

M.Sc. Examination, 2019

Semester-IV

Zoology

Paper – MZET-401 (iv)

(Fish Biology)

Time: 4Hours

Full Marks: 80

Questions are of value as indicated in the margin.

Answer **any eight** questions, taking at least four from each group.

Group-A

1. Outline the classification of fish upto subclass with characters and examples. Write the distinctive characters of the orders Carcharhiniformes, Perciformes and mugiliformes and cite atleast one example for each. 4+6=10
2. (a) Give a brief note on the feeding and breeding biology of an Indian Major Carp, *Catla catla*.
(b) Write the role of silver carp in carp culture in India.
(c) State the reasons for discontinuous distribution of Bombay duck.
(d) Write a note on the shoaling behaviour of oil sardine, *Sardinella longiceps*.
2.5+2.5+2.5+2.5=10
3. What do you understand by gross conversion efficiency? How is it related to the specific growth rate and relative food intake. Give a brief account of energy flow through aquatic organisms. 3+3+4=10
4. How feeding habits of fish can be correlated with mean relative length of gut. Compare and contrast participation of proteases in protein digestion in herbivore and carnivore fishes. Give an account of protein digestion in fish gut emphasizing the substrate specificity of endopeptidases. 4+3+3=10
5. Write the factors that influence the growth of fish. Elaborate different methods of age determination in fish. 3+7=10
6. Distinguish between ammonotelic, ureotelic organisms with specific examples. Give an account of the specific biochemical reactions, enzymes involved and their cellular localization in relation to ammonia synthesis. 3+4+1+2=10

Group-B

7. What is lateral line system? Draw and describe the structure of a neuromast organ. How does the neuromast organ code different signals with limited number of receptor cells? How does a fish discriminate the stimuli generated by a predator fish from the stimuli of the wave generated by its own movement? 1+3+3+3=10

P.T.O.

(2)

8. What is bioluminescence? Describe the structure of different types of photophores with suitable diagrams. Comment on the evolution of bioluminescence among deep sea fishes. How is quorum sensing involved in bioluminescence of fish? $2+3+3+2=10$
 9. Give an account of endocrine regulation of (a) follicular growth (b) maturation in the ovary of a fish species breeding annually during monsoon. $5+5=10$
 10. Why resumption of final oocyte maturation is important for ovulation and fertilization? Describe the intra oocyte signalling events responsible for activation of cyclin B cdc 2 complex in goldfish oocyte. $3+7=10$
 11. How do fish maintain buoyancy? Briefly describe the anatomy and histology of a swim bladder. Explain the gas secretion and gas resorption mechanism in a physoclistous swim bladder. $2+3+5=10$
 12. What are electrolocation and electro communication? Give an illustrated account of different electroreceptor organs in fish. $2+8=10$
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