M.Sc. ZOOLOGY
THIRD SEMESTER
FISH & FISHERY BIOLOGY
MSZ-303 C

Duration: 3 Hrs. **Marks: 70**

PART : A (OBJECTIVE) = 20
PART : B (DESCRIPTIVE) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins. Marks: 50

[Answer question no. One (1) & any four (4) from the rest]

1. What are hill stream fishes? Describe the pristine conditions prevailing in the hill streams. Explain briefly about the modifications and adaptations of hill stream fishes. (1+2+7=10)

2. What are osmoregulators and osmoconfirmers? Explain in detail about the phenomenon of osmoregulation in fishes with suitable examples. (5+5=10)

3. Classify fishes on the basis of their food and feeding habits giving examples. Describe how the bucco-pharyngeal region of teleosts has become adapted to suit the feeding habits. (5+5=10)

4. How can fish remove 80-90% of O_2 available from water? Write a brief note on counter current mechanism. (4+6=10)

5. Describe brief note on the meaning and scope of fish marketing. With the help of proper fish marketing channels describe the role of middleman. (5+5=10)

6. Highlight some of the salient features of the fish and fisheries of the River Brahmaputra. (10)

7. Elucidate in detail about colouration and pigmentation in fishes with a note on its significance. (10)

8. Write a short note on the following: (*Select any two*) (5×2=10)
   (i) Conditions responsible for air breathing adaptation in fishes.
   (ii) Rich ichthyofaunal diversity in Northeastern India.
   (iii) Differences between physostomous and physoclistous fishes.
   (iv) How does fish have a successful life in aquatic environment?
   (v) Hormonal role in the migration of fishes.

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[PART-A : Objective]

Choose the correct answer from the following : **1×20=20**

1. Which of the following group of fishes do not have gas bladder?
   a. Cat fishes and Carps.
   b. Loaches and Silurids.
   c. Bagarids and Sisorids.
   d. Lampreys and Sharks.

2. Which of the following is true for Cyprinid fish?
   a. Skin naked.
   b. Body with cycloid scales.
   c. Body with ctenoid scales.
   d. Body with ganoid scales.

3. Which of the following fishes do not produce sound?
   a. Cobitids
   b. Clupeids
   c. Anguillids
   d. Silurids

4. The characteristic feature of lung fishes is:
   a. The development of gas bladder from the dorsal wall of gut.
   b. The development of gas bladder from the lateral wall of gut.
   c. Development of gas bladder from ventral surface of gut.
   d. Development of pharyngeal diverticulum.

5. Ram ventilation in fishes:
   a. Requires more energy.
   b. Does not require energy.
   c. Requires enzymes to start process.
   d. Has both active and passive process.

6. Which of the group of following fish is mouth brooder?
   a. *Oreochromis* & *Tilapia*
   b. *Trichogaster*
   c. Channids
   d. Loaches

7. Which of the following fish does not have hemoglobin in blood?
   a. Flat fish
   b. *Pleuronectes*
   c. *Hippocampus*
   d. Crocodile ice fish

8. The characteristic feature of a carnivore fish is:
   a. Presence of long, hard, sharp and pointed teeth like gill rakers.
   b. Presence of broad sieve like gill rakers.
   c. Presence of short and stumpy gill raker with sharp pointed pharyngeal teeth.
   d. Presence of thin, long and filamentous like gill raker.

9. Which of the following is the feeding ground of the adult catadromous fishes?
   a. Oceans
   b. Mangroves.
   c. Freshwater lakes and rivers.
   d. Lagoons.

10. Which of the following hormone is responsible to maintain salt balance for diadromous fishes in freshwater?
   a. Urotensins
   b. Colcitonin
   c. Corticotroph
   d. Prolactin

11. Black and yellow chromatophores in fishes develop:
   a. Orange colour.
   b. Black colouration.
   c. Green colouration.
   d. Yellow colouration.

12. The pigment material of xanthophores include:
   a. Carotenoids and pterins.
   b. Vescicles.
   c. Melanophores.
   d. Retinon.

13. When a dam is constructed:
   a. It helps in the movement of fish.
   b. It acts as a barrier in the movement of fish.
   c. It induces the fish to change their behaviour.
   d. It increased the productivity of fishes.

14. The branch of study dealing with Fish bone is:
   a. Endocrinology b. Osteology
   c. Myology d. Kinesiology

15. The reflecting cells are called:
    a. Irridiocytes
    b. Pteridines
    c. Drosopterines
    d. Tyrosine

16. The melanin is known as a brown or black pigment derived from the amino acid:
    a. Guanine
    b. Lysine
    c. Arginic acid
    d. Tyrosine

17. Osmoregulators are those animals who:
    a. Can maintain their internal osmolarity different from the medium in which they live.
    b. Cannot maintain internal osmolarity but can maintain homeostasis.
    c. Cannot maintain internal osmolarity.
    d. All of the above.

18. The hill stream fishes generally possess:
    a. Long narrow, band shaped caudal peduncle.
    b. Arrow shaped caudal peduncle.
    c. Bow shaped peduncle.
    d. Short caudal peduncle.

19. The mighty river Brahmaputra, draining the Eastern Himalayas, along with 47 tributaries has a combined length of:
    a. 4000 Km
    b. 8000 Km
    c. 2,500 Km
    d. 3000Km

20. The outer rays of the paired fins in hill streams are modified for adhesion and the number of inner rays are therefore:
    a. Increased.
    b. Decreased.
    c. Increased and decreased.
    d. Both increased laterally and posteriorly.

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UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

[PART (A) : OBJECTIVE]

Duration : 20 Minutes

Serial no. of the main Answer sheet

Course : .....

Semester : ..... **Roll No :** .....

Enrollment No : ..... **Course code :** .....

Course Title : .....

Session : 2017-18 **Date :** .....

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Instructions / Guidelines

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

Scrutinizer's Signature *Examiner's Signature* *Invigilator's Signature*