

023/2023

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. With regard to Tuna resources MSY of around one lakh tones is available from the area of :
(A) Around the Lakshadweep (B) Around the Andaman
(C) Along the Coromandel Coast (D) Along the Malabar Coast
2. Which fish will eat the bioluminescence bacteria (*Photobactor sp*) and store it in light organ around the esophagus for the purpose of emits the light during the night hours to attract pray?
(A) Sun fish (B) Angler fish
(C) Silver bellies (D) Soles
3. World most expensive Caviar is produced from :
(A) *Huso huso* (B) *Ephinephalus lanciolatus*
(C) *Acanthurus blochii* (D) *Paracanthurus hepatus*
4. What is the FAO area code for Eastern Indian Ocean?
(A) FAO area 51 (B) FAO area 47
(C) FAO area 61 (D) FAO area 57
5. The method used to analysis of length frequency data is :
(A) Integrated method (B) Petersen methods
(C) Model class progression analysis (D) All the above
6. In Y/R recruit model developed by Beverton and Holt (1957) age at first capture denoted by :
(A) t_b (B) tr
(C) t_0 (D) L_r
7. Devicolam (cold water lake) is located in the state of :
(A) Tamil Nadu (B) Kerala
(C) Maharastra (D) Uttaranchal

A

3

[P.T.O.]

8. The evil effects of damming of rivers on fisheries were first reported by :
- (A) V.G. Jhingran (B) Alikunhi
(C) Sir Francis Day (D) M.G.K. Menon
9. The first fish which is tagged in India to study migration pattern by Jhingran and Patro at Chilika Lake :
- (A) Mullet (B) Milk fish
(C) Sea bass (D) Irrawaddy dolphin
10. Select the deep-sea shrimps from the followings :
- (A) *Palaemon* (B) *Hippolismata*
(C) *Solenocera* (D) None of the above
11. Transducer produce the sound vibration by ceramic discs using electricity is :
- (A) C.R.T. (B) Magneto - striction
(C) Piezo-electric (D) Circular disc stylus
12. Fish death occurs due to nervous imbalance :
- (A) Electro necrosis (B) Electrocutation
(C) Electrolysis (D) Frightening effect
13. The line attached to the head and foot rope of the trawl net in which webbing is mounted to give additional strength by transfer the stress :
- (A) Breast line (B) Side line
(C) Bridle line (D) Bloch line
14. Cut intermingling of bar cut and point alternatively will result in :
- (A) 45° angle (B) More than 45° angle
(C) Less than 45° angle (D) 90° angle
15. Preservative "Kutch" is extracted from :
- (A) *Terminalia spp* (B) *Diosphynos spp*
(C) *Tamarindus indica* (D) All the above
16. Catamaran of Andhra Pradesh is locally known as :
- (A) Oodom (B) Teppalu
(C) Beputhoni (D) Dingi

17. Select the water borne type wood preservative :
- (A) Creosote coal tar (B) Copper naphthenate
(C) Tributyltin oxide (D) Chromated zinc chloride
18. The first steel ship was built in the year :
- (A) 1878 (B) 1898
(C) 1988 (D) 1978
19. The plan shows the outline of the water lines, which are drawn parallel to the base lines :
- (A) Profile plan (B) Sectional plan
(C) Half breadth plan (D) Cross sectional plan
20. Select the Kort nozzle propeller :
- (A) Contra rotating propeller (B) Ducted propeller
(C) Azipod propulsion (D) Voith propeller
21. All the standard meridians are apart from each other by :
- (A) 10° (B) 15°
(C) 5° (D) 60°
22. A fix taken by bearings of single object over a period of time :
- (A) Running fix (B) Simultaneous fix
(C) Positioning (D) Dead reckoning
23. The device used to show the GST and for identifying the longitudes is :
- (A) Aneroid barometer (B) Gyrocompass
(C) Sextants (D) Chronometer
24. Life jacket should have a capacity to withstand about 24 hrs at minimum weight of :
- (A) 5.5 kg (B) 6.5 kg
(C) 7.5 kg (D) 8.5 kg
25. Trawling vessel should show following shapes during day time trawling :
- (A) 2 cones with both the apex looking top
(B) 2 cones with apex together
(C) 2 cones with both the apex looking bottom
(D) 2 cones with opposite apex

26. Copper containing proteins found in the blood of crustaceans like shrimp, crab are :
- (A) Plastocyanins (B) Hemocyanins
(C) Azurin (D) Myosin
27. Which of the following seafood is having high glycogen content?
- (A) Live fish (B) Shrimp
(C) Molluscs (D) Crab
28. Which type of bacteria is more sensitive to irradiation?
- (A) Salmonella (B) Shiegella
(C) Vibrio bacteria (D) Staphylococci
29. Freezer used for producing frozen block product :
- (A) Liquid nitrogen freezer (B) Individual quick freezer
(C) Plate freezer (D) Cryogenic freezer
30. The formation of dry impervious layer on the surface of fish preventing the diffusion of water is called :
- (A) Case hardening (B) Shrinkage
(C) Denaturation (D) Rehydration
31. Thawing in a steam injected vacuum chamber comes under :
- (A) Conductive thawing method (B) Non-conductive thawing method
(C) Both (A) and (B) (D) Radiated thawing method
32. Clinoptiolite is used in live fish transport medium for the purpose of :
- (A) Reducing CO₂ level
(B) Reducing concentration of ammonia
(C) Increasing O₂ level
(D) Decreasing the temperature of medium
33. Consider the following statements :
- Ascertain (A) : In canning process, after filling the material, exhausting must be done
Reason (R) : To prevent the oxidation of fat and consequent deterioration
- Now select your answer according to the coding scheme given below
- (A) Both (A) and (R) are true (R) is the correct explanation of (A)
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false and (R) is true

34. _____ method used for transportation of Ornamental fish.
- (A) Tank method (B) Plastic bag method
(C) Waterless method (D) Oxygenated container
35. Toxicity in food caused by packaging materials are usually :
- (A) Migration of toxic substances (B) Due to polymerisation reaction
(C) Long term exposure (D) Carcinogenicity
36. *Staphylococcus aureus* are partially eliminated at freezing temperature of :
- (A) -40°C (B) -18°C
(C) -25°C (D) -180°C
37. _____ is a bacteria responsible for spoilage in canning of fishery products.
- (A) *L. monocytogenes* (B) *C. botulinum*
(C) *E. coli* (D) *S. aureus*
38. In plant process has responsibility to oversee and ensure specification of progress :
- (A) Quality assurance (B) Quality Inspection
(C) Quality verification (D) Process control
39. Food safety control system ensures all unit operations of a process are so controlled to preclude any health hazard is known as :
- (A) EIA (B) CCP
(C) HACCP (D) BAP
40. _____ literally means degree or grade of excellence of thing/distinctive attribute/characteristic trait.
- (A) Quality (B) Standards
(C) Management (D) Hygiene
41. Which of the following practices are in agreement with the principles of organic aquaculture?
- (i) Conservation of soil
(ii) Avoidance of toxic substances with negative impact on ecosystem in feeds
(iii) Avoidance of antibiotics in treatment of diseases
- (A) (i) only (B) (ii) and (iii) only
(C) None of the above (D) All the above

42. 'Aqua husbandry' finds its earliest mention in 'Treatise on Fish Culture' (in Chinese) written by :
- (A) Si Wen Ming (B) Chow Mit
(C) Fan Li (D) Hsu Kwang
43. Culture of blue mussel (*Mytilus* sp.) on rows of branches of trees or wooden poles set in mud, perpendicular to the shore :
- (A) Raft Culture System (B) Rope Culture System
(C) Bouchot Culture System (D) None of the above
44. Integrated Multi Trophic Aquaculture (IMTA) is an ecosystem based approach for addressing the issue of waste generated by aquaculture. Which of the following statement is true for IMTA?
- (A) Carnivorous fishes can be grown in IMTA
(B) Formulated feeds are not used in IMTA
(C) Molluscs cannot be grown in IMTA
(D) None of the above
45. Passive Integrated Transponder (PIT) tags have become a popular tool in selective breeding of fishes. Which of the following statements is true about PIT tags?
- (A) They have battery powered microchips
(B) They can be read with mobile phones
(C) Inserted into muscle or body cavity
(D) None of the above
46. Choose the right option from the following statements about giant freshwater prawn, *Macrobrachium rosenbergii*, larvae :
- (i) They swim upside down
(ii) They are reared at a salinity of 12 ppt
(iii) They are commonly fed with Brine Shrimp Nauplii and egg custard in hatcheries
(iv) There are 11 zoeal stages in the larval phase
- (A) (i) is not true (B) (iv) is not true
(C) All statements are false (D) All statements are true

47. Choose the species for which the following statements are true :
- (i) Larvae are fed with rotifers followed by artemia nauplii during the hatchery phase
 - (ii) Larvae are cannibalistic
 - (iii) Regular size grading is done during the larval phase to remove 'shooters'
- (A) *Etroplus suratensis* (B) *Chanos chanos*
 (C) *Mugil cephalus* (D) *Lates calcarifer*
48. Stocking material for *Penaeus vannamei* culture in India is fully dependent on :
- (A) Specific pathogen free broodstock
 - (B) Specific pathogen resistant broodstock
 - (C) Specific pathogen tolerant broodstock
 - (D) All the above
49. Which of the following carps prefers to feed on detritus?
- (A) *Ctenopharyngodon idella* (B) *Labeo catla*
 (C) *Hypophthalmichthys molitrix* (D) *Cirrhinus cirrhosus*
50. An intensive aquaculture system that uses bacteria, algae, or protozoa held together in a matrix along with particulate organic matter for the maintenance of water quality, waste recycling and disease prevention :
- (A) RAS Technology (B) Aquaponics Technology
 (C) Biofloc Technology (D) Bioremediation Technology
51. Which among the following fishes shows these changes during breeding season?
- (i) Males with tubercles on head, operculum and pectoral fins
 - (ii) Bulged belly in female
 - (iii) Round and protruded genital opening in females
- (A) *Pterophyllum scalare* (B) *Etroplus maculatus*
 (C) *Betta splendens* (D) *Carassius auratus*

52. An aquarium fish of South American origin that can withstand low dissolved oxygen levels, with no food value and predation pressure, presently reported from the natural waters of many Indian states :
- (A) *Pterigoplichthys spp.* (B) *Poecilia spp.*
(C) *Ictalurus spp.* (D) *Gambusia spp.*
53. Which of the categories listed below are not permitted for import as per DAHD's sanitary protocol for import of ornamental fishes?
- (i) Genetically modified varieties
(ii) An invasive species with deleterious impacts
(iii) A known vector or carrier of pathogens
- (A) (ii) and (iii) only (B) (iii) only
(C) All the above (D) None of the above
54. Ovoviviparous fishes give birth to young ones. Which of the following statements are true about live bearers?
- (i) Anal fin modified to gonopodium in males
(ii) Internal fertilization
(iii) Once mated, the sperm is stored for fertilizing multiple batches of eggs
(iv) Mothers are cannibalistic on young ones
- (A) (i), (ii) and (iii) are correct (B) (ii) and (iii) are correct
(C) (i) (ii) and (iv) are correct (D) All the statements are true
55. Green certification of freshwater ornamental fishes is an assurance that they have been caught/produced/reared in a manner that ensures social and environmental sustainability. Which is the nodal agency for implementation of Green Certification and Green Seal Labelling in India?
- (A) Export Inspection Agency
(B) Marine Products Export Development Authority
(C) Coastal Aquaculture Authority
(D) National Fisheries Development Board

56. Low input sustainable aquaculture system that integrates mangrove tree culture with brackish water aquaculture :
- (A) Silviculture (B) Silvofisheries
(C) Sericulture (D) None of the above
57. The method by which fish germplasm resources are conserved in their natural habitat :
- (A) Cryopreservation (B) Exotic Introductions
(C) *Ex-situ* conservation (D) None of the above
58. Which of the following statements can be related to ocean acidification?
- (i) Corals experience reduced calcification
(ii) Oceans absorb anthropogenic CO₂ from atmosphere
(iii) pH of oceans reduce due to increase in H⁺ ion concentration in seawater
- (A) (i) and (iii) only (B) (ii) only
(C) (i) and (ii) only (D) All the above
59. The air is 78% nitrogen, why is then nitrogen a limiting factor in marine primary productivity?
- (A) Marine plants cannot use atmospheric nitrogen
(B) Role of nitrogen fixing bacteria is limited in the oceans
(C) Nitrate runoff from soil is utilized in the coastal waters
(D) All the above ((A), (B) and (C))
60. Part of the photic zone of the ocean where animals can see but there is insufficient light for productive photosynthesis :
- (A) Disphotic Zone (B) Aphotic Zone
(C) Euphotic Zone (D) None of the above
61. The smallest virus based on the relative molecular mass belongs to :
- (A) Herpesviruses (B) Iridoviruses
(C) Picornaviruses (D) Rhabdoviruses

65. PCBs stands for :
- (A) Polycarbonated Biphenyls (B) Polychlorinated Butanes
(C) Polychlorinated Biphenyls (D) Polycarbonated Butanes
66. Synbiotics are nutritional supplements in the form of synergistic effect that includes the combination of :
- (A) Vaccine and probiotics (B) Antibiotics and probiotics
(C) Probiotics and antibiotics (D) Probiotics and prebiotics
67. Large-scale outbreaks of communicable disease occurring temporarily in limited areas is known as :
- (A) Sporadic diseases (B) Epidemics/Epizootics
(C) Pandemics/Panzootics (D) Endemics/Enzootics
68. Approved medicated feed especially Romet® consists of :
- (A) Oxytetracycline dihydrate and Ormetoprim
(B) Ormetoprim and Sulfadimethoxine
(C) Sulfadimethoxine and Oxytetracycline dehydrate
(D) Only oxytetracycline dihydrate
69. Which of the following is/are not an OIE listed pathogen?
- (i) Infectious spleen and kidney necrosis virus
(ii) Koi herpes virus
(iii) *Gyrodactylus salaricus*
(iv) Tilapia Lake Virus
- (A) (i) and (ii) (B) (i) only
(C) (iv) only (D) (i) and (iii)
70. The potential for gas-bubble disease in fish is due to :
- (A) High concentration of ammonia in water
(B) Super saturation of total dissolved gases in water
(C) High level of carbon monoxide gas in water
(D) Increase in partial pressure of water

71. The following are the properties of a normal curve except :

- (A) The area under the curve is unity
- (B) Mean, median and mode are equal
- (C) Skewness is not equal to zero
- (D) It's a bell shaped curve

72. Consider the following pairs :

- | | |
|-------------------|-------------------------|
| (a) Dispersion | (i) Chi square tests |
| (b) Association | (ii) Regression |
| (c) Prediction | (iii) t-tests |
| (d) Compare means | (iv) Standard deviation |

Which of the given pairs below are correctly matched?

- | | |
|--|--|
| (A) (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii) | (B) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv) |
| (C) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii) | (D) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii) |

73. If P-value of a test is 0.07, which of the following is true?

- | | |
|------------------|-------------------------|
| (A) Reject H_0 | (B) Do not reject H_0 |
| (C) Accept H_1 | (D) Do not reject H_1 |

74. With reference to the relationship between variance and standard deviation, consider the following statements :

- (a) Variance and standard deviation are not related.
- (b) Variance is equal to square of the standard deviation.
- (c) Variance is equal to standard deviation.
- (d) Variance is less than the standard deviation.

Which of the following statement/s is/are correct?

- | | |
|-----------------|-----------------|
| (A) (a) and (b) | (B) (b) and (c) |
| (C) (c) and (a) | (D) (b) only |

75. In regression analysis, the variable that is being predicted is :

- | | |
|-------------------------------|---------------------|
| (A) The independent variables | (B) Random variable |
| (C) The dependent variables | (D) None of these |

76. In Poisson distribution mean and variance are :

- | | |
|-----------|-------------------|
| (A) Equal | (B) 1 |
| (C) 0 | (D) None of these |

77. In a distribution, as the sample size increases what happens to the standard error :
- (A) Increases (B) Decreases
(C) Not defined (D) Not affected
78. The purpose of hypotheses testing is to make a judgment about the difference between :
- (A) Type I and type II error
(B) Null and alternative hypotheses
(C) Sample statistic and population parameter
(D) One tailed and two tailed test
79. When the correlation coefficient is close to one?
- (A) There is no relationship between the two variables
(B) There is a strong linear relationship between the two variables
(C) It is impossible to tell if there is a relationship between the two variables
(D) The slope of the regression line will be close to one
80. Statement 1 : t test and F test are non-parametric tests.
Statement 2 : t test is used for comparison between two groups whereas F test is used for comparison between more than two groups.
- In this context of the above two statement, which of the following codes is correct :
- (A) Both the statement 1 and 2 are correct
(B) Both the statement 1 and 2 are incorrect
(C) Statement 1 is correct and 2 is incorrect
(D) Statement 1 is incorrect and 2 is correct
81. What Latin root does the word “sociology” come from?
- (A) Sociedade (B) Societus
(C) Societate (D) Sosaiete

82. Any extension programme includes five key phases that must be completed sequentially. Choose the correct sequence :
- (A) Analysing the situation, Deciding objectives, Teaching, Evaluation and Reconsideration
 - (B) Deciding objectives, Analysing the situation, Teaching, Evaluation and Reconsideration
 - (C) Analysing the situation, Teaching, Deciding objectives, Evaluation and Reconsideration
 - (D) Teaching, Deciding objectives, Analysing the situation, Evaluation and Reconsideration
83. This diagram represents individuals or institutions in the village whose size indicates their importance in terms of decision-making :
- (A) Map diagram
 - (B) Flow diagram
 - (C) Venn diagram
 - (D) Routine diagram
84. It refers to an idea or practice that a person or other unit of adoption perceives as new :
- (A) Innovator
 - (B) Technology
 - (C) Information Technology
 - (D) Innovation
85. The extension methods are classified into three categories based on use. Choose the correct one :
- (A) Seminar, Conference and Symposium
 - (B) Individual, group and mass
 - (C) Radio, Television, Newspapers
 - (D) Telephone, Personal Letters, Farm and Home Visits
86. Which one of the following is considered the permanent set-up for extension machinery in our country?
- (A) Community Development Programme
 - (B) Grow More Food Campaign
 - (C) National Extension Service
 - (D) National Rural Employment Programme
87. It is described as the condition or environment in which all the elements necessary for promoting learning are present :
- (A) Learning Condition
 - (B) Teaching Situation
 - (C) Learning Experience
 - (D) Learning Situation

88. Which of the following foundation established Community Agrobiodiversity Centre (CAbC) at Wayanad district of Kerala in 1997?
- (A) Reliance Foundation
 - (B) M.S. Swaminathan Research Foundation
 - (C) DHAN Foundation
 - (D) Sammaan Foundation
89. It refers to the range of methods utilized to comprehend how men and women relate to one another, their access to various resources, activities, and the constraints they encounter on them in relation to one another :
- (A) Gender mainstreaming
 - (B) Gender analysis
 - (C) Gender action plan
 - (D) Gender issues
90. Which of the following best describes the group contact method?
- (A) Circular letters
 - (B) Result demonstration
 - (C) Method demonstration
 - (D) Farm and Home Visits
91. Who is the father of Economics?
- (A) Adam Smith
 - (B) Robbins
 - (C) Marshal
 - (D) Winston
92. What is National Income?
- (A) It is the net value of all economic goods produced by a country
 - (B) It is the gross value of all economic goods produced by a country
 - (C) All income earned by a country
 - (D) All income excluding interest earned by a country
93. Fish resources that cross the boundary of one coastal state's Exclusive Economic Zone into the EEZ(s) of one or more other coastal states are referred to as :
- (A) Transboundary stocks
 - (B) Straddling stocks
 - (C) Abundant Stocks
 - (D) Highly migratory fish stocks
94. The production efficiency of fish farm refers to :
- (A) Biological performance of the farm
 - (B) Gross yield of the farm
 - (C) Net yield of the farm
 - (D) Average yield of the farm

95. A point where catch or the harvest of fish is just equal to the growth of the stock of fish, which is both sustainable and at a harvest level that generates the largest possible catch is termed as :
- (A) Maximum Economic Yield (B) Maximum Obtainable Yield
(C) Maximum Sustainable Yield (D) Maximum Marginal Yield
96. Legislation is defined as :
- (A) Act of making laws (B) Act of processing regulation
(C) Act of framing guidelines (D) Act of farming norms
97. The scope of administration can be expressed in terms of the functional elements indicated by the letters of the word "POSDCORB" in which "R" stands for what?
- (A) Recruiting (B) Reporting
(C) Redirecting (D) Reforming
98. The human resource that organises labour, land and capital to produce goods and services is termed as :
- (A) Human Capital (B) Entrepreneurship
(C) Enterprise (D) Establishment
99. It is considered as a continuous threat to the long-term sustainable management of world fisheries :
- (A) Mechanised fishing
(B) Illegal, unreported and unregulated fishing
(C) Climate change
(D) Trawl fishing
100. In reference to India's Comprehensive Marine Fisheries Policy (2004), which of the following statement(s) is/are true?
- (i) To ensure the share of benefits resulting from marine resources.
(ii) To integrate deep sea and traditional coastal fishing sectors in the management of fisheries.
(iii) To regulate fishermen's access to biological resources.
(iv) To Allow foreign fishing vessels into Indian waters
- (A) (i) and (iv) Only (B) (ii) Only
(C) (i) and (iii) Only (D) (ii) and (iii) only

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK