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**OPSC**  
**Assistant**  
**Fisheries Officer**  
**Previous Year Paper**  
**(Notification no. 5) 2020**  
**Paper-I**



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Test Booklet Series



T. B. C. : AFO – 1/20

## TEST BOOKLET

ASSISTANT FISHERIES OFFICER  
PAPER – I

SI. No. **1145**

(FISHERIES SCIENCE)

Time Allowed : 2 $\frac{1}{2}$  Hours

Maximum Marks : 400

### : INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES A, B, C OR D, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write anything else on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains 200 items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry two marks each. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be no negative marking for wrong response (answer).**
8. Before you proceed to mark (darken) in the Answer Sheet the responses (answers) to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the **Answer Sheet** issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO**

TC – 1A/13

(Turn over)

SEAL

1. The ratio of soap and oil in the emulsion used for removal of aquatic insects in the pond :  
(A) 1 : 2  
(B) 2 : 3  
(C) 1 : 3  
(D) 1 : 4

2. Water mass in the bottom of thermally stratified lake / reservoir known as :  
(A) Epilimnion  
(B) Metalimnion  
(C) Hypolimnion  
(D) Thermocline

3. Ideal stocking of carp fry (million fry/ha) in rearing ponds :  
(A) 0.1 to 0.2  
(B) 0.2 to 0.3  
(C) 0.3 to 0.6  
(D) 0.6 to 0.9

4. Medium size carps incorporated with major carps in aquaculture for promoting species diversification :  
(A) **Labeo bata**

(B) **L. fimbriatus**  
(C) **Puntius sarana**  
(D) All of these

5. Duck weeds belong to genus / genera :  
(A) **Lemna**  
(B) **Azolla**  
(C) **Wolffia**  
(D) All of these

6. **Labeo calbasu** prefers to dwell at niche of pond :  
(A) Surface  
(B) Column  
(C) Bottom  
(D) None of these

7. Genetic markers are categorized as :  
(A) Allozymes  
(B) DNA markers  
(C) Both (A) and (B)  
(D) None of these

8. Fin rays lepidotrichia are found in fish :  
(A) Sharks  
(B) Bony fish  
(C) Petromyzon  
(D) Both (B) and (C)

9. Highest marine fish catch of world is from ocean :  
(A) Pacific  
(B) Atlantic  
(C) Indian  
(D) Arctic

10. The large reservoir has a size (area in ha.) of :  
(A) 1000  
(B) 2000 to 4000  
(C) More than 5000  
(D) Less than 5000

11. Flood plain wetlands or oxbow lakes are typical topographical feature along river basins of :  
(A) Godavari

(B) Ganga  
(C) Cauvery  
(D) Narmada

12. Indigenous fresh water ornamental fish resource of India is highest at locality :  
(A) Eastern ghat  
(B) Gangetic belt  
(C) North-eastern states  
(D) Narmada and Tapti river basin

13. An important clam species with high potential for farming in Vembanad lake of Kerala :  
(A) **Villorita cyprinoides**  
(B) **Anadara granosa**  
(C) **Meretrix casta**  
(D) **Donax species**

14. Mussel species extensively used in farming along our South-West Coast :  
(A) **Mytilus edulis**  
(B) **Perna viridis**  
(C) **P. perna**  
(D) **M. platensis**

15. Common varieties of Gold Fish are :

- (A) Lion head, Veiltail, Comet
- (B) Marble, Albino, Veiltail
- (C) Ornada, Marble, Black
- (D) All of these

16. Shallow areas along periphery of wet lands can be used for farming through :

- (A) Cage culture
- (B) Pen culture
- (C) Both (A) and (B)
- (D) Raceway

17. Human health benefits due to eating of fish is attributed to presence of the item in fish lipids :

- (A) n-3 PUFA
- (B) Phospholipids
- (C) Sterols
- (D) Glycerol

18. Ornamental fish exhibiting sex reversal frequently :

- (A) Black molley
- (B) Gouramy
- (C) Rosy tetra
- (D) Sword tail

19. Management measures for large reservoirs to enhance fish production :

- (A) Stock enhancement
- (B) Culture fisheries
- (C) Species enhancement
- (D) Habitat modification

20. Pelagic fish exhibiting well restricted geographic distribution :

- (A) Bombay duck
- (B) Lesser sardine
- (C) Mackerel
- (D) Soles

21. Chromosomal banding carried out in fishes :

- (A) C-banding
- (B) G-banding
- (C) Q-banding
- (D) All of these

22. Gonadal maturation and breeding efficiency is enhanced by supplementing the diet with :

- (A) Vitamins
- (B) Starch
- (C) n-3 and n-6 PUFA
- (D) Rice polish

23. Major fishing craft commonly used in reservoirs of peninsular India :

- (A) Trawler
- (B) Coracle
- (C) Dug out canoe
- (D) Mechanized boat

24. Protein level (%) considered optimum and economical for practical diets of herbivore and omnivore fish fingerlings in pond feeding :

- (A) 15-20
- (B) 18-23
- (C) 25-30
- (D) 35-40

25. Degeneration and resorption of maturing oocyte is called :

- (A) Atresia
- (B) Vitellogenesis
- (C) Both (A) and (B)
- (D) Zygote

26. Pairs of cranial nerves present in teleosts :

- (A) Five
- (B) Eight
- (C) Ten
- (D) Twelve

27. Gonadotrops (FSH and LH cells) are usually located in :

- (A) Proximal pars distalis
- (B) Pars intermedia
- (C) Metaadenohypophysis
- (D) None of these

28. Time taken for absorption of yolk in larva / hatchlings of Indian major carps :

- (A) 3 days
- (B) 6 days
- (C) 9 days
- (D) 12 days

29. Most suitable enhancement measures practiced for small reservoirs in India :  
(A) Species enhancement  
(B) Environment enhancement  
(C) Stock enhancement  
(D) Culture based fisheries

30. Protein requirement of fish compared to mammals is :  
(A) More  
(B) Less  
(C) Equal  
(D) None of these

31. Most important climatic factor influencing productivity in lakes and reservoirs :  
(A) Latitude  
(B) Depth  
(C) Nutrients  
(D) Area

32. The exotic larvivorous fish is :  
(A) Barilius

(B) Rasbora  
(C) Colisa  
(D) Lebestes

33. Fishes preferring to breed in flooded waters in rivers :  
(A) Rohu  
(B) Calbasu  
(C) Mrigal  
(D) All of these

34. Factors influencing spawning in fish :  
(A) Photoperiod  
(B) Temperature  
(C) Both (A) and (B)  
(D) Algal bloom

35. Inshore fishing mainly occurs with in the depth of sea :  
(A) 50 m  
(B) 100 m  
(C) 200 m  
(D) 300 m

36. Dietary protein energy ratio (mg/kcal) for optimum growth of fish is around : (B) **C. rivularis**  
(C) **Saccostrea cculata**  
(A) 100  
(B) 125  
(C) 75  
(D) 60

37. The species of oyster most suitable for farming in India : (A) **Saccostrea cculata**  
(B) **Crassostrea gryphoides**  
(C) **C. rivularis**  
(D) **C. Madrasensis**

38. Widely used live feed for ornamental fish are : (A) Infusoria  
(B) Chironemids  
(C) Both (A) and (B)  
(D) Volvox

39. The oyster species used for pearl production : (A) **Crassostrea gryphoides**

(B) **C. rivularis**  
(C) **Saccostrea cculata**  
(D) **Pinctada fucata**

40. Fish metabolic rate doubles with rise of temperature ( $^{\circ}\text{C}$ ) to extent of : (A) 5  
(B) 10  
(C) 15  
(D) 20

41. Methods used to transfer gene to animal embryo : (A) Microinjection  
(B) Electroporation  
(C) Both (A) and (B)  
(D) None of these

42. Optimum temperature range ( $^{\circ}\text{C}$ ) for most of cold water fishes : (A) 5-10  
(B) 14-18  
(C) 15-22  
(D) 20-27

43. The single dose of ovaprim / ovatide (ml/kg body weight) to female magur administered in induced breeding :  
(A) 0.5  
(B) 1.0 to 1.5  
(C) 2.0  
(D) 2.5 to 3.5

44. Example of live bearer ornamental fish :  
(A) **Trichogaster leeri**  
(B) **Colisa lalia**  
(C) **Betta splendens**  
(D) **Poecilia reticulata**

45. Ideal Alkalinity range (mg/lit) of water for good growth of fish :  
(A) 25-75  
(B) 75-250  
(C) 250-300  
(D) 300-400

46. Maximum nitrogen excretion of teleost fish is in the form of :  
(A) Urea

(B) Ammonia  
(C) Uric acid  
(D) Creatine

47. Example of Gastrointestinal hormone of fish :  
(A) LH-RH  
(B) Thyroxin  
(C) Somatostatin  
(D) Insulin

48. EEZ of India (million km<sup>2</sup>) has magnitude of :  
(A) 1.02  
(B) 2.02  
(C) 3.02  
(D) 4.02

49. Inbreeding of fish causes :  
(A) Homozygosity  
(B) Depression  
(C) Both (A) and (B)  
(D) Fast growth

50. Rampani operation in maximum along coast of : (A) Maharashtra (B) Gujarat (C) Karnataka (D) Tamil Nadu

51. Oil sardine occurrence is maximum along the coast of : (A) Malabar coast (B) Konkan coast (C) Coromandel coast (D) Gujarat coast

52. Tools using application of ICT in extension works : (A) VSAT (B) GPS (C) Remote sensing (D) All of these

53. ITK refers to cost effective technology generated at : (A) Locality

(B) Imported (C) Research centre (D) Other countries

54. Potential Fishery Zone (PFZ) information is provided mainly by the analysis of : (A) Sea surface temperature (B) Dissolved oxygen (C) Primary productivity (D) Benthos

55. Software technology includes : (A) Operating system (B) Web browser (C) Data management system (D) All of these

56. Green house gases causing global warming and sea level rise : (A)  $\text{CO}_2$  and  $\text{CH}_4$  (B) Cholofluorocarbons (C)  $\text{CH}_4$  and  $\text{N}_2\text{O}$  (D) All of these

57. As per Ramsar Convention, 1971, wetland includes marine water with depth limit (metre) at low tide to the extent of :  
(A) 6  
(B) 9  
(C) 11  
(D) 15

58. Pelagic spawners include :  
(A) Sardines  
(B) Tuna  
(C) Both (A) and (B)  
(D) Flat Fish

59. Senescent period refers to the stage of fish at :  
(A) Larva  
(B) Juvenile  
(C) Adult  
(D) Old age

60. Number of articles in the Code of Conduct for Responsible Fisheries (CCRF) :  
(A) 6

(B) 10  
(C) 12  
(D) 15

61. Example of nest building ornamental fish with accessory respiratory organ :  
(A) Gold fish  
(B) Angel fish  
(C) Guppy  
(D) Gouramies

62. Proportion of fresh water fish among all fishes in the world :  
(A) 2%  
(B) 41%  
(C) 58%  
(D) 80%

63. Mackerel **Rastrelliger brachysoma** occurs maximum at coast of :  
(A) Gujarat  
(B) Andaman Nicobar Islands  
(C) Kerala  
(D) Karnataka

64. Father of Ichthyology is attributed to : (C) 1.5 to 2.0  
(A) P. Atredi (D) More than 2.5  
(B) G. Cuvier  
(C) M. E. Bloch  
(D) C. Linneaus

65. Type of scales usually found in sharks : (A) 20  
(B) 40  
(C) 60  
(D) 90

66. Mangrove area is highest along the coast of : (A) Cycloid  
(B) Placoid  
(C) Cosmoid  
(D) Ctenoid

67. The organic carbon content (%) in a high productive pond : (A) 0.5 to 1.0  
(B) 1.0 to 15

68. Usually the expenditure on artificial feed in semi-intensive fish culture to the extent of about (as % of total cost) : (A) 20  
(B) 40  
(C) 60  
(D) 90

69. Turbidity due to suspended soil particles can be suitably controlled by : (A) Gypsum  
(B) Urea  
(C) Farm Yard Manure  
(D)  $\text{CuSO}_4$

70. Tools using application of ICT is extension works : (A) VSAT  
(B) GPS  
(C) Remote sensing  
(D) All of these

71. Heterogenous individual growth is a prominent feature in culture population of :  
(A) Rohu  
(B) Tilapia  
(C) Fresh Water Prawn  
(D) White Shrimp

72. Blood forming sites in teleosts :  
(A) Kidney  
(B) Spleen  
(C) Both (A) and (B)  
(D) Liver

73. **Coilia dussumieri** is commonly known as :  
(A) Lesser sardine  
(B) White bait  
(C) Carangid  
(D) Golden anchovy

74. Deep and flood prone areas of wetlands can be used for farming of carps through :  
(A) Pen culture

(B) Cage culture  
(C) Integrated culture  
(D) Biofloc

75. Most important morphometric factor influencing productivity in reservoirs :  
(A) Depth  
(B) Altitude  
(C) Turbidity  
(D) Benthos

76. Pyloric caeca being well developed in the fish :  
(A) Catla  
(B) **Notopterus**  
(C) Rohu  
(D) Mrigal

77. Efferent branchial arteries of fish carry :  
(A) Oxygenated blood  
(B) Deoxygenated blood  
(C) Both (A) and (B)  
(D) Urea

78. Air breathing fish include :  
(A) **Clarias batrachus**  
(B) **Notopterus chitala**  
(C) **Channa striatus**  
(D) All of these

(B) Major Carps  
(C) Clarias  
(D) Tiger Shrimp

82. The ratio of ablated female to male for successful mating in shrimp hatcheries :  
(A) 4 : 1  
(B) 2 : 1  
(C) 1 : 2  
(D) 2 : 3

83. Enzyme splitting ester bonds of fats :  
(A) Amylase  
(B) Elastase  
(C) Chitinase  
(D) Lipase

84. Kidney is most developed in the group of fish :  
(A) Marine sharks  
(B) Marine teleost  
(C) Freshwater teleost  
(D) Croakers

81. Electocauterisation is usually done in the hatchery of :  
(A) Crabs

85. Enzyme responsible for digestion of ingested moulted shells in shell fish : (B) Rural knowledge centre  
(C) Kishan call centre  
(D) All of these

(A) Lipase  
(B) Chitinase  
(C) Cellulase  
(D) Protease

86. Hormone gastrin in shell fish is produced at the organ : (A) BEAM 1  
(B) BEAM 2  
(C) BEAM 3  
(D) BEAM 4

(A) Stomach  
(B) Small intestine  
(C) Pancreas  
(D) Liver

87. Abundance of diatom **Fragilaria oceanica** in coastal water indicate abundance of fish : (A) FAST  
(B) FISAT II  
(C) ARTFISH  
(D) CLIMPORD

(A) Bombay duck  
(B) Ribbon fish  
(C) Oil sardine  
(D) Pomfrets

88. Various strategy of ICT application to enhance fish production : (A) 1897  
(B) 1947  
(C) 1997  
(D) 2005

(A) Aqua choupal

89. Analytical bioeconomic simulation tool for multispecies and multifleet fisheries : (A) FAO-ICLARM stock assessment tool refers to :  
(B) FAST  
(C) FISAT II  
(D) ARTFISH

90. FAO-ICLARM stock assessment tool refers to :  
(A) FAO-ICLARM stock assessment tool  
(B) FAST  
(C) FISAT II  
(D) ARTFISH

91. Indian Fisheries Act was enacted in the year :  
(A) 1897  
(B) 1947  
(C) 1997  
(D) 2005

92. The gear commonly used for Bombay duck : (B) DRDA  
(C) ITI  
(D) SHG

(A) Rampani  
(B) Gill net  
(C) Dol net  
(D) Trawler

93. As per the 7th Schedule of Indian Constitution, fishing and fisheries beyond territorial waters is a subject of : (A) 12  
(B) 24  
(C) 30  
(D) 200

(A) Union Government  
(B) State Government  
(C) Both (A) and (B)  
(D) MPEDA

94. Types of swim bladder in fish : (A) 200  
(B) 300  
(C) 400  
(D) 250

(A) Physostomous  
(B) Physoclistous  
(C) Both (A) and (B)  
(D) Pneumatic duct

95. Institutes providing need based and skill oriented training to fish farmers : (A) KVK  
(B) Reduction in fitness  
(C) Recessive alleles  
(D) Loss of variance

(C) ITI  
(D) SHG

96. Territorial waters along Indian coast refers to the limit in distance (nautical miles) of : (A) 12  
(B) 24  
(C) 30  
(D) 200

97. The EEZ of India extends to the distance (nautical miles) on the sea : (A) 200  
(B) 300  
(C) 400  
(D) 250

98. Heterozygosity leads to : (A) Reduction in fitness  
(B) Recessive alleles  
(C) Loss of variance  
(D) Faster growth

99. Heterocercal tails usually observed in fish :  
(A) Sharks  
(B) Silurids  
(C) Perches  
(D) All of these

(B) Lower jaw  
(C) Hyoid arch  
(D) Cranium

100. Downward (inferior) pointing mouth mostly found in fish :  
(A) Surface feeders  
(B) Column feeders  
(C) Bottom feeders  
(D) None of these

101. The cryoprotectants used in treating milt samples with extender :  
(A) DMSO  
(B) Propylene glycol  
(C) Glycerol  
(D) All of these

103. Traditional brackish water farming of Bhasabada Fisheries found in the state :  
(A) West Bengal  
(B) Goa  
(C) Karnataka  
(D) Tamil Nadu

104. The appendicular skeleton of fish includes :  
(A) Pectoral fins  
(B) Pelvic fins  
(C) Both (A) and (B)  
(D) Vertebra

105. The cutaneous respiration is prominent in respiratory gas of fish :  
(A) Carps  
(B) Trouts  
(C) Sharks  
(D) Eels

106. Aquatic weed used as nitrogenous biofertiliser in the ponds : (C) Mumbai  
(D) Delhi  
(A) Azolla  
(B) Potamogeton  
(C) Vallisneria  
(D) Hydrilla

107. The oceanic tuna occurring along Indian coast : (C) India  
(D) Cambodia  
(A) **Auxis thazard**  
(B) **A. rochei**  
(C) **Sarda orientalis**  
(D) **Thunnus albacores**

108. Integrated fish farming promotes : (B) Bacteria  
(C) Parasites  
(D) Algae  
(A) Organic farming

109. Sewage fed aquafarming practice is highest at locality of : (A) Barbs  
(B) Danio  
(C) Gold fish  
(D) Guppies  
(A) Chennai  
(B) Kolkata

110. Cage farming of fish originated in the country : (A) Japan  
(B) Thailand

111. Disease in ornamental fish having white spots in the body and fins is caused by : (A) Fungus  
(B) Bacteria  
(C) Parasites  
(D) Algae

112. Live bearer breeding habit found in fish : (A) Barbs  
(B) Danio  
(C) Gold fish  
(D) Guppies

113. Conservation of fish germplasm resource at their natural environment is called as :

(A) In-situ conservation  
(B) Ex-situ conservation  
(C) Both (A) and (B)  
(D) Ranching

(B) Classical taxonomy  
(C) Both (A) and (B)  
(D) None of these

114. High value of catchability coefficient 'q' indicates :

(A) Low efficiency of gear  
(B) High efficiency of gear  
(C) Suboptimal gear  
(D) None of these

115. State fish of Odisha is :

(A) *Tenualosa ilisha*  
(B) *Tor mahanadicus*  
(C) *Labeo rohita*  
(D) *Clarias batrachus*

116. Fragments of fish can be suitably identified by :

(A) DNA barcoding

117. Method of demonstration to some farmers is an example of teaching method called :

(A) Individual contact method  
(B) Group contact method  
(C) Mass contact method  
(D) All of these

118. Leucocytes of fish includes :

(A) Lymphocytes  
(B) Thrombocytes  
(C) Monocytes  
(D) All of these

119. Outermost layer of ovary is called :

(A) Germinal epithelium  
(B) Tunica albuginea  
(C) Peritoneum  
(D) None of these

120. Mackerel catch is usually highest along the coast of : (B) 6.5 and 4.9 (C) 6.0 and 4.1 (D) 5.6 and 4.0

(A) Tamil Nadu (B) Gujarat (C) Maharashtra (D) Karnataka

121. Fat soluble vitamins needed in fish diet : (A) Riboflavin (B) Folic acid (C) Ascorbic acid (D) Vitamin A

122. Minerals much needed for bone formation in fish : (A) Zinc and Cobalt (B) Phosphorus and Iodine (C) Calcium and Manganese (D) Calcium and Phosphorus

123. Gross energy level (kcal/g) of protein and lipid is : (A) 5.6 and 9.4 (B) 6.5 and 4.9 (C) 6.0 and 4.1 (D) 5.6 and 4.0

124. Estrogens in fish are produced by the organ : (A) Liver (B) Testes (C) Ovary (D) Pancreas

125. The first marine fish cultured in the world **Seriola quinqueradiata** commonly known as : (A) Yellow croaker (B) Japanese yellow tail (C) Japanese sea bass (D) Yellow salmon

126. Fish eating on limited food items : (A) Monophagous (B) Euryphagous (C) Stenophagous (D) All of these

127. The larva of lobster is known as : (B) Chatting  
(A) Zoea (C) Internet  
(B) Velliger (D) All of these  
(C) Mysis

128. Commonly used sea weed species suitable for farming in India : (A) **Gracilaria edulis**  
(B) **G. verrucosa**  
(C) **Porphyra tenera**  
(D) **Undaria spp**

129. Processed sea food product bache-de-mer of S. E. Asian countries is prepared from : (A) Lobster  
(B) Oyster  
(C) Cuttle fish  
(D) Sea cucumber

130. Aquagyan choupals to enhance technical knowledge of farmers : (A) Telnet

131. The heart of fish is enclosed inside : (A) Pericardial cavity  
(B) Peritoneal cavity  
(C) Sinus venosus  
(D) None of these

132. Osmotic concentration upto sea water level in marine fish are maintained by : (A) Urea  
(B) TMAO  
(C) Both (A) and (B)  
(D) Ammonia

133. Wide tolerance of salinity by organisms : (A) Osmoconforming  
(B) Euryhaline  
(C) Stenohaline  
(D) Hyperosmotic

134. Spiral valve is associated with gut of fish : (B) - 37  
(A) Minnows (C) - 97  
(B) Trouts (D) - 196  
(C) Sharks  
(D) Perches

135. Turtle nesting in winter season is a prominent feature at estuary of river : (A) Philippines  
(B) China  
(C) Indonesia  
(D) All of these

136. Improved Rohu Jayanti Production was promoted by : (A) Floating cage  
(B) Fixed cage  
(C) Submersible cage  
(D) Submerged cage

137. Fish gametes in cryopreservation in liquid nitrogen are held at low temperature ( $^0\text{C}$ ) of : (A) - 4 (B) - 37  
(C) - 97 (D) - 196

138. Pen culture in commercial scale practiced in the country / countries of : (A) Philippines  
(B) China  
(C) Indonesia  
(D) All of these

139. Cage suitable for shallow water bodies (1 m to 3 m) : (A) Floating cage  
(B) Fixed cage  
(C) Submersible cage  
(D) Submerged cage

140. **Rhincodon typus** is commonly known as : (A) Whale shark  
(B) Gangetic shark  
(C) Pondicherry shark  
(D) Speartoothed shark

141. Traditional practice of pokkali paddy cum shrimp farming found in the state :

(A) West Bengal  
(B) Karnataka  
(C) Goa  
(D) Kerala

142. Item much needed in fish diet but not bio-synthesized in fish :

(A) Fatty acid  
(B) Non-essential amino acid  
(C) Essential amino acid  
(D) Phospholipids

143. Micronutrients needed in diet for synthesis of DNA and RNA and essential for cell proliferation :

(A) Manganese  
(B) Zinc  
(C) Copper  
(D) Sodium

144. The hormone stimulating vitellogenesis :

(A) 11-ketosterone  
(B) 17 beta estradiol  
(C) Both (A) and (B)  
(D) Cortisol

145. Mechanised fishing vessels upto 15 m length are usually allowed to operate beyond a minimum distance from the coast :

(A) 5 km  
(B) 12 km  
(C) 15 km  
(D) 25 km

146. Larval stage of mud crab is known as :

(A) Nauplius  
(B) Mysis  
(C) Megalopa  
(D) Phyllosoma

147. Species suitable for crab fattening : (C) Both (A) and (B)

(A) **Scylla serrata**

(D) Promiscuous

(B) **S. tranquebarica**

(C) Both (A) and (B)

(D) None of these

148. Mortality per unit time is called

as :

(A) Total mortality

(B) Instantaneous mortality

(C) Fishing mortality

(D) All of these

149. Clear annual rings in scales / otolith

are found in :

(A) Equatorial fish

(B) Tropical fish

(C) Temperate fish

(D) Polar fish

150. Fishes which spawn and then die are

called :

(A) Semelparous

(B) Iteroparous

151. The features of e-Governance

includes :

(A) Automation

(B) Information

(C) Transformation

(D) All of these

152. Urea production in fish occurs by

breakdown of :

(A) Arginine

(B) Purine

(C) Both (A) and (B)

(D) Lysine

153. Release of mature oocyte from its

follicles is known as :

(A) Oogenesis

(B) Ovulation

(C) Vitellogenesis

(D) Fertilization

154. Omega-3 fatty acids of fish with

much importance in human nutrition :

- (A) Eicosapentaenoic acid
- (B) Docosahexaenoic acid
- (C) Both (A) and (B)
- (D) Ascorbic acid

155. Essential elements of effective

learning situation in extension  
education includes :

- (A) Learner
- (B) Teaching method
- (C) Both (A) and (B)
- (D) KVK

156. The National Federation of

Fishermen's Cooperative Ltd.

(FISHCOPFED) started its operation  
in the year :

- (A) 1897
- (B) 1956
- (C) 1972
- (D) 1982

157. Hilsa constitutes major fisheries in

the region :

- (A) Godavari estuary
- (B) Hooghly matla estuary
- (C) Vembanad lake
- (D) Maharashtra coast

158. The main gear used for harvest of

demersal fish :

- (A) Gill net
- (B) Pole and Line
- (C) Trawl net
- (D) Beach seine

159. Marine protected areas along Indian

coast as per the Indian Wildlife

(Protection) Act :

- (A) Gulf of Mannar
- (B) Gulf of Kutch
- (C) Both (A) and (B)
- (D) Godavari estuary

160. Number of categories to which CRZ (Coastal Regulation Zone) are classified :

(A) Four  
(B) Six  
(C) Nine  
(D) Ten

161. Benefits of participatory fisheries management :

(A) Rational resource use  
(B) Equitable benefits  
(C) Amicable conflict resolution  
(D) All of these

162. The relative length of gut is highest in groups of fish :

(A) Carnivore  
(B) Herbivore  
(C) Omnivore  
(D) Predators

163. Essential amino acids needed for fish :

(A) Lysine  
(B) Methionine  
(C) Phenylalanine  
(D) All of these

164. Gizzard in stomach is well developed in fish :

(A) Mullets  
(B) Carps  
(C) Trouts  
(D) All of these

165. **Latimeria Chalumnae** belong to order :

(A) Osteolepiformes  
(B) Coelacanthiformes  
(C) Dipnoi  
(D) Palaeonisciforme

166. Fishes being considered ureotelic :

(A) Sharks  
(B) Eels  
(C) Hilsa  
(D) All of these

167. Most fertile region of Arabian coast along the state of : (C) T/F (D) M/F

(A) Goa (B) Karnataka (C) Maharashtra (D) Kerala

168. Feeding habit of cephalopods : (A) Herbivore (B) Omnivore (C) Carnivore (D) Scavenger

169. Growth rate approaches zero in : (A) Young fish (B) Juveniles (C) Adult fish (D) Too old fish

170. Exploitation ratio "E" is denoted by : (A) M/Z (B) F/Z

171. Well developed closed type swim bladder are found in fish : (A) Oil sardine (B) Bombay duck (C) Sciaenids (D) Mackerel

172. Highest amount of non-penaeids shrimps are harvested from the coast of : (A) Gujarat (B) Tamil Nadu (C) Kerala (D) Andhra Pradesh

173. Migration in mud crab occurs for : (A) Feeding (B) Breeding (C) Both (A) and (B) (D) Overwintering

174. Glochidium larva are found in :

- (A) Oysters
- (B) Unio
- (C) Crab
- (D) Loligo

175. Ink gland is found in shellfish :

- (A) Sepia
- (B) Oyster
- (C) Mussel
- (D) Crab

176. Gonadal steroid hormone of fish :

- (A) Testosterone
- (B) Thyroxin
- (C) Both (A) and (B)
- (D) Prolactin

177. Mating system of fish include :

- (A) Polyandry
- (B) Polygyny
- (C) Polygynandry
- (D) All of these

178. Parthenogenesis is found in fish :

- (A) **Poecilia formosa**
- (B) **Carassius auratus**
- (C) **Betta splendens**
- (D) None of these

179. **Protopterus** belong to the class :

- (A) Holocephali
- (B) Dipnoi
- (C) Elasmobranchii
- (D) None of these

180. Sea horse **Hippocampus** belong to family :

- (A) Syngnathidae
- (B) Exocoetidae
- (C) Cyprinodontidae
- (D) Sphyraenidae

181. Mucous cells are mainly scattered in :

- (A) Epidermis
- (B) Dermis
- (C) Sub cutis
- (D) None of these

182. Food items rarely entering the gut of fish with other items called :  
(A) Basic food  
(B) Secondary food  
(C) Incidental food  
(D) Obligatory food

183. Gill rakers best developed being long and thin and forming sieve like structure in :  
(A) Wallago  
(B) Puntius  
(C) Channa  
(D) Hilsa

184. Swim bladder contains mixture of gases like :  
(A)  $\text{CO}_2$ ,  $\text{O}_2$ ,  $\text{N}_2$   
(B)  $\text{H}_2$ ,  $\text{SO}_2$ ,  $\text{NH}_3$   
(C)  $\text{CO}_2$ ,  $\text{H}_2$ ,  $\text{SO}_2$   
(D) All of these

185. Weberian ossicles include :  
(A) Claustrum

(B) Scaphium  
(C) Intercalarium  
(D) All of these

186. Organ being important for maintaining homeostasis :  
(A) Kidney  
(B) Liver  
(C) Gonad  
(D) All of these

187. The testes remain attached to body wall and airbladder by :  
(A) Mesovarium  
(B) Mesoorchium  
(C) Pericardium  
(D) None of these

188. Metamorphosis of spermatids to sperms is called :  
(A) Spermiogenesis  
(B) Gametogenesis  
(C) Spermatogenesis  
(D) Vitellogenesis

189. Outer most layer of mature egg is called as :

- (A) Zona radiata
- (B) Zona granulosa
- (C) Theca
- (D) None of these

190. Corpuscles of Stannius are present near :

- (A) Liver
- (B) Intestine
- (C) Kidney
- (D) All of these

191. Causes of fish migration can be :

- (A) Avoiding unfavourable conditions
- (B) Optimize feeding
- (C) Increase reproductive success
- (D) All of these

192. Hill stream fishes include :

- (A) Garra
- (B) Barilius
- (C) Glyptothorax
- (D) All of these

193. Algal bloom is controlled by the use of :

- (A) Simazine
- (B)  $\text{Na}_2\text{SO}_4$
- (C) Both (A) and (B)
- (D) Urea

194. Hard parts used for age determination in fish are :

- (A) Scales
- (B) Otolith
- (C) Operculum
- (D) All of these

195. Species of frog with potential for culture and export item :

- (A) *Rana tigrina*
- (B) *Bufo melanostictus*
- (C) *Pila globosa*
- (D) Both (B) and (C)

196. Diencephalon is present in :

- (A) Mid brain
- (B) Fore brain
- (C) Hind brain
- (D) Medulla oblongata

197. Bundh breeding is well practiced in the state :

- (A) West Bengal
- (B) Assam
- (C) Maharashtra
- (D) Both (B) and (C)

198. Genetically female fish can be converted to functional males by feeding them with suitable amount of steroid like :

- (A) 17 beta estradiol
- (B) 17 alpha methyltestosterone
- (C) Mibolerone
- (D) Both (B) and (C)

199. Contribution of fisheries sector

(in percent) to national GDP is

- about :
- (A) One
- (B) Five
- (C) Eight
- (D) Ten

200. Jano fisheries is a typical feature of water body :

- (A) Pulicat
- (B) Vembanad
- (C) Chilka
- (D) Sunderban

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