

<b>CSM – 29/16</b>
<b>Fisheries Science</b>
<b>Paper – II</b>

*Time : 3 hours*

*Full Marks : 300*

*The figures in the right-hand margin indicate marks.*

*Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and **three** of the remaining questions, selecting at least **one** from each Section.*

**SECTION – A**

1. Answer any **three** of the following :
  - (a) Discuss, in detail, about the significance of aquatic animal disease management. 20
  - (b) Write the difference between fisheries and aquaculture. Discuss the scope and prospects of aquaculture in the state of Odisha. 20
  - (c) Describe the importance of feed in

aquaculture and their management in different culture system. 20

(d) Describe, in detail, about the importance of different environmental variables for breeding of fishes ? Write about the evolution of different hatcheries in fish breeding with diagram. 20

2. (a) Write down the advantages and disadvantages of the following : 20

- (i) Aquatic plants
- (ii) Biofertilizer
- (iii) Algal bloom
- (iv) Waste water aquaculture

(b) Write down the brief notes on the following : 20

- (i) Diversification of aquaculture
- (ii) Integrated farming system (IFS) models
- (iii) Types of lime and their application in aquaculture
- (iv) Recirculatory system in aquaculture

- (c) Write about different types of aquaculture practices. Discuss, in detail, about cage and pen culture. 20
3. (a) Describe major bacterial diseases of cultivable fishes and their remedial measures. 20
- (b) What do you mean by defense mechanism ? Discuss, in detail, about the defence mechanism of shellfishes. 20
- (c) What do you mean by transgenic fish ? Write about the selective breeding of fishes. 20
4. (a) Write about the soil and water quality criteria for brackish water aquaculture and their management strategies. 20
- (b) What do you mean by the environmental diseases of fishes ? Discuss, in detail, the environmental diseases of fishes and their remedial measures. 20
- (c) Write about the seed production and hatchery management of freshwater prawn. 20

## SECTION – B

5. Answer any **three** of the following :
- (a) What do you mean by craft ? Write about the care and preservation of fishing boats. 20
  - (b) Write the proximate composition of fish. Give an account of changes associated with frozen fishery products and their control measures. 20
  - (c) Write about the handling and transportation of fresh fishes. Discuss, in detail, about the principles of low temperature preservation of fishes. 20
  - (d) What do you mean by BIS and IS for fish and fishery products ? Write, in detail, about them. 20
6. (a) What do you mean by surimi ? Discuss, in detail, about the fermented fishery products produced in India. 20
- (b) What do you mean by fishery by-products ? Write about the different fishery by-products. 20

- (c) Discuss about the biochemical, microbiological and organoleptic indices of fresh fish. 20
7. (a) Give an account of the following : 20
- (i) Value added fishery products
  - (ii) Food poisoning microbes
  - (iii) Icing of fishes
  - (iv) Care and preservation of fishing gears
- (b) Write about safety and stability of fishing boats. 20
- (c) Discuss about the different modern commercial fishing methods. 20
8. (a) Write, in detail, about different types of canning. Discuss about the different steps followed in canning. 20
- (b) Write brief notes on the following : 20
- (i) Natural and synthetic materials for fishing gears
  - (ii) Fish muscle chemistry
  - (iii) Methods of thawing
  - (iv) Smoking of fishes

- (c) Discuss about the quality specifications for export of Indian Fishery Products to European Union, USA and Japan. 20

