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**OPSC**  
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**Previous Year Paper**  
**(Notification no. 17)**  
**2020 Paper-I**



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Test Booklet Series



T. B. C. : AFO(SR) – 1/20

## TEST BOOKLET

ASSISTANT FISHERIES OFFICER  
(FISHERIES SCIENCE)

SI. No.

1005

PAPER – I

Time Allowed : 2½ 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 equal marks. 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 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.

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CN – 1A/14

( Turn over )

SEAL



1. The technique mainly used for the production of monosex male population is :
  - (A) Gynogenesis
  - (B) Androgenesis
  - (C) Polyploidy
  - (D) All of these
2. Continuous aeration except during feeding is maintained in :
  - (A) Shrimp spawning tanks
  - (B) *Artemia* cyst hatching tank
  - (C) Scampi larval rearing tank
  - (D) All of these
3. The water in a recirculatory system can maximally be used :
  - (A) 5 times
  - (B) 10 times
  - (C) 2 times
  - (D) As many times as possible
4. For capturing prey in early larval stages of fin fish, it is necessary to develop :
  - (A) Olfactory senses
  - (B) Optical senses
  - (C) Auditory senses
  - (D) Gustatory senses
5. Marine fish require more :
  - (A) n-6 type of fatty acid
  - (B) n-3 type of fatty acid
6. Ammonia production results when amino acid is :
  - (A) Further aminated
  - (B) Denatured
  - (C) Deaminated
  - (D) Oxygenated
7. For spat settling which condition is necessary ?
  - (A) Strong wave
  - (B) Low surface water temperature
  - (C) Sandy bottom substratum
  - (D) Hard rocky bed
8. Which among the following is not a fouling organism in cage culture ?
  - (A) Polychaete worms
  - (B) Sea weeds
  - (C) Barnacles
  - (D) Sponges
9. The ideal species under running water culture systems should have :
  - (A) Streamlined body
  - (B) Compatibility among the individuals
  - (C) Tendency to intake formulated feed
  - (D) All of these

10. The stocking density of IMC spawn in a nursery pond is :  
(A) 25-30 lakhs/ha  
(B) 30-35 lakhs/ha  
(C) 35-40 lakhs/ha  
(D) 40-45 lakhs/ha

11. Mycotoxins are produced by :  
(A) Cotton seed  
(B) Soyabean  
(C) Peanut meals  
(D) None of these

12. Lipidosis is caused by feeding fish with :  
(A) Rancid formulated feeds  
(B) Fatty feed  
(C) Poorly stored trash fish  
(D) All of these

13. Spinal deformity associated with the deficiency of :  
(A) Ascorbic acid  
(B) Tryptophan  
(C) Thiamine  
(D) None of these

14. Per-oxidative damage of cells is caused by :  
(A) Antioxidant  
(B) Free radicals

15. Efficiency of carbohydrate in fish is :  
(A) 20%  
(B) 70%  
(C) 50%  
(D) 39%

16. Fish cannot synthesize amino acids in their body such as :  
(A) Arginine  
(B) Valine  
(C) Histidine  
(D) All of these

17. Methionine deficiency in fish diet causes :  
(A) Lordosis  
(B) Scoliosis  
(C) Lens cataracts  
(D) None of these

18. A deficiency of essential amino acids in fish diet may lead to :  
(A) Poor utilization of dietary protein  
(B) Growth retardation  
(C) Poor live weight gain  
(D) All of these

19. Glycogen energy reserve in fish seed causes :  
(A) Delay in fish mortality after stocking  
(B) Hasten fish mortality after stocking  
(C) Does not impart any effect on fish mortality  
(D) None of these

20. Carbohydrates as energy source are effectively utilised by :  
(A) Carps  
(B) Eels  
(C) Cat fishes  
(D) All of these

21. Euryphagous mean :  
(A) Eating a limited variety of foods  
(B) Eating a great variety of foods  
(C) Eating only one type of food  
(D) None of these

22. Pyloric caecae is extension to the :  
(A) Upper part of the mid-gut  
(B) Upper part of the hind-gut  
(C) Lower part of the mid-gut  
(D) Lower part of the hind-gut

23. Anterior portion of oesophagus secretes :  
(A) Digestive juice  
(B) Mucus  
(C) Proteolytic enzymes  
(D) Hydrochloric acid

24. The pH of the anterior and posterior side of the pylorus is :  
(A) 7-8 and 2-5  
(B) 4-5 in both the areas  
(C) 2-5 and 7-8  
(D) None of these

25. In intestine of fish :  
(A) Secretion is more than absorption  
(B) Absorption is more than secretion  
(C) Both are equal  
(D) Only absorption occurs

26. Bile is secreted from :  
(A) Gall bladder  
(B) Liver  
(C) Pancreas  
(D) Spleen

27. Protein is broken down to polypeptides by :  
(A) Peptidases  
(B) Lipases  
(C) Proteases  
(D) Amylases

28. Enterokinase is secreted by cells in the wall of :  
(A) Stomach  
(B) Liver  
(C) Intestine  
(D) Oesophagus

29. Scientific name of sand lobster is :  
(A) *Panurillus polyphagus*  
(B) *Thenus orientalis*  
(C) *Thenus unimaculatus*  
(D) None of these

30. Registration of shrimp farm under CAA in India is done for a period of :  
(A) 5 years  
(B) 3 years  
(C) 9 years  
(D) 12 years

31. The Organic Certification Body established in India is :  
(A) MPEDA  
(B) NFDB  
(C) Indocert  
(D) None of these

32. GnRH hormone is :  
(A) Protein  
(B) Steroid  
(C) Genomic  
(D) Non-genomic

33. Mother of Probiotic is :  
(A) *Vibrio sp.*  
(B) *Desulphovibrio sp.*  
(C) *Lactobacillus sp.*  
(D) *Aeromonas sp.*

34. 'Classics of Fish culture' is written by :  
(A) Li Sang

(B) Fan Li  
(C) Fan Hung Sung  
(D) None of these

35. Which is the "Wonder gift of nature" ?  
(A) *Azolla*  
(B) *Typha*  
(C) *Spirulina*  
(D) None of these

36. Tricaine methanesulfonate is the chemical name of :  
(A) Etomidate  
(B) 2-phenoxyethanol  
(C) MS-222  
(D) None of these

37. Artificial shelter for production lobster in shallow coastal water is known as :  
(A) Trench  
(B) Polyhouse  
(C) Casitas  
(D) None of these

38. Scientific name of Black lip pearl oyster is :  
(A) *Pinctada chemnitzii*  
(B) *P. anomioides*  
(C) *P. fucata*  
(D) *P. anomioides*

39. As per the quarantine guidelines the certificate to accompany the consignment of SPF *Litopenaeus vannamei* broodstock should be free from :  
(A) MBV  
(B) WSSV  
(C) YHV  
(D) Both WSSV and YHV

40. Among these which egg scatterer lays non-adhesive eggs :  
(A) Dwarf gourami  
(B) Gold fish  
(C) Zebra fish  
(D) Rasbora

41. Long line culture is suitable in :  
(A) Rough sea  
(B) Sheltered bay  
(C) Coral reefs  
(D) River mouth

42. Two-phase clear water larval rearing technology of *Macrobrachium rosenbergii*, developed by :  
(A) CIBA  
(B) CIFT  
(C) CIFRI  
(D) CIFA

43. Urea contains \_\_\_\_\_ of nitrogen.  
(A) 32%  
(B) 46%  
(C) 54%  
(D) None of these

44. Dropsy is caused by :  
(A) *Aeromonas hydrophila*  
(B) *Edwardsiella tarda*  
(C) *Vibrio parahaemolyticus*  
(D) None of these

45. The maximum number of patents granted in aquaculture in India is related to :  
(A) Apparatus for transport of live fish and rearing of fish  
(B) Hatcheries and incubators for hatching of fish eggs  
(C) Controlling insects, pests, weeds in aquatic environment and farm management  
(D) None of these

46. Which doesn't exhibit any sexual dimorphism during breeding season ?  
(A) Grouper  
(B) Sea bass  
(C) Milk fish  
(D) Mullet

47. Cryopreservation is the storage of fish spermatozoa by the following conservation method :  
(A) In-vivo  
(B) In-vitro  
(C) In-situ  
(D) Ex-situ

48. Demand is perfectly inelastic when :  
(A)  $Ped < 1$   
(B)  $Ped > 1$   
(C)  $Ped = 1$   
(D)  $Ped = 0$

49. When GDP is measured on the basis of current price, it is called :  
(A) Nominal GDP  
(B) Real GDP  
(C) Absolute GDP  
(D) None of these

50. Marginal product of labour is :  
(A)  $MPL = \Delta Q / \Delta L$   
(B)  $MPL = \Delta L / L$   
(C)  $MPL = \Delta L / \Delta Q$   
(D)  $MPL = \Delta Q / L$

51. Rights for conservation and management purposes of all resources under the law of the sea (LOS) convention are within \_\_\_\_\_ area adjacent to coastline.  
(A) 200 km  
(B) 322 km  
(C) 222 km  
(D) 500 km

52. The headquarters of NABARD is situated in :  
(A) Mumbai

(B) Visakhapatnam  
(C) Lucknow  
(D) Chennai

53. Food Safety and Standards Act in India was enacted in the year :  
(A) 2000  
(B) 2002  
(C) 2006  
(D) 2008

54. Largest reservoir in India is :  
(A) Bhakra Nangal  
(B) Shivasagar  
(C) Nagarjuna Sagar  
(D) Indira Sagar

55. Gill net below \_\_\_\_\_ cm mesh size is banned for fishing in reservoir.  
(A) 120 mm  
(B) 200 mm  
(C) 100 mm  
(D) 180 mm

56. Total reservoir area in India is :  
(A) 1.25 million ha  
(B) 2.25 million ha  
(C) 3.25 million ha  
(D) None of these

57. Antibody-producing cells are :  
(A) B lymphocytes  
(B) Thrombocytes  
(C) T lymphocytes  
(D) Erythrocytes

58. Glycogen is a :

- (A) Mucopolysaccharide
- (B) Homopolysaccharide
- (C) Heteropolysaccharide
- (D) None of these

59. Area between the low tide line and high tide line comes under :

- (A) CRZ – IV
- (B) CRZ – III
- (C) CRZ – II
- (D) CRZ – I

60. For calculation of MEI, which depth of reservoir should be considered ?

- (A) Maximum depth
- (B) Mean depth during full reservoir volume
- (C) Mean Depth
- (D) None of these

61. Which one is a trace mineral ?

- (A) Phosphorus
- (B) Zinc
- (C) Calcium
- (D) Magnesium

62. Cholesterol is a :

- (A) Metalloprotein
- (B) Lipoprotein
- (C) Glycolipoprotein
- (D) Chromoprotein

63. Sucrose consists molecules of :

- (A) Glucose + Glucose
- (B) Glucose + Galactose
- (C) Glucose + Fructose
- (D) Fructose + Galactose

64. On the basis of fat content "Cod" is considered as :

- (A) Lean fish
- (B) Medium fat fish
- (C) High fat fish
- (D) None of these

65. Capture and sale of IMC fish below \_\_\_\_\_ total length is banned in reservoir fishing.

- (A) 250 mm
- (B) 290 mm
- (C) 310 mm
- (D) 355 mm

66. Domperidone is used during the preparation of synthetic hormone like :

- (A) Ovatide
- (B) Ovaprim
- (C) Both Ovatide and Ovaprim
- (D) None of these

67. Total larval stages in *Penaeus monodon* are :

- (A) 10
- (B) 12
- (C) 11
- (D) 9

68. First age at maturity of male cobia is :  
(A) 3-4 years  
(B) 2-3 years  
(C) 4-5 years  
(D) 1-2 years

69. Egg colour of spiny lobster is :  
(A) Dark yellow  
(B) Deep orange to brown  
(C) Light greenish to brown orange  
(D) Dark brownish

70. Brown trout was introduced in India during the year :  
(A) 1873  
(B) 1973  
(C) 1863  
(D) 1944

71. Saponin percentage (%) in tea seed cake is :  
(A) 6-9%  
(B) 15-16%  
(C) 5-6%  
(D) 10-15%

72. Clay turbidity in fish culture pond can be reduced by :  
(A) Calcite  
(B) Dolomite  
(C) Alum  
(D) Gypsum

73. Utility is always :  
(A) Psychological  
(B) Biological  
(C) Social  
(D) None of these

74. The cost incurred on one more or additional unit of the product :  
(A) Marginal Cost  
(B) Junk Cost  
(C) Fixed Cost  
(D) None of these

75. The first All India Fisheries Conference (1948) was held in :  
(A) Chennai  
(B) New Delhi  
(C) Calcutta  
(D) Bangalore

76. Total number of large reservoir in India is :  
(A) 45  
(B) 56  
(C) 65  
(D) 54

77. Which state has the maximum oxbow lake area ?  
(A) West Bengal  
(B) Bihar  
(C) Manipur  
(D) Assam

78. Tetracyclines are effective against :  
(A) Gram positive bacteria  
(B) Gram negative bacteria  
(C) Protozoa  
(D) Both (A) and (B)

79. Fat soluble vitamin is :  
(A) Vit. D  
(B) Vit. A  
(C) Vit. K  
(D) All of these

80. Which one is the "Wonder gift of nature" ?  
(A) *Azolla*  
(B) *Typha*  
(C) *Spirulina*  
(D) None of these

81. Conchiolin is made up of :  
(A) Polypeptide  
(B) Aragonite  
(C) Mucopolysaccarides  
(D) None of these

82. Nature of *Heteropnuestes fossilis* is :  
(A) Monogamous  
(B) Polygamous  
(C) Polyandrous  
(D) Monandrous

83. Natural sex reversal mechanism is shown in :  
(A) Gold fish  
(B) Platy

84. Megalopa larvae is related to :  
(A) Crab  
(B) Shrimps  
(C) Cuttle fish  
(D) Mussels

85. Bifuran is the brand name of :  
(A) Doxycycline  
(B) Furazolidone  
(C) Nitrofurazone + Furazolidone  
(D) Sulphadiazine + Trimethoprim

86. Which one of the following is not an essential amino acid in fish ?  
(A) Lysin  
(B) Methionine  
(C) Leucine  
(D) Cysteine

87. PIT stands for :  
(A) Pacific Integrated Trade  
(B) Passive Integration Trademark  
(C) Passive Integrated Transponder  
(D) None of these

88. Clubbed gill disease in fish is due to the absence of :  
(A)  $B_1$   
(B)  $B_6$   
(C)  $B_{12}$   
(D)  $B_5$

89. Kakaban is :

- (A) Live feed
- (B) Egg collector
- (C) Probiotic
- (D) Growth promoter

90. Genital pore of male *Macrobrachium rosenbergii* is present at the base of :

- (A) 3<sup>rd</sup> swimming leg
- (B) 5<sup>th</sup> walking leg
- (C) 3<sup>rd</sup> walking leg
- (D) 5<sup>th</sup> swimming leg

91. Alevin is the egg of :

- (A) Mahseer
- (B) Grouper
- (C) Salmon
- (D) Trout

92. For decapsulation of *Artemia* cysts, stocking density of cysts is :

- (A) 100 g/L water
- (B) 200 g/L water
- (C) 250 g/L water
- (D) 150 g/L water

93. Aromatic C-terminal amino acid is :

- (A) Tyrosine
- (B) Valine
- (C) Lysine
- (D) None of these

94. Use of polyhouse in fish farming is to :

- (A) Decrease water temperature
- (B) Increase alkalinity
- (C) Increase water temperature
- (D) None of these

95. In pig-cum-fish farming, required number of pigs per ha area is :

- (A) 7-10
- (B) 10-15
- (C) 20-25
- (D) 30-40

96. Exclusive Economic Zone (EEZ) in India is upto \_\_\_\_\_ nautical miles from the shore line.

- (A) 350
- (B) 200
- (C) 225
- (D) 325

97. Which one is a floating macrophyte ?

- (A) *Pistia*
- (B) *Hydrilla*
- (C) *Scirpus*
- (D) None of these

98. Application rate of mohua oil cake is (Kg/ha/m) :

- (A) 1000-1500
- (B) 2500-3000
- (C) 500-750
- (D) 3000-3500

99. Which fish breeds in captivity ?  
(A) *Labeo rohita*  
(B) *Catla catla*  
(C) *Cyprinus carpio*  
(D) *Labeo bata*

100. Metahaline culture refers to :  
(A) Culture in brackishwater  
(B) Culture in reservoirs  
(C) Culture in hypersaline water  
(D) None of these

101. The immunostimulant "CIBASTIM" is developed by :  
(A) CIFRI  
(B) CMFRI  
(C) CIFA  
(D) CIBA

102. "CIFAMA" is the broodfeed of \_\_\_\_\_ developed by CIFA.  
(A) Magur  
(B) Common carp  
(C) *Macrobrachium*  
(D) None of these

103. Which one is required to induce mussel ?  
(A)  $\text{NH}_4\text{Cl}$   
(B)  $\text{NH}_4\text{OH}$   
(C)  $\text{H}_2\text{O}_2$   
(D) HCl

104. "Wheel animalcules" is the common name of :  
(A) *Artemia*  
(B) *Rotifer*  
(C) *Daphnia*  
(D) *Moina*

105. Which is permeating cryoprotectant ?  
(A) Sucrose  
(B) Glucose  
(C) DMSO  
(D) None of these

106. Toxicity of saponin is :  
(A) Neurotoxin  
(B) Haemolytic toxin  
(C) Hepatotoxin  
(D) None of these

107. Cyanobacterial bloom may cause :  
(A) Hepatotoxicity  
(B) Neurotoxicity  
(C) Nephrotoxicity  
(D) All of these

108. During breeding season a male IMC can be distinguished by the roughness of :  
(A) The dorsal surface of the pectoral fin  
(B) Ventral surface of the pectoral fin  
(C) Dorsal surface of the pelvic fin  
(D) Ventral surface of the pelvic fin

109. PER (Protein Efficiency Ratio) of fish feed efficiency is :

- (A) g wet weight gain / g crude protein fed
- (B) g crude protein fed / g wet weight gain
- (C) Total dry feed fed in g / fish weight gain in g
- (D) None of these

110. Which is used to absorb ammonia from water body ?

- (A) Zeolite
- (B) Mustard oil cake
- (C) SSP
- (D) Dolomite

111. Haemocytometer is used to count :

- (A) Egg
- (B) Ovum
- (C) Sperm
- (D) Spawn

112. Which serve as source of  $\text{CO}_2$  when free  $\text{CO}_2$  decreases in pond water ?

- (A) Carbonates
- (B) Bicarbonates
- (C) Hydrocarbon
- (D) None of these

113. Salinity of brackish water ranges from :

- (A) Trace to 5 ppt
- (B) 5-30 ppm
- (C) 5-30 ppt
- (D) 30-35 ppt

114. Dietary requirement for shrimps should include :

- (A) Sterol compounds
- (B) Lecithin
- (C) Ascorbic acid
- (D) All of these

115. The best quality marine pearl is produced during :

- (A) Summer
- (B) Winter
- (C) Spring
- (D) Rains

116. Domestic sewage contains :

- (A) More phosphorus
- (B) More faecal coliforms
- (C) More detergents
- (D) All of these

117. Quarantine pond is used as :

- (A) Isolation tank
- (B) Disease treatment tank
- (C) Observation tank following import
- (D) All of these

118. In pond culture, poultry litter is considered as :

- (A) Manure
- (B) Fertilizer
- (C) Biofertilizer
- (D) Supplementary feed

119. NCBI stands for :

- (A) National Centre for Biotechnological Information
- (B) National Centre of Bioinformatics
- (C) National Centre for Biological Identification
- (D) None of these

120. B-carotene is principally available from :

- (A) Zooplankton
- (B) Benthos
- (C) Phytoplankton
- (D) Periphyton

121. Filtering capacity is high in :

- (A) Grass carp
- (B) Silver carp
- (C) Catla
- (D) Magur

122. Scientific name of Black Carp is :

- (A) *Hypophthalmichthys nobilis*
- (B) *Mylopharyngodon piceus*
- (C) *Amblypharyngodon piscium*
- (D) None of these

123. Ideal live feed during larval rearing of carp is :

- (A) *Chlorella*
- (B) *Brachionus*
- (C) *Isochrysis*
- (D) *Chaetoceros*

124. Recirculatory aquaculture is based

on the principle of :

- (A) Heat conservation
- (B) Water budgeting
- (C) Closed circuit aquafarming
- (D) All of these

125. In glass jar hatchery of 6.35L \_\_\_\_\_

number of eggs can be incubated.

- (A) 25,000
- (B) 35,000
- (C) 50,000
- (D) 1,00,000

126. The ideal framing material for a marine floating cage would be :

- (A) Hard steel
- (B) Mild steel
- (C) Polycoated mild steel
- (D) Hard wood

127. To control aquatic insect the ratio of soap and oil in soap-oil emulsion is :

- (A) 18 : 54
- (B) 19 : 57
- (C) 18 : 56
- (D) 20 : 60

128. Water velvet is the common name of :

- (A) *Azolla*
- (B) *Lemna*
- (C) *Eichhornia*
- (D) *Pistia*

129. Marine Aquarium Council was established in the year :

- (A) 1992
- (B) 1994
- (C) 1995
- (D) 1996

130. Clay turbidity in fish culture pond can be reduced by :

- (A) Copper sulphate
- (B) Alum
- (C) Potassium permanganate
- (D) None of these

131. During heavy algal bloom :

- (A) pH fluctuation will be more
- (B) DO fluctuation will be more
- (C) Early morning surfacing of fish will be more
- (D) All of these

132. Reservoir fishery management should be through :

- (A) Capture fishery approach
- (B) Culture fishery approach
- (C) Culture cum capture fishery approach
- (D) None of these

133. Predatory fishes are also competitors of :

- (A) Dissolved oxygen
- (B) food
- (C) Space
- (D) All of these

134. Liming is necessary for the ponds to :

- (A) Control pH
- (B) Provide Ca as mineral
- (C) Enhance mineralization
- (D) All of these

135. Scientific name of Scampi is :

- (A) *Penaeus monodon*
- (B) *Penaeus Vannamei*
- (C) *Macrobrachium rosenbergii*
- (D) *Penaeus penicillatus*

136. The most common gear used to capture fish in Indian reservoirs is :

- (A) Gill net
- (B) Bag net
- (C) Cast net
- (D) Drag net

137. Cage culture site should have :

- (A) Partially guarded area
- (B) Easily accessible
- (C) Free from pollution
- (D) All of these

138. Volume development index is related with :

- (A) Maximum depth
- (B) Mean depth
- (C) Both (A) and (B)
- (D) None of these

139. A thermally stratified ecosystem occurs in :

- (A) Tropical lakes
- (B) Temperate lakes
- (C) Tropical Oxbow lakes
- (D) None of these

140. The effectiveness of digestive enzymes is influenced by :

- (A) Water temperature
- (B) pH
- (C) Both (A) and (B)
- (D) None of these

141. The number of essential amino acids in fish is :

- (A) 8
- (B) 10
- (C) 12
- (D) 9

142. Which one is a green marine algae ?

- (A) *Porphyra*
- (B) *Enteromorpha*
- (C) *Ulva*
- (D) None of these

143. Bhasabhadha fishery is refers to :

- (A) Traditional shrimp farming in West Bengal
- (B) Carp farming in Bihar
- (C) Catfish farming in Andhra Pradesh
- (D) Cage farming in reservoirs

144. Pokkali is present in :

- (A) Odisha
- (B) Andhra Pradesh
- (C) Tamil Nadu
- (D) Kerala

145. Duck plague is :

- (A) Bacterial disease
- (B) Fungal disease
- (C) Protozoan disease
- (D) None of these

146. In fish-cum-duck farming system, size of the fish fingerlings stocked is :

- (A) 2 cm
- (B) 4 cm
- (C) 6 cm
- (D) More than 10 cm

147. Eye stalk ablation is done in :

- (A) Male shrimp
- (B) Female shrimp
- (C) Both male and female
- (D) Not in shrimp

148. Make pregnancy is encountered in :

- (A) *Sepia*
- (B) Clams
- (C) Sea horse
- (D) Lobsters

149. *Unio* is a :

- (A) Fresh water bivalve
- (B) Fresh water gastropod
- (C) Marine gastropod
- (D) None of these

150. Monoclonal antibodies are made by :

- (A) Identical immune cells and clones of different parent cells
- (B) Different immune cells and clones of unique parent cells
- (C) Identical immune cells and clones of unique parent cells
- (D) Different immune cells and clones of different parent cells

151. Which one is a predator-prey combination ?

- (A) Catla and Bata
- (B) Grass carp and Magur
- (C) Magur and Singhi
- (D) Sea bass and Tilapia

152. Total brackish water potential farming area (million ha) in India is :

- (A) 3.2
- (B) 1.2
- (C) 2.1
- (D) 2.5

153. Total larval stage of mud crab :

- (A) 3
- (B) 4
- (C) 5
- (D) 7

154. Scientific name of hard clam :

- (A) *Mytilus indicus*
- (B) *Oestrea edulis*
- (C) *Mercenaria mercenaria*
- (D) None of these

155. Copulation in *P. monodon* requires :

- (A) Moulting of the male
- (B) Moulting of the female
- (C) Moulting of both male and female
- (D) None of these

156. Hygiene of water in the tiger prawn hatchery is maintained by :

- (A) Ozonization
- (B) Chlorination
- (C) Bio-filtration
- (D) All of these

157. The habitat of adult *Penaeus monodon* is :

- (A) Brackish water
- (B) Estuarine water
- (C) Marine water
- (D) Fresh water

158. Umbo is the larval form of :

- (A) Pearly oyster
- (B) Horse shoe crab
- (C) Sea horse
- (D) Shrimps

159. Nitrogenous base Uracil is present in RNA instead of :

- (A) Guanine
- (B) Cytosine
- (C) Thymine
- (D) Adenine

160. Pre-initiation of DNA complex contains

- (A) Core Promoter Sequence
- (B) Transcription Factors
- (C) RNA Polymerase
- (D) All of these

161. A mismatched nucleotide may occur :

- (A) Once per 10,000 base pairs
- (B) Once per 100,000 base pairs
- (C) Once per 1000,000 base pairs
- (D) None of these

162. The building blocks of DNA are :

- (A) Nucleotides
- (B) Nucleosides
- (C) Nucleic acids
- (D) Genes

163. Petasma in shrimp is :

- (A) Modified endopodite
- (B) Modified exopodite
- (C) Modified pereiopods
- (D) Modified pleopods

164. *Scylla serrata* attains sexual maturity at an age of :

- (A) 1 year
- (B) 10 months
- (C) 5 months
- (D) 1-2 years

165. B. D. Needle No. 19 is used for :

- (A) Fish over 3 kg
- (B) Fish below 1 kg
- (C) Between 1-2 kg
- (D) None of these

166. Intramuscular injection is administered holding syringe at an angle of :

- (A)  $30^\circ$
- (B)  $35^\circ$
- (C)  $40^\circ$
- (D)  $45^\circ$

167. Acetone acts in :

- (A) Pituitary extract preparation
- (B) De-fattening and de-hydrating agent of pituitary
- (C) Quality booster of pituitary
- (D) None of these

168. Proximal Pars Distalis is the part of :

- (A) Neurohypophysis
- (B) Thyroid
- (C) Adenohypophysis
- (D) None of these

169. In India, induced breeding by pituitary was first achieved in :

- (A) *Essomus danicus*
- (B) *Cirrhinus mrigala*
- (C) *Labeo rohita*
- (D) None of these

170. Maturity of brood fish depends upon :

- (A) Temperature
- (B) Photoperiod
- (C) Balanced feeding
- (D) All of these

171. Fishes suffering from primary stress exhibit :

- (A) Increased level of liver glycogen
- (B) Increased level of corticosteroids in the circulating blood
- (C) Decreased inflammatory response
- (D) None of these

172. Formation of methaeoglobin is a combination of :

- (A) Haemoglobin and Nitrogen
- (B) Haemoglobin and Carbon dioxide
- (C) Haemoglobin and Carbon mono-oxide
- (D) None of these

173. Ideal alkalinity of water should be around :

- (A) 50 ppm
- (B) 70 ppm
- (C) 100 ppm
- (D) 200 ppm

174. Alkalinity deals with the measurement of :

- (A) Positive ions
- (B) Negative ions
- (C) Both positive and negative ions
- (D) Unionized salts

175. Lab-lab is a good food for the :

- (A) Surface feeder
- (B) Column feeder
- (C) Bottom feeder
- (D) All of these

176. Red tide is due to :

- (A) Red algae
- (B) *Isochrysis*
- (C) *Chaetoceros*
- (D) *Gonyaulax*

177. The national productivity in freshwater aquaculture is around :

- (A) 2 tonnes/ha
- (B) 3 tonnes/ha
- (C) 4 tonnes/ha
- (D) 5 tonnes/ha

178. In general, intensity of Indian freshwater aquaculture can be considered as :

- (A) Extensive
- (B) Intensive
- (C) Super intensive
- (D) Improved traditional

179. The superiority or inferiority of hybrids over the parents is known as :

- (A) Cross breed
- (B) Heterozygous
- (C) Hybrid vigor
- (D) Superior hybrid

180. Conchocelis is the summer phase of :

- (A) *Porphyra*
- (B) *Laminaria*
- (C) *Ulva*
- (D) *Hizikia*

181. Natural seed of IMC is available at :

- (A) Main course of riverine zone
- (B) Newly flooded deep area
- (C) Newly flooded shallow areas with mild water current
- (D) Newly flooded shallow areas with strong water current

182. Recirculatory system is principally designed for :

- (A) Water budgeting
- (B) Heat conservation
- (C) Water re-use
- (D) All of these

183. The particle size of food is an important criterion in larval feeding because of :

- (A) Size of the mouth gap
- (B) Size of the gut
- (C) Size of the body
- (D) None of these

184. The nutritional quality of microalgae depends upon :

- (A) Cultural hygiene
- (B) Media composition
- (C) Purity of culture
- (D) All of these

185. For larval feeding, *Artemia nauplii* are primarily enriched with :

- (A) Essential amino acids
- (B) HUFAs
- (C) Carotenoids
- (D) Vitamins

186. Formulated feed is best suited in :

- (A) Intensive monospecies culture
- (B) Composite culture
- (C) Indian polyculture
- (D) Traditional type culture

187. Un-ionized ammonia accumulation in water depends upon :

- (A) DO
- (B) Hardness
- (C) Temperature
- (D) pH

188. Which amount of the following fish is ideal in running water culture system ?

- (A) Rohu
- (B) Eel
- (C) *Channa* sp.
- (D) *Wallago attu*

189. Most essential mineral for the growth of diatoms is :

- (A) Cu
- (B) Ca
- (C) Fe
- (D) Si

190. The normal rate of Ovaprim for Catla male for per kg body weight is :

- (A) 500 micro gram
- (B) 1,000 micro gram
- (C) 500 pico gram
- (D) 5 milligram

191. In facultative pond :

- (A) Oxidation state prevails always
- (B) Both oxidation and reduction processes are operative
- (C) Reduction state prevails always
- (D) Not clearly defined

192. Protein content of soyabean meal is about :

- (A) 60%
- (B) 30%
- (C) 45%
- (D) 65%

193. Restriction of aqua farming in coastal areas under CRZ is :

- (A) 500 meters from the low tide zone
- (B) 500 meters from the high tide zone
- (C) 500 meters from the coastal line
- (D) 500 meters from the continental shelf

194. For phytoplankton bloom control which may be preserved from grazing of fish ?

- (A) Small sized zooplankton
- (B) Large sized zooplankton
- (C) Benthic invertebrates
- (D) Aquatic insects

195. Continuous aeration except during feeding/harvesting is maintained in :

- (A) Shrimp spawning tanks
- (B) Artemia cyst hatching tank
- (C) Scampi larval rearing tank
- (D) All of these

196. For capturing prey in early larval stages of fin fish it is necessary to develop :

- (A) Olfactory senses
- (B) Optical senses
- (C) Auditory senses
- (D) Gustatory senses

197. For spat settling which condition is necessary ?

- (A) Strong wave
- (B) Low surface water temperature
- (C) Sandy bottom substratum
- (D) Hard rocky bed

198. For eradication of predatory fish with ammonia and bleaching powder :

- (A) Bleaching powder should be applied first
- (B) Urea should be applied well in advance
- (C) Both urea and bleaching powder should be applied simultaneously
- (D) Lime should be applied before application of urea and bleaching powder

199. Hyaline cells play important role in shrimp immunity which are one type of :

- (A) Lymphocyte
- (B) Monocyte
- (C) Fibroblast
- (D) Haemocyte

200. In case of non-specific defence mechanism in fish following immune molecules become active :

- (A) Interferon, immunoglobins and bacterins
- (B) Complement, lysozyme and nucleic acid
- (C) Lysozyme, complement and interlukins
- (D) Interlukins, immunoglobins and lysozymes

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