

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

Test Booklet Series

Serial No. **909769****A****BAC-38****FISHERIES SCIENCE**

Time Allowed : 2 Hours

Maximum Marks : 300

INSTRUCTIONS TO CANDIDATE

1. IMMEDIATELY AFTER THE 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.
2. ENCODE YOUR OPTIONAL SUBJECT CODE AS MENTIONED ON THE BODY OF YOUR ADMISSION CERTIFICATE AND ADVERTISEMENT AT APPROPRIATE PLACES ON THE ANSWER SHEET.
3. ENCODE CLEARLY THE TEST BOOKLET SERIES A, B, C OR D AS THE CASE MAY BE IN THE APPROPRIATE PLACES IN THE ANSWER SHEET USING HB PENCIL.
4. You have to enter your Roll No. on the Test Booklet in the Box provided along side. DO NOT write anything else on the Test Booklet.
5. This Test Booklet contains 120 items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
6. You have to mark all your responses **ONLY** on the separate Answer Sheet provided by using HB pencil. See instruction in the Answer Sheet.
7. All items carry equal marks. All items are compulsory. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet. For each question for which a wrong answer is given by you, **one fifth (0.20) of the marks assigned to that question will be deducted as penalty.**
8. Before you proceed to mark in the Answer Sheet the responses to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your **Admission Certificate.**
9. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator the Answer Sheet, the Test Booklet issued to you.

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1. Which country ranks first in the world marine fish production ?
(a) China (b) Japan
(c) USA (d) Peru
2. Mud bank is situated in
(a) Tamilnadu (b) Maharashtra
(c) Kerala (d) Andhra Pradesh
3. Indian Exclusive Economic Zone occupies an area of about
(a) 1.02 million Sq. Km (b) 3.02 million Sq. Km
(c) 2.02 million Sq. Km (d) 4.02 million Sq. Km
4. Latimera is a living _____ .
(a) Mammal (b) Reptile
(c) Fish (d) Bird
5. Which fishing gear has destroyed the pearl oyster bed in Gulf of Mannar ?
(a) Drift net (b) Purse seine
(c) Trawl net (d) Traps
6. Closed season is a methodological tool used in fisheries.
(a) Management (b) Statistics
(c) Production (d) Environment
7. Fish food is rich in _____
(a) Protein (b) Carbohydrates
(c) Saturated fat (d) Vitamins
8. Harbour wave is popularly known as
(a) Tao (b) Tsunami
(c) Tornado (d) Taipei
9. Indian coast line should be free from any coastal aquaculture practice upto how many meter zone ?
(a) 1000 metre (b) 500 metre
(c) 5000 metre (d) 100 metre
10. The Deemed University in Fisheries Education in India i.e., CIFE is situated in
(a) Cuttack (b) Mumbai
(c) Calcutta (d) New Delhi

11. The endangered aquatic mammal which eats only herbivorous diet is
(a) Whales (b) Dolphin
(c) Dugong (d) Walrus
12. The World fish production could be increased still further from the present level only by
(a) Aquaculture (b) Marine fish catch
(c) Reservoir fisheries (d) Riverine fisheries
13. The salinity range of brackish water is as follows :
(a) 0.5 to 5 % (b) 0.5 to 1.0 %
(c) 0.5 to 2 % (d) 0.5 to 3 %
14. The freshwater pearl production technology was perfected by
(a) CMFRI (b) CIFT
(c) CIFE (d) CIFRI
15. The coral reef cover was much reduced from the previous status due to
(a) disease and siltation (b) fishing
(c) sea weed growth (d) sea urchin population
16. Because of over fishing, the potential of fisheries resources of EEZ has reached the state of
(a) diminishing (b) growing
(c) static (d) lost
17. Sea Surface Temperature data are used in Remote Sensing to find out
(a) coral reef cover (b) molluscan resource
(c) pearl oyster bed (d) potential fishing zone
18. To achieve sustainable fishing for the preserving the potential fishery resources, the Government should develop policies to enforce the fishermen to go far
(a) MSY (b) MEY
(c) Indiscriminate fishing (d) Discriminate fishing
19. K and M are inversely related to
(a) Z (b) LM
(c) $L \infty$ (d) L_m and $L \infty$
20. Stock assessment of fisheries resources is a _____ method.
(a) direct (b) indirect
(c) direct/indirect (d) none of the above

21. India is getting a share of foreign exchange from the export of seafood and which is about
(a) 1000 crores (b) 2500 crores
(c) 4500 crores (d) 6000 crores
22. LIT Method is used internationally to survey the underwater _____ resource.
(a) Coral (b) Pelagic fish
(c) Demersal fish (d) Benthic forms
23. Sea ranching of diminishing finfish and shellfish can be taken upto _____ in marine ecosystem.
(a) stock enhancement (b) stock assessment
(c) stock exploitation (d) stock depletion
24. In a normal fish population, the exploitation ratio will be equal to
(a) 0.3 (b) 0.5
(c) 0.45 (d) 0.6
25. The reproductive physiological processes in fish is initiated by
(a) environmental cues (b) food availability
(c) sight of opposite seas (d) none of the above
26. X and Y organs of crustacean are located in the parts of
(a) Tail (b) Abdomen
(c) Perepod (d) Eye stalk and head
27. Nidamental gland is present in the female reproductive system of
(a) Sharks (b) Gastropod
(c) Oyster (d) Squids and cuttlefishes
28. Sarotherodon mossambicus is called as _____ in caring their young ones.
(a) pouch brooder (b) mouth brooder
(c) bubble nest brooder (d) none of the above
29. Gladius or Pen is the chitinous part present in
(a) Cuttle fish (b) Nautilus
(c) Loligo (d) Octopus
30. *Lates calcarifer* is an euryhaline fish and which can tolerate _____ range of salinity.
(a) wide (b) narrow
(c) both (d) none of the above

31. Among the molluscan species, _____ group of animals are well developed.
(a) Gastropods (b) Bivalves
(c) Planktonic molluscs (d) Cephalopods
32. The total number of finfish species available in Indian marine ecosystem is about
(a) 2200 (b) 3200
(c) 2000 (d) 3000
33. Sharks produce their offspring and care them by keeping them in their visceral cavity since they are
(a) Oviparous (b) Viviparous
(c) Ovo-viviparous (d) None of the above
34. Pituitary secretes GnRH which influences gonads and they secrete
(a) Sex hormones (b) Growth hormones
(c) Both (d) None of the above
35. Marine fishes do drink sea water to regulate their hyposmolarity state when compare to the hyperosmolarity environment.
(a) Yes (b) No
(c) Both (d) None of the above
36. The presence of canine teeth in the finfishes denotes that they belong to
(a) Herbivore (b) Omnivore
(c) Carnivore (d) All the above
37. The term Aquaculture, aimed at producing processing and marketing covers
(a) Production (b) All activities
(c) Processing (d) Marketing
38. Culture of Oysters in Greece was mentioned by
(a) Aristotle (b) Pliny
(c) Alikhuni (d) Gilbert
39. Culture of Marine Fish, Molluscs and Shell Fishes began in India in
(a) 19th Century (b) 18th Century
(c) 17th Century (d) 16th Century
40. Marine animals produce
(a) Very small eggs (b) Larger eggs
(c) Alevins (d) Juvenills

41. Freshwater fish species produces
- (a) Small eggs (b) Larger eggs
(c) Larvae (d) Fry
42. Milk Fish reproduces in
- (a) Freshwater (b) Lagoons
(c) Sea (d) Coastal Water
43. True Aquaculture is found on
- (a) Hatcheries & Nursery (b) Hatcheries & Rearing Pond
(c) Stocking Pond and Rearing Pond (d) Nursing & Stocking Pond
44. Conversion of Natural productivity into food for human consumption is termed as
- (a) Intensive aquaculture (b) Extensive Aquaculture
(c) Semi Intensive Aquaculture (d) Traditional Aquaculture
45. Area in which aquaculture is not developed
- (a) Canal water (b) Reservoir
(c) Open sea (d) Coastal water
46. Which is most important variables for all aquatic organisms ?
- (a) Light (b) Temperature
(c) Food (d) Oxygen
47. Salts present in dissolved state in sea water are defined by
- (a) 5 % (b) 50 %
(c) 500 % (d) 5000 %
48. The most common way of measuring dissolved Oxygen content is the
- (a) Burette Method (b) Winkler Method
(c) Colorimetry (d) Digital Method
49. A mixture of physical, chemical & biological mechanisms is called as
- (a) Ammonia cycle (b) Nitrogen cycle
(c) Phosphorus cycle (d) Colorimetry
50. Which one oxidises organic matter rapidly in water ?
- (a) Oxygen (b) Ozone
(c) CO₂ (d) NH₃

51. Rotifers are cultured in
(a) Still water (b) Running Water
(c) Brackish water (d) Oxygenated Still water
52. Dominant planktonic crustaceans in salt water is
(a) Ostracods (b) Daphnia
(c) Artemia (d) Moina
53. Molluscs belong to the class
(a) Crustacea (b) Bivalvia
(c) Mytilidae (d) Lamellibranchs
54. The species which is not found in fresh water is
(a) Metapenaeus (b) Macrobrachium
(c) M. barbata (d) M. Rosenbergii
55. Post larva of prawn are formed from
(a) Nauplius (b) Zoea
(c) Mysis (d) Female
56. Eye stalk ablation is for
(a) Gonadal development by the hormone
(b) Accumulation of hormone in eye stalk
(c) Removal of eye stalk
(d) Reduction of gonadal development
57. Freshwater Prawns are found in
(a) Temperate water (b) Tropical waters
(c) Coastal waters (d) Lagoons
58. Transparency of water is measured by
(a) Meter scale (b) Secchi disc
(c) Lux meter (d) Nano meter
59. Cyprinus Carpio is
(a) Herbivorous (b) Carnivorous
(c) Omnivorous (d) Insectivorous
60. Most of the Indian aquaculture takes place in
(a) Cold water (b) Warm water
(c) Brackish water (d) Coastal water

61. Induced breeding technique was adopted in the year
(a) 1950 (b) 1957
(c) 1960 (d) 1962
62. Hypopyzation is done by
(a) FSH hormone (b) Crude PG extract
(c) Ovatide (d) Ovaprim
63. Operational research projects on composite culture was started in the year
(a) 1980 (b) 1983
(c) 1987 (d) 1993
64. Intensive culture is profitable in
(a) Carp Culture (b) Catfish culture
(c) Cold water culture (d) Shrimp culture
65. Milk fish naturally breeds in
(a) Brackish water (b) Freshwater
(c) Seawater (d) Cold water
66. Biological causes of fish diseases is
(a) Parasites (b) Fish
(c) Human (d) Animal
67. Heterosis is opposite to the phenomenon of
(a) Out breeding (b) Inbreeding
(c) Cross breeding (d) Selective breeding
68. Which one is an example of intergeneric hybrid ?
(a) *L.calbasu* X *L. rohita* (b) *L.bata* X *L.calbasu*
(c) *L.rehita* X *C.catla* (d) *L.rohita* X *L.bata*
69. Which one is a type of female heteromorphic genetic sex in Fishes ?
(a) XO (b) XY
(c) ZW (d) XXY
70. Which one is not degraded to succinyl COA ?
(a) Methionine (b) Isoleucine
(c) Histidine (d) Valine

71. Cysteine can be metabolised from
 (a) Methionine (b) Tryptophan
 (c) Lysine (d) Proline
72. Which one is required for formatting of peritrophic membrane in which faecal pellets of prawn is enveloped?
 (a) Cellulose (b) Chitin
 (c) Raffinose (d) Stachyose
73. The average wave-length of tsunami at sea is
 (a) 20 – 80 km (b) 100 – 200 km
 (c) 400 – 600 km (d) 900 – 1000 km
74. Calanus glacialis, feeding on Coscinodiscus sp. discards more cells after biting off a portion as satiation (R_{max}). What does R_{max} indicate?
 (a) Maximum respiration (b) Maximum input
 (c) Maximum ration (d) Maximum effort
75. What is the term used for the phenomenon where deep water, which is colder than the surface water wells up towards the surface?
 (a) Coriolis force (b) Current separation
 (c) El Nino (d) Upwelling
76. What is the optimum saline range and temperature for the culture of marine Chlorella?
 (a) 5-10 ppt and 30 °C (b) 10-20 ppt and 20 °C
 (c) 0-35 ppt and 25-35 °C (d) 10-20 ppt and 25-35 °C
77. Animals spending their lives on top of the air-water interface such as water strider, Gerris sp. is called
 (a) Neuston (b) Hyponeuston
 (c) Epineuston (d) Nekton
78. Flora upto the depth to which effective light penetration is possible facilitating the growth of rooted vegetation is called
 (a) Pedonic flora (b) Emergent flora
 (c) Littoral flora (d) Benthic flora
79. The diversity index $D_1 = \sum_n \log n$, where 'n' is the number of individuals in that species divided by the total number of individuals in the eco system. What does the sum indicate?
 (a) The total number of species present
 (b) Forecasting of biological system
 (c) Quantitative system
 (d) Cumulative number of species

80. Which of the following is the missing expression of intertidal oscillations as a balance between the inertial forces and the coriolis force of the formula ?

$$\frac{?}{dt} = \frac{2 \pi u}{T_1}$$

- (a) du (b) di
 (c) da (d) Cf
81. In the transformation of Nitrogen formed in the nitrogen cycle of estuaries, which of the step is transformed ammonification process ?

- (a) $NH_3 \longrightarrow NO_3^-$
 (b) $NO_3^-, NO_2^-, N_2O \longrightarrow$ gaseous products
 (c) $R - NH_2 \longrightarrow NH_3$
 (d) $N_2 \longrightarrow NH_3$

82. Surface waves in deep water ($H/\lambda > 0.25$) which disperse and satisfy a dispersion relation

$$W^2 = gk \text{ is called ; :}$$

- (a) Deep water wave (b) Edge wave
 (c) Equatorial wave (d) Evanescent wave
83. In the marine and estuarine environment, what is the behaviour element of ^{40}K , ^{86}Rb , and ^{137}Cs ?

- (a) Barium (b) Potassium
 (c) Carbon (d) Strontium

84. In the absorption of nutrients from the aquatic medium, by the formula $V = \frac{V_m \cdot S}{K_s + S}$, K_s represents what aspect ?

- (a) Concentration of elements in the ambient medium.
 (b) Maximum specific rate of element absorption from the medium.
 (c) Medium concentration, when 'V' reaches $\frac{1}{2}$ of the maximal value.
 (d) Algae's capacity to absorb nutrients at low ambient concentrations.

85. Ziehl-Neelsens staining reaction is a

- (a) Simple staining (b) Differential staining
 (c) Specific staining (d) All of these

86. Mac Conkeys agar is a
(a) Simple media (b) Selective media
(c) Differential media (d) Selective differential media
87. Magnification of oil immersion objectives is
(a) 100 (b) 50
(c) 30 (d) 20
88. The most specific immunoglobulin is
(a) Ig A (b) Ig E
(c) Ig G (d) Ig D
89. An example for a spore forming bacteria
(a) Salmonella (b) Shigella
(c) Klebsiella (d) Bacillus
90. The part of the bacteria responsible for Grams reaction
(a) Cell wall (b) Plasma membrane
(c) Cytoplasm (d) Nuclear material
91. The temperature of autoclave at 10 lbs pressure
(a) 110 C (b) 115 C
(c) 120 C (d) 125 C
92. The first used antiseptic is
(a) KMnO_4 (b) H_2O_2
(c) Phenol (d) None of these
93. Medium used for sugar fermentation reaction is
(a) Peptone water (b) Nutrient broth
(c) Normal saline (d) All of these
94. Aflatoxin is produced by
(a) Bacteria (b) Virus
(c) Fungus (d) Protozoa
95. Prions are infectious particles having only
(a) DNA (b) RNA
(c) Protein (d) Lipids

96. Immunoglobulins are produced by
- (a) Monocytes (b) Eosinophils
(c) Basophils (d) Lymphocytes
97. A commercial fishing method not usually associated with FAD's
- (a) Purse seine (b) Ring seine
(c) Hook & line (d) Trawl
98. Double rig trawling originated in
- (a) Gulf of Mexico (b) Gulf of Cambay
(c) Sargasso sea (d) Mediterranean sea
99. 'Kites' are used to improve the following function of trawls :
- (a) Horizontal opening (b) Vertical opening
(c) Speed (d) Drag
100. Rectangular vertically curved otter boards are known as
- (a) Suberkrub boards (b) Polyvalent boards
(c) V-boards (d) Cobb pelagic boards
101. Barbless hooks are used in
- (a) Tuna long line (b) Tuna pole and line
(c) Tuna trolling (d) Tuna jigs
102. Polysaccharide present in prawn shell
- (a) Glycogen (b) Chitin
(c) Cellulose (d) Collagen
103. An index of oxidative rancidity
- (a) TBA value (b) Iodine value
(c) TMA value (d) None
104. Instrument used for analysis of antibiotic residue in fish meat
- (a) HPLC (b) LC-MS
(c) GLC (d) UV spectrophotometer

105. The name of canning originated from
(a) Peter Durhand (b) Esty and Meyer
(c) Nicholas Appert (d) Louis Pasteur
106. The packaging material with the highest moisture and gas barrier property among the following is
(a) Polyester (b) High density poly ethylene
(c) Aluminium foil (d) Polypropylene
107. Operating temperature of a plate freezer is
(a) -18°C (b) -20°C
(c) -30°C (d) -40°C
108. A universal chilling medium for fish
(a) CaCl_2 brine (b) ice
(c) Liquid nitrogen (d) ammonia
109. Error created by random sampling is simply called by Statistician as
(a) Statistical error (b) Sampling error
(c) Population error (d) Experimental error
110. We obtain biased sample when we use
(a) Random sampling (b) Accidental sampling
(c) Cluster sampling (d) Any other
111. The smooth, bell shaped curve has a special name
(a) Normal curve
(b) A distribution with positive skew
(c) A distribution with negative skew
(d) Any other
112. The interquartile range is the range of the middle
(a) 50% of the population (b) 70% of the population
(c) 20% of the population (d) 90% of the population
113. When we want to examine the relationship between two quantitative sets of score, we compute a
(a) Correlation coefficient (b) Regression coefficient
(c) Analysis of variance (d) Student's "t" test

114. The first Krishi Vigyan Kendra was established under
- (a) Assam Agricultural University
 - (b) Tamil Nadu Agricultural University
 - (c) Rajendra Agricultural University
 - (d) Bidhan Chandra Krishi Vidyalaya
115. Method demonstration is
- (a) Mass approach
 - (b) Individual approach
 - (c) Group approach
 - (d) Any other
116. Social Change involves alteration
- (a) in Both Structure and function of a Social System
 - (b) Only in Structure
 - (c) Only in Function
 - (d) Any other
117. The first step in Fishery Extension Programme Planning is
- (a) Collection of Facts
 - (b) Implementation of the programme
 - (c) Monitoring of the programme
 - (d) Evaluation of the programme
118. The loss or decline in value of an asset due to usages, wear and tear and obsolescence is called as
- (a) Depreciation cost
 - (b) Recurring cost
 - (c) Fixed cost
 - (d) Variable cost
119. The most profitable marketing channel for fish producer is
- (a) Producer to consumer
 - (b) Producer to retailer to consumer
 - (c) Producer to wholesaler to retailer to consumer
 - (d) Any other
120. The slide projector is based on the principle of
- (a) Direct projection
 - (b) Indirect projection
 - (c) Reflected projection
 - (d) Any other

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