Rhinebothriidea

Answer any *two* questions : $4 \times 2 = 8$

5. Describe the structure of Apical Complex with labelled diagram.
6. What is calabar swelling? Add a note on its pathogenicity. $2+2$
7. Describe in brief the life cycle of *Trichinella spiralis*.
8. Write a short note on Epizootic Ulcerative Syndrome (EUS) in freshwater fishes.

P.T.O.

(8)

Answer any *one* question : $8 \times 1 = 8$

9. Discuss the lifecycle, pathogenicity and prophylaxis of *Echinococcus granulosus*. $5+2+1$
10. Describe in detail the mechanism of host defense and parasite evasion in host - parasite interaction.

Internal Assessment : 5 marks
