# FISHERIES SCIENCE

### Time : 3 hours

# Full Marks: 200

180023

#### Instructions :

- (1) Answer all questions following the directions.
- (2) The figures in the right-hand margin indicate full marks for the questions.

### SECTION-A

1. Give a brief account on the capture-based culture fisheries.

Or

Write about the prospects and challenges of species diversification in freshwater aquaculture in India.

- 2. Write short notes on the following (any five) :
  - (a) Raceway aquaculture
  - (b) Cage and pen culture
  - (c) Recirculatory aquaculture system
  - (d) Wastewater aquaculture
  - (e) Biological filter
  - (f) Cryopreservation
  - (g) Osmoregulation in teleost

3. Write on any two of the following :

- (a) Prospects of cold-water fisheries in Arunachal Pradesh
- (b) Role of endocrine in gametogenesis in fish
- (c) Brief account of cold-water fish diseases and their preventive measures

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(d) Brood stock management of Macrobrachium rosenbergii

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10×2=20

10

 $2 \times 5 = 10$ 

## SECTION-B

## ( Fishery Biology )

Explain the countercurrent mechanism in teleost with proper diagram. 10
 Or

What are different methods for age and growth determination of fish?

- 5. Write short notes on any *five* of the following : 2×5=10
  - (a) Mangroves ecosystem
  - (b) Pituitary gland
  - (c) Reservoir fisheries management
  - (d) Fly casting
  - (e) Ornamental fishery resources of North-East India
  - (f) MSY and MEY
  - (g) Beel fisheries management
- 6. Answer any two of the following :

#### $10 \times 2 = 20$

- (a) Write a brief note on *ex situ* and *in situ* conservation measures of fish germplasm.
- (b) Explain the digestive system of finfishes.
- (c) Explain the maturity stages of finfishes (both male and female).

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## SECTION-C

## (Fishery Hydrography)

7. "Planktons are the basis of fish culture." Explain.

Or

Write a brief note on standard operating procedure for soil and water quality management in carp culture.

8. Write short notes on any five of the following :

2×5=10

10

(a) EIA

(b) Micronutrients role in aquaculture

(c) Biological productivity

(d) Harmful Algal Bloom (HAB)

(e) Methods of aquatic weed control

(f) Bioremediation

(g) Aquatic insects control

**9.** Define primary productivity. What are different methods used for estimation of primary productivity? Explain any one. 1+1+8=10

Or

Define ecosystem. What are different biotic and abiotic factors affecting the productivity of an ecosystem? Explain.

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## SECTION-D

## ( Fishery Technology )

- 10. Define radiation preservation. What are different advantages of this technology?
  10
- 11. Write short notes on any *five* of the following :
  - (a) IQF
  - (b) Mince-based fish products
- (c) Smoked fish
  - (d) Canning
  - (e) Hook and lines
  - (f) Value addition
  - (g) Smoked fish preparation
- 12. Write different steps involved in postmortem changes in fish.

Or

Give a brief note on different traditional preservation techniques of fish prevailing in North-East India.

## SECTION-E

#### (Fishery Economics and Management)

13. Write short notes on any *three* of the following :

5×3=15

10

2×5=10

- (a) Prevailing fish marketing system in India
- (b) NFDB
- (c) WTO
- (d) Elasticity of demand and supply
- (e) Capital budgeting

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14. Define the concept of entrepreneur. What are different characteristics of an entrepreneur?

Or

Write a brief note on trade policies of India.

## SECTION-F

## (Fishery Extension)

- Define Trickle Down System and its mechanism involved in aquaculture extension for rural development.
   10
  - Or

What are different constraints to transfer of aquaculture technologies?

16. Write a brief note on different teaching methods in extension.

Or

What are different objectives of extension?

- 17. Write short notes on any three of the following :
  - (a) KVK
  - (b) One-stop aqua shop
  - (c) ATIC

(d) ITK in fisheries

(e) Potential Fishery Zone (PFZ)

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YY8-36

7

6×3=18

10