

Sl. No. :

FSDE/19

Register
Number

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2019
FISHERIES SCIENCE
(Degree Std.)

Time Allowed : 3 Hours]

[Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. The applicant will be supplied with Question Booklet 15 minutes before commencement of the examination.
2. This Question Booklet contains 200 questions. Prior to attempting to answer, the candidates are requested to check whether all the questions are there in series and ensure there are no blank pages in the question booklet. **In case any defect in the Question Paper is noticed, it shall be reported to the Invigilator within first 10 minutes and get it replaced with a complete Question Booklet. If any defect is noticed in the Question Booklet after the commencement of examination, it will not be replaced.**
3. Answer all questions. All questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An answer sheet will be supplied to you, separately by the Room Invigilator to mark the answers.
6. You will also encode your Question Booklet Number with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per Commission's notification.
7. Each question comprises *four* responses (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are **four** circles (A), (B), (C) and (D) against each question. To answer the questions you are to mark with Blue or Black ink Ball point pen **ONLY ONE** circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. *e.g.* If for any item, (B) is the correct answer, you have to mark as follows :
(A) ● (C) (D)
9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the time of examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. **Do not make any marking in the question booklet except in the sheet before the last page of the question booklet, which can be used for rough work. This should be strictly adhered.**
11. Applicants have to write and shade the total number of answer fields left blank on the boxes provided at side 2 of OMR Answer Sheet. An extra time of 5 minutes will be given to specify the number of answer fields left blank.
12. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.

SPACE FOR ROUGH WORK

1. Feeding habit of Notopterus Chitala is
(A) Herbivorous (B) Carnivorous
(C) Omnivorous (D) Planktivorous
2. A senior synonym which has remained unused for over 50 years and has to be treated as a forgotten name is
(A) Nomen dobium (B) Nomen novum
(C) Nomen nudum (D) Nomen oblitum
3. Carapace is bivalved in the class
(A) Copepoda (B) Ostracoda
(C) Malacostraca (D) Thecostraca
4. The diameter of DNA double helix is
(A) 30 Å (B) 40 Å
(C) 50 Å (D) 20 Å
5. Pleiotropic gene has
(A) Multiple genotypes (B) Multiple phenotypes
(C) Multiple allelism (D) Single phenotype
6. In fishes, the hormone "calcitonin" is secreted by
 (A) Ultimobranchial gland (B) Islets of Langerhans
(C) Chromaffin tissues (D) Thyroid gland

7. If the stock is under exploited then, which of the statement is correct?
- (A) lesser number of breeding biomass will be there
 - (B) fishes experience growth overfishing.
 - (C) All age groups will be represented
 - (D) Fishes experience mortality overfishing
8. Marine parks are established under _____ act.
- (A) MFRA
 - (B) WPA
 - (C) MPEDA
 - (D) NBFGR
9. MFRA (1983) of TN recommended cod and mesh size of shrimp trawl net is _____.
- (A) 25 mm
 - (B) 10 mm
 - (C) > 37 mm
 - (D) < 5 mm
10. ELEFAN package was developed by
- (A) CMFRI
 - (B) CAA
 - (C) ICLARM
 - (D) NIOT
11. The marine fishing area (As per FAO) assigned to the Eastern India Ocean is
- (A) 51
 - (B) 57
 - (C) 31
 - (D) 61

12. The fishing cost line cuts the revenue curve at
- (A) MSY (B) MEY
(C) $\frac{1}{2}$ MEY ~~(D) Break Even Point~~

13. The formula for estimation of MSY by Gulland method is
- (A) $MSY = M \times B_{\infty}$
~~(B) $MSY = M \times 0.5 \times B_{\infty}$~~
(C) $MSY = Z \times B_{\infty}$
(D) $MSY = M \times 0.9 \times B_{\infty}$

14. If $N_0 = 70,000$ and $N_1 = 30,000$ then 'A' is
- (A) 0.3 (B) 1.0
(C) 0 ~~(D) 0.7~~

15. The annual mortality rate (A) estimated as per Heincke's method is
- ~~(A) $\frac{N_0}{\sum N}$~~ (B) $\frac{\sum N}{N_0}$
(C) $\frac{N_{t+1}}{N_t}$ (D) $\frac{N_t}{N_{t+1}}$

16. Of the given four lobsters, which one attain the largest size (L_{∞})
- (A) Panulirus Homarus (B) Panulirus Polyphagus
~~(C) Panulirus Ornatus~~ (D) Puerulus Sewelli

23. _____ soil results from the formation of pyrite.
- (A) Clayey loam Acid Sulphate
(C) Sandy (D) Clayey
24. Nitrate is specifically efficient in promoting the growth of _____ in shrimp farms.
- (A) Chlorella (B) Spirulina
(C) Spirogyra Diatoms
25. The most significant nutrient in brood stock nutrition is
- (A) Vitamin E (B) Vitamin B
 n- 3 PUFAs (D) Cholesterol
26. The widely cultured Salmonid for sport fishery is
- (A) Tor tor Salmo gairdneri
(C) Salmo clarkii (D) Salvelinus aureolus
27. The number of moults (larval stages) observed in the life cycle of "Macrobrachium" is
- (A) 10 (B) 15
 11 (D) 09
28. The macrophytic filamentous algae commonly found in hardwaters is
- (A) Najas (B) Potamogeton
 Chara (D) Polygonum

29. Simazine and glyphosate are used in controlling
- (A) Weedy fishes (B) Micro algae
 (C) Aquatic plants (D) Tadpoles
30. The dominant cultivable catfish species in USA is
- (A) Pangasius hypophthalmus
 (B) Ictalurus Punctatus
(C) Pangasius bocorti
(D) Clarias sp.
31. The most important cultivable species of mussel in the world in aquaculture is
- (A) Mytilus galloprovincialis
 (B) Mytilus edulis
(C) Perna viridis
(D) Mytilus crassitesta
32. Which among the following disease is caused by virus?
- (A) Enteric Red Mouth
(B) Hitra disease
 (C) Infectious Pancreatic Necrosis
(D) Epizootic ulcerative syndrome
33. Chilodonella sp. is otherwise known as
- (A) Skin fluke (B) Gill fluke
(C) Anchor worm (D) Protozoan

34. An example for true estuarial organisms is

(A) Channa striata

(C) Sardinella spp

(B) Etroplus suratensis

(D) Hilsa sp

35. Biggest coral reef in the world is

(A) Coramandal coast reef

(C) Great Barrier reef

(B) Palk bay reef

(D) Gulf of Kutch reef

36. On the basis of contents the True Plankton are otherwise called as

(A) Limnoplankton

(C) Euplankton

(B) Haliplankton

(D) Pseudoplankton

37. Nonliving component of the seston is called as

(A) Neuston

(C) Tripton

(B) Pleuston

(D) Nekton

38. In this type of lakes surface temperature always above 4°C

(A) Sub polar lakes

(C) Tropical lakes

(B) Temperate lakes

(D) Polar lakes

39. Lake with greatest depth in the world is

(A) Crater lake

(C) Seneca lake

(B) Lake Baikal

(D) Lake superior

40. The particles having high penetrating power is
- (A) Alpha particles (B) Beta particles
(C) Neutron particles (D) Positrons
41. The systems having very excessive nuisance conditions, 'anoxia' and undesirable biological communities are called as
- (A) Hyper entrophic systems
(B) Entrophic systems
(C) Non entrophic systems
(D) Hypo entrophic systems
42. Through domestic sewage tuberculosis may be caused by _____ in humans.
- (A) Mycobacterium sp (B) Salmonella sp
(C) E. coli (D) Listeria sp
43. All India Coordinated Research Project (AICRP) on _____ started in 1971 for demonstrating the technology in different agro-climatic conditions of the country.
- (A) Integrated fish farming
(B) Sewage fed fish culture
(C) Race way culture
(D) Composite carp culture
44. Learning for adoption of any new practices is attained through one of the following principal steps of
- (A) creating awareness of new ideas (B) use of local resources
(C) self help (D) democratic approach

45. Those statistics which will assess the fish population is termed as
- (A) Biological statistics (B) Economic statistics
(C) Fish trade statistics (D) Socio-economic statistics
46. The difference of rates involved between the producer's price and the consumer's price is called as
- (A) Price spread (B) Marketing efficiency
(C) Monopoly (D) Perfect competition
47. _____ utility is given to fishes by making available in different areas, where it is not/less available to fetch a good price.
- (A) Place (B) Time
(C) Form (D) Possession
48. Which is the major port to handle frozen export cargo from West Coast of India?
- (A) Mumbai (B) Kochi
(C) Mangalore (D) Goa
49. International fish trade has been increasing at a rapid level in recent decades facilitated by the widespread use of
- (A) Chemicals (B) Refrigeration
(C) Preservatives (D) Growth promoters

50. _____ is not complete after creation of utility, unless it acquires value in exchange in the market.
- (A) Consumption (B) Utility
 (C) Production (D) Satisfaction
51. When _____ profit is earned by the existing firms, there will be no new entry in the competitive market or the industry.
- (A) constant (B) cyclical
 (C) abnormal (D) normal
52. When a lesser quantity of Sardine fish has a demand with rise in price, there is _____ of demand.
- (A) increase (B) contraction
(C) extension (D) decrease
53. The price, income, habit, taste and availability of substitute determines
- (A) potential demand
(B) derived demand
(C) market demand
 (D) an individual demand
54. An additional weight carried on the boat for either ensuring proper stability condition or economy of propulsion or for correction of list is called as
- (A) Awning (B) Heel
 (C) Ballast (D) Free Board

55. The other name of "dumb compass" is
(A) Azimuth mirror (B) Gyro compass
 (C) Pelorus (D) Sextant
56. Which of the following acoustic instrument is designed specially for trawl net monitoring?
 (A) Net sonde (B) SONAR
(C) Echosounder (D) Doppler log
57. The device used onboard vessel to record the speed and distance travelled through water in a given time is called as
 (A) Log (B) Compass
(C) Lead line (D) Echosounder
58. The resultant value of the deviation and variation of magnetic compass is termed as
(A) Index error (B) Side error
 (C) Compass error (D) Error of perpendicularity
59. Harpooning is a fishing method mainly used for capture of
(A) Bill fishes (B) Tuna
(C) Sharks (D) Whales
60. One nautical mile is equal to
(A) 1852 km (B) 18.52 km
(C) 185.2 km (D) 1.852 km

61. The number of nylon yarn is 210 dinier means
- (A) 1000 m lengthy single yarn weighs 210 g
 - (B) 9000 m lengthy single yarn weighs 210 g
 - (C) 1000 m lengthy single yarn weighs 210 mg
 - (D) 9000 m lengthy single yarn weighs 210 mg
62. The chemical name of nylon is
- (A) Vinylidene
 - (B) Polyamide
 - (C) Polyvinyl chloride
 - (D) Polyvinyl alcohol
63. Type of condenser used in house hold refrigerator is
- (A) Natural air cooled
 - (B) Forced air cooled
 - (C) Shell and tube
 - (D) Shell and coil
64. Amount of heat to be added or removed to raise or lower the temperature of one gram water by one degree Celsius is called as
- (A) One BTU
 - (B) One degree Kelvin
 - (C) One kilo caloric
 - (D) One caloric
65. Boyles Law describes the relationship between
- (A) Pressure and Temperature
 - (B) Pressure and Heat
 - (C) Pressure and Volume
 - (D) Pressure and Enthalpy

66. Which type of cooling system is used in out board engine?
- (A) Indirect Freshwater Cooling
 - (B) Direct Seawater Cooling
 - (C) Keel Cooling
 - (D) Air Cooling
67. Manual or hand starting of engine is possible for the engine with the power.
- (A) Upto 60 hp
 - (B) Upto 200 hp
 - (C) Upto 250 hp
 - (D) Upto 300 hp
68. _____ packaging are commonly called as 'drink boxes'.
- (A) Shrink
 - (B) Aseptic
 - (C) Retort
 - (D) Vacuum
69. _____ is produced by the polymerisation of propylene.
- (A) Propene
 - (B) Polypropylene
 - (C) Polythene
 - (D) Polyester
70. Freezing of fish causes death of bacteria to the extent of _____ % depending on the initial flora of fish.
- (A) 10 - 20
 - (B) 30 - 40
 - (C) 40 - 50
 - (D) 60 - 90

71. _____ is a traditional smoke cured product prepared from Tuna in India.
- (A) Katsuo-bushi (B) Sashimi
(C) Sushi (D) Masmin
72. When we plot equilibrium moisture content against water activity for particular or range of temperature in a food product, the resultant curve obtained is called _____ curves
- (A) TDT (B) Sorption Isotherms
(C) Moisture-Water (D) Equilibrium Moisture
73. Accumulation of lactic acid in muscle lowers P^H of the fish flesh, makes of firmer resulting in increase
- (A) Moisture (B) Drip loss
(C) Weight (D) Shelf life
74. The reciprocal of the slope of Thermal Death time curve is called
- (A) A value (B) D value
(C) F value (D) Z value
75. In TFS cans, TFS stands for
- (A) Total free steel (B) Tin free steel
(C) Tin free sulphur (D) Thin film steel
76. Higher the _____ content faster the spoilage in fish
- (A) Protein (B) Fat
(C) Moisture (D) Ash
77. _____ enzyme is responsible for post harvest discolouration in crustaceans
- (A) Proteinase (B) Phospholipase
(C) Transglutaminase (D) Polyphenol oxidase

78. The type A Fish Protein Concentrate contain protein level of _____ %
- (A) 50 (B) 60
 (C) 80 (D) 100
79. The resistance of Chitosan towards Gamma radiation and ability to absorb metal ions make it suitable for the removal of
- (A) Radioactive solutes (B) Protein Waste
 (C) Hydrocolloids (D) Acid Wastes
80. On an average, to produce 1.0 kg of Chitin _____ kg of caustic soda and concentrated HCl is required respectively.
- (A) 0.5 and 1.0 (B) 1.0 and 10
 (C) 15 and 50 (D) 50 and 100
81. In alkali refining process of fish body oil, the settled mixture obtained after the addition of NaOH is called
- (A) Press liquor (B) Stick Water
 (C) Foots (D) Stearine
82. Fish oil differ from vegetable oils in containing
- (A) Saturated Fatty acids (B) Unsaturated Fatty acids
 (C) Esters (D) Triglycerides
83. _____ is added as a thickening agent in the preparation of fish soup powder
- (A) Citric acid (B) Carboxy methyl cellulose
 (C) Potassium Sorbate (D) Calcium Propionate
84. Combination of 1% _____ and modified atmosphere of 60% CO₂, 20% oxygen and 20% Nitrogen at 1°C extends shelf life in care of marine fish like Red Hake/Salmon
- (A) Calcium Oxide (B) Potassium Sorbate
 (C) STPP (D) Potassium Chloride

85. Identify the food linkage principle of the food traceability system
- (A) Definition of traceable unit (B) Ensuring one step-forward traceability
 (C) Method of attaching ID (D) Establishing a procedure
86. Which heavy metal is of safety concern in seafood products?
- (A) Cadmium (B) Arsenic
 (C) Mercury (D) Strontium
87. The widely used food additive to control Melanosis in shrimp by the fish processing establishments is
- (A) Sodium borate (B) Sodium citrate
 (C) Sodium metabisulphate (D) Sodium tripolyphosphate
88. Bleeding is the process done in post-mortem fish to
- (A) delay the onset of riger mortis (B) reduce the lipid oxidation
 (C) reduce the microbial degradation (D) reduce the autolysis
89. An analytical instrument used to analyse the volatile flavour compounds to determine seafood quality is
- (A) LC-MS-MS system (B) GC-MS system
 (C) NIR spectroscopy (D) NMR spectroscopy
90. A sensory method that cannot be adopted for all species of seafood is
- (A) Torry scale (B) European Union scheme
 (C) Consumer testing method (D) Quality index method
91. A PCR – based technique that requires reference gene sequences in the databases to authenticate the fish species through phylogenetic analysis is
- (A) PCR - RAPD
 (B) q PCR
 (C) PCR - FINS
 (D) PCR - AFLP

92. The assessment of the applicants pre-processing center by the Assessment Panel of Experts (APC) shall be executed in
- (A) One stage (B) Two stages
- (C) Three stages (D) Five stages
93. Process hygiene criteria established in cooked crustaceans and shell fish are for
- (A) Salmonella
- (B) E. coli and coagulase positive staphylococci
- (C) L.monocytogenes
- (D) Total coliforms
94. Oysters and Octopus are the richest source of this micromineral.
- (A) Selenium (B) Zinc
- (C) Iodine (D) Copper
95. A processing method that is satisfactory in terms of preserving the nutritive value of seafood is
- (A) Canning (B) Frying
- (C) Grilling (D) Smoking
96. Which one is not a test for texture measurement in fish?
- (A) Kramer test (B) Warner-Bratzler shear test
- (C) Compression test (D) Hunter Tristimulus test
97. The action of TMAO ase responsible for DMA-N production in iced fish is inhibited by
- (A) Low temperature (B) Light
- (C) Ice (D) Oxygen

98. In which of the following fish, pyloric caecae are present
- (A) Hilsa ilisha (B) Wallago Attu
(C) Cirrhinus mrigala (D) Tor tor
99. 'Ponderal Index' is another term for
- (A) Maturity of gonads (B) Food quotient
(C) Growth factor (D) Condition factor
100. Vitellogenin is synthesized mainly in
- (A) Kidney (B) Ovary
(C) Spleen (D) Liver
101. The introduction of foreign DNA into animal cells is called
- (A) Transversion (B) Conversion
(C) Inversion (D) Transfection
102. Loaches can be categorized as
- (A) Phytophil (B) Psammophil
(C) Pelagophil (D) Ostracophil
103. A measure to compare a particular item of food in the gut and that of in the environment is
- (A) Index of perponderance (B) Index of relative importance
 (C) Index of selectivity (D) Gastroscopic index

104. The term 'wonder net' is related to

(A) Spiral valve

(C) Weberian apparatus

(B) Rete mirabile

(D) Rectal gland

105. Remove the odd one out

(A) Suckers

(C) Catfishes

(B) Carps

(D) Eels

106. Cutlass fishes belong to the family,

(A) Sphyraenidae

(C) Rachicentridae

(B) Trichiuridae

(D) Scombridae

107. The longest larval stage in marine invertebrates is the

(A) Naupliar stage

(C) Phyllosome stage

(B) Zoeal stage

(D) Prezoal stage

108. The L_{∞} will be higher for

(A) Oil sardine

(C) Indian white shrimp

(B) Yellow fin tuna

(D) Anchovy

109. Of the 1500 species captured from the world, the top most 25 species is contributing around
- (A) about 40% (B) about 25%
(C) about 30% (D) about 10%
110. The % contribution from the top 25 major marine fishing countries was
- (A) Less than 40 (B) About 50
(C) About 60 (D) About 80
111. Among the given flat fish groups, the group harvested higher during 2017 in India was
- (A) Right eye Flounder
(B) Left eye Flounder
 (C) Sole
(D) Psettoterds
112. The current annual fishing mortality is zero. Then the yield will be
- (A) MSY (B) Zero
(C) MEY (D) MSE
113. The YPR (in g) will be higher for
- (A) $M = 0.2$ (B) $M = 0.4$
(C) $M = 0.5$ (D) $M = 0.6$

114. Of the given fishing practice, the most ecofriendly type is
- (A) Dynamiting
 - (B) Fishing with poisonous plant
 - (C) Fishing with bleaches
 - (D) Gill netting
115. The gastropod shell listed under schedule IV and WPA is
- (A) Cassis Cornuta
 - (B) Cypraea talpa
 - (C) Conus malneedwardsi
 - (D) Tridacna maxima
116. Remove the odd one
- (A) Meretrix casta
 - (B) Paphia malabarica
 - (C) Mercia opima
 - (D) Pinctada fucata
117. Malabar sole are caught by _____ gear
- (A) Trawl net
 - (B) Sardine Gill net
 - (C) Long line
 - (D) Hand line
118. Diseases not caused by micro organisms
- (A) Dietary toxicity
 - (B) Bacterial disease
 - (C) Fungal disease
 - (D) Viral disease
119. This biological filter used in aquarium has the gravel bed replaced with foam bed through water is filtered
- (A) Air lift box filter
 - (B) Sponge filter
 - (C) Under gravel filter
 - (D) Mechanical filter

120. In duck fish farming the stocking size of fish fingerlings must be more than
(A) 3 cm (B) 2 cm
(C) 5 cm (D) 10 cm
121. Diammonium phosphate are good fertilizers for fresh water because they have N : P₂O₅ ratio of
(A) 1:7 (B) 1:5
 (C) 1:3 (D) 1:4
122. A feeder were the feeding is controlled by fish themselves
(A) stationary feeder (B) automatic feeder
 (C) demand feeder (D) food distributors
123. Fish have no direct requirement of bicarbonates but crustaceans require it for moulting at levels of
 (A) 75-100 mg/L (B) 25-50 mg/L
(C) 30-50 mg/L (D) 40-60 mg/L
124. The second largest cultivable group of fishes in the world is
(A) Catfish (B) Carps
 (C) Tilapia (D) Murrels
125. The carp fish species with its body covered unevenly with few large shiny scales is
 (A) Mirror carp (B) Scale carp
(C) German carp (D) Leather carp

126. The major aminoacids used to as supplements as chemoattractants in fish feed are
 (A) Lysine-Methionine (B) Arginine-histidine
(C) Threonine-valine (D) Lysine-leucine
127. The feeder that utilizes high or low pressure air stream to dispense feed are
(A) drop feeders (B) pneumatic feeder
(C) auger feeder (D) disc feeder
128. The most effective method of removing chlorine from water is by treatment with
 (A) sodium thiosulfate (B) sodium bicarbonate
(C) zeolite (D) glutaraldehyde
129. "Ice-Ice" is a disease observed in
(A) salmonids (B) cyprinids
(C) sea cucumber (D) sea weeds
130. Fusarium species is a _____ pathogen mainly in penacid prawn hatchery
(A) Bacteria (B) Fungi
(C) Protozoan (D) Virus
131. The trace element required for haemocyanin in invertebrates is
(A) Cobalt (B) Copper
(C) Zinc (D) Iron

132. Which among the following is required as a specific nutrient ingredient in $f/2$ medium for culture of diatoms?

(A) NaNO_3

(B) Na_2SiO_3

(C) Biotin

(D) Na_2 EDTA

133. The "Ladder system Hatchery" has been developed particularly for

(A) Edible Oyster

(B) Shrimp

(C) Lobster

(D) Pearl Oyster

134. The tides with a smaller tidal range and occur around times when during the moon is on quarter is

(A) High tide

(B) Tidal bore

(C) Neap tide

(D) Spring tide

135. The increased concentration of non-biodegradable chemicals in the higher levels of food chains is called as

(A) biogenous material

(B) biohazard

(C) biological magnification

(D) bioluminescence

136. National parks and sanctuaries are coming under marine protected areas

(A) Category I

(B) Category II

(C) Category III A

(D) Category III B

137. CCD is Acronym for
- (A) Counter Current Deposit
 - (B) Circumpolar Current Deposit
 - (C) Calcite Compensation Depth
 - (D) Cumulative Current Density
138. Vertical movement of cold, deep, nutrient rich water to the surface is called as
- (A) Divergence
 - (B) Convergence
 - (C) Upwelling
 - (D) Downwelling
139. Deep Scattering Layer (DSL) is caused by
- (A) Downwelling
 - (B) Vertical migration of marine organisms
 - (C) Upwelling
 - (D) Coral reef organisms
140. During this time, all places in the world experience equal lengths of night and day
- (A) Summer solstice
 - (B) Vernal equinox
 - (C) Tropic of cancer
 - (D) Tropic of capricorn
141. Red tides are caused by
- (A) Diatoms
 - (B) Green algae
 - (C) Dinoflagellates
 - (D) Brown algae

142. The gap between Fisheries Research Institute and fishing/farming community could be bridged by

- (A) Extension agency (B) Trading agency
(C) Financing agency (D) Marketing agency

143. Identify the extension methods from the given examples :

- | | |
|------------------------|--------------------|
| (a) Individual contact | 1. Leaflets |
| (b) Group contact | 2. Personal letter |
| (c) Mass contact | 3. Discussion |
| (d) Office contact | 4. Field trips |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 1 | 3 | 4 | 2 |
| <input checked="" type="checkbox"/> (B) | 2 | 4 | 1 | 3 |
| (C) | 3 | 1 | 2 | 4 |
| (D) | 4 | 2 | 3 | 1 |

144. Which extension programme can be effective to improve marketing of fish?

- (A) Training on fish handling (B) Training on fishing
(C) Training on packaging (D) Training on health care

145. Extension starts with the _____ by knowing their skill, methods, tools, leaders, beliefs, practices, organisation and institutions.

- (A) Product (B) People
(C) Place (D) Public relation

146. Export, import and consumption pattern of fish can be drawn in one graph called

- (A) Simple bar diagram (B) Histogram
(C) Pie-diagram (D) Multiple bar diagram

147. The highest change in domestic consumption of fish by species groups by 2020 compared to 2000 is
- (A) Molluscs (B) Shrimp
(C) Tilapia (D) Indian Major carps
148. Uncompensated elasticities of demand represent changes in quantity demanded as a result of changes in prices, which capture both price effect and _____ effect.
- (A) Supply (B) Demand
(C) Income (D) Consumption
149. Development of successful ornamental fish culture village clusters around metropolitan cities are examples of _____ development through small scale enterprises.
- (A) women (B) societal
(C) labour (D) industry
150. FAO estimates that fisheries and aquaculture assure livelihood for _____ of the global population.
- (A) 13-15% (B) 18-20%
(C) 5-8% (D) 10-12%
151. The exhaustible resources are those natural resources which can be used once cannot be
- (A) convertible (B) renewed
(C) reversed (D) created

152. Which of the following sentence is not relevant to "Boat's Displacement"?
- (A) A mass of the water that the boat displaces which floating
 - (B) The amount of water that would spill out of a completely filled container, if boat is placed in it
 - (C) Amount of water of the same mass as the underwater part of ship or boat
 - (D) Mass of water equal to the volume of fish hold and fuel tank of a boat
153. A portion of the trawl net mouth in between two wings is called as
- (A) Quarter
 - (B) Jib
 - (C) Bosen
 - (D) Overhang
154. What is the colour of side light meant for star board side of fishing vessel?
- (A) White
 - (B) Yellow
 - (C) Red
 - (D) Green
155. Which of the following buoyage system is in conjunction with the Mariner's compass?
- (A) Lateral marks
 - (B) Cardinal marks
 - (C) Isolated danger marks
 - (D) Special marks
156. In Marine Communication and signalling system, the word 'MAY DAY' indicates
- (A) weather condition
 - (B) distress condition
 - (C) port information
 - (D) pilot requirement

157. When a vessel is said to be in unstable equilibrium
- (A) centre of gravity will be above transverse metacentre
 - (B) centre of gravity and transverse metacentra will be in the same point
 - (C) centre of gravity will be below transverse metacentre
 - (D) centre of buoyancy will be in the same vertical line as centre of gravity
158. The framework of a vessel together with all decks, deck houses and plating is termed as
- (A) Keel
 - (B) Hull
 - (C) Mould
 - (D) Super structure
159. A dustpan shaped nets fabricated without a pursing device are called as
- (A) Lampara nets
 - (B) Trammel nets
 - (C) Purse seines
 - (D) Beach seines
160. Troll lines are mainly operated for capturing
- (A) Cephalopods
 - (B) High value crustaceans
 - (C) Benthic dwelling fishes
 - (D) Fast moving pelagic fishes
161. The term applied for making webbing by hand is
- (A) Stapling
 - (B) Reeving
 - (C) Braiding
 - (D) Shaping

162. In evaporator coil of vapour compression refrigeration system, the partially vapourized refrigerant absorbs _____ from the substances to be cooled
- (A) Latent heat
 - (B) Specific heat
 - (C) Sensible heat
 - (D) Vapour
163. Which unit in the vapour compression refrigeration regulates the flow of refrigerant?
- (A) Condensor
 - (B) Evaporator
 - (C) Expansion valve
 - (D) Compressor
164. Which of the following refrigerant is not in use now-a-days due to toxic in nature?
- (A) Freon
 - (B) Carbon-di-oxide
 - (C) Sulphur-di-oxide
 - (D) Ammonia
165. In IC engines, during compression stroke.
- (A) Both inlet and exhaust valves will be opened
 - (B) Both inlet and exhaust valves will be closed
 - (C) Inlet valve also opened
 - (D) Exhaust valve alone opened
166. Which of the following fish processing machinery works with the principle of sublimation?
- (A) Tunnel Freezer
 - (B) Deep Freezer
 - (C) Smoking Kiln
 - (D) Freeze - drier

167. The floor space requirement for a typical Block Ice manufacturing unit of 50 ton/24 h. Capacity is _____ m².
- (A) 10 (B) 50
(C) 90 (D) 190
168. In contact freezer, it is ideal to have a product thickness of less than _____ mm
- (A) 40 (B) 60
(C) 80 (D) 90
169. The typical freezing rate for Quick freezing in a continuous air blast freezer is _____ mm/h
- (A) 1 (B) 3-15
(C) 12-25 (D) 15-20
170. Amount of water present in the fish which remains as unfrozen even at very low temperature is called _____
- (A) Free Water (B) Bound Water
(C) Freeze Water (D) Freeze loss
171. _____ is a system where in sea water is cooled by mixing it with ice
- (A) RSW (B) CSW
(C) MSW (D) ASW
172. _____ bacteria is responsible for flat sour spoilage in canned fish
- (A) Bacillus stearothermophilus (B) Pseudomonas spp
(C) Listeria monocytogene (D) Vibrio parahaemolyticus
173. _____ is the process by which air from the can contents and the head space of billed can is removed before the can is sealed
- (A) Retorting (B) Seaming
 (C) Exhausting (D) Blanching

181. In modified atmospheric packaged fresh seafood products, the lag phase of bacterial growth is extended up to _____ days.
- (A) 3 (B) 5
(C) 6 (D) 12
182. _____ is a type of packaging that changes the condition of the packaged food to extend shelf life or improve safety or sensory property while maintaining the quality of the food.
- (A) Vacuum packaging (B) Cook-Chill pack
 (C) Active packaging (D) Edible film
183. Polyurethane adhesives cured by an _____ is used for bonding laminates in retort pouch making.
- (A) Aliphatic Isocyanate (B) Aromatic Isocyanate
(C) Aliphatic Isothionate (D) Aromatic Isothionate
184. Litwel -N (LTW-N) in the new type of packaging material introduced by Japan for
- (A) Surimi packs (B) Sashimi tuna
 (C) Food and beverage cans (D) J Q F products
185. In I Q F packaging, the laminated film used in duplex carton to improve its functional property is _____ of 10 micron size
- (A) Biaxially oriented poly propylene (B) Linear low density poly ethylene
(C) Poly styrene (D) High density polythene
186. _____ is a packaging material which can tolerate temperature up to 220^oc and can be reheated in both microwave and conventional ovens
- (A) LDPE (B) LLDPE
(C) Polypropylene (D) Crystallized polyester
187. _____ is a grease proof sulphite paper, which is given a high gloss finish by the finishing rollers
- (A) Kraft paper (B) Paper board
 (C) Glassine (D) Carton

188. A fish is considered fit for human consumption even if it contains
- (A) Biotoxins (B) Chemical contaminants
 (C) Excess fat (D) Parasites
189. Which one is a surfactant used in cleaning and disinfection process in the food industry?
- (A) Chlorine (B) Iodine
 (C) Peracetic acid (D) Quaternary ammonium compounds
190. Which is a CCP and not a critical limit?
- (A) Brine concentration in cured fish
 (B) Food handler hygiene
 (C) pH values in fermented fish
 (D) Water activity values in dried fish
191. How many principles are there in HACCP system?
- (A) Five (B) Seven
 (C) Twelve (D) Nine
192. Which one of the following functions is not under MPEDA's focus?
- (A) Registration of infrastructural facilities for sea food export trade
 (B) Implementation of effective surveillance system to ensure compliance
 (C) Promotion of deep-sea fishing projects
 (D) Collection and dissemination of trade information
193. The recommended microbiological limits set for aerobic plate counts for fresh and chilled raw fish by ICMSF is
- (A) $n = 5$; $c = 3$; $m = 5 \times 10^5$; $M = 10^7$ cfu/g
 (B) $n = 5$; $c = 2$; $m = 10^5$; $M = 10^7$ cfu/g
 (C) $n = 5$; $c = 3$; $m = 5 \times 10^5$; $M = 10^6$ cfu/g
 (D) $n = 5$; $c = 2$; $m = 10^6$; $M = 10^7$ cfu/g

194. A powerful molecular tool for the detection and quantification of pathogens and SSOs in seafood is
 (A) ELISA (B) q PCR
 (C) FISH (D) Microarray
195. A bacterium that forms biofilm on food contact surfaces and contaminate seafood is
 (A) Staphylococcus Aureus (B) Escherichia coli
 (C) Listeria monocytogenes (D) Clostridium botulinum
196. The histamine producing bacteria associated with fermented fish products are
 (A) Micrococcus, Lactobacillus, Staphylococcus
 (B) Maganella maganii, Klebsiella pneumoniae
 (C) Photobacterium phosphoreum
 (D) Hafnia alva, Vibrio sp.
197. Which human virus responsible for major outbreaks causing acute gastroenteritis is associated with the consumption of oysters?
 (A) Hepatitis A virus (B) Hepatitis B virus
 (C) Norovirus (D) Astrovirus
198. The only pathogenic bacteria tested by taking swabs from the workers hand by the EIA officials is
 (A) Salmonella (B) Coagulase positive staphylococcus
 (C) Vicholerae (D) Histeria monocytogenes
199. Fishery products packed in hermetically sealed containers and heat processed shall be subjected to this test.
 (A) Coagulase positive staphylococcus (B) Sterility
 (C) Histeria monocytogenes (D) Yeast & Mould
200. Sanitation and Hygiene control samples from food contact surfaces and workers hand shall be tested by FBO for microbiological checks atleast
 (A) once in 15 days (B) once in a day
 (C) once in a month (D) once in 6 months

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SECRET