

**M.Sc. Examination, 2017**

**Semester-IV**

**Zoology**

**Paper - MZET-401**

**(Fish Biology)**

**Time: 4 Hours**

**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. Define Gross Conversion Efficiency. How it is related to Specific Growth Rate (SGR) and relative food intake? Give a brief account of energy flow in an aquatic organism.  
3+3+4=10
2. What is relative gut length? How it is related to feeding habit in fish? How the involvement of proteases in protein digestion is different in herbivorous and carnivorous fishes? Give an account of protein digestion in fish gut emphasizing the substrate specificity of endopeptidases.  
2+2+3+3=10
3. Distinguish between *Elasmobranchi* and *Holocephali*. Write the salient features with examples of the Order Rajiformes, Clupeiformes, Perciformes and Mugiliformes.  
2+(2+2+2+2)=10
4. Give a brief account of feeding and breeding biology of **any two** of the following:  
(a) *Heteropneustes fossilis* 5x2=10  
(b) *Sardinella longiceps*  
(c) *Hypophthalmichthys molitrix*
5. Write briefly on the factors that influence the growth of fish. Describe the direct and indirect methods for age determination of fish.  
4+6=10
6. Write brief notes on **any two** of the following 5x2  
(a) Feeding adaptation in jaw and dentition of fish  
(b) Discontinuous distribution of Bombay duck  
(c) Role of buccal and opercular pumps in the process of gill ventilation in fish  
(d) Oxygen-haemoglobin saturation kinetics in fish blood

**Group B**

7. Name the primary excretory organ in teleosts. Describe in brief the mechanism of ammonia formation in fish. Compare and contrast the mechanisms of osmoregulation in freshwater and marine teleosts.  
1+4+5=10

P.T.O.

(2)

8. Describe the organization of lateral line system in fish. How does the neuromast organ convey information about stimuli to the central nervous system through *across fibre coding*? 6+4=10
  9. Narrate the chemistry behind bioluminescence in fish. Describe with suitable diagram different types of photophores found in fish. State the adaptive advantages gained by different deep-sea fish species from their luminescence. 2+4+4=10
  10. What do you mean by octavo-lateralis system? Give a brief account of the electroreceptor organ of fish and add a note on electro-communication. 1+7+2=10
  11. Give schematic location (along with suitable diagram) of the major endocrine organs in fish. Compare and contrast the origin, location, secretion and the actions of Chromaffin tissue and Inter-renal tissue in teleosts. 4+6(3+3)=10
  12. Give a brief account of oogenesis in teleosts. Comment on endocrine regulation of vitellogenin synthesis. State how steroid action at oocyte surface triggers resumption of meiosis in gravid ovary. 2+4+4=10
-