FISHERIES
(FINAL)

1. In multispecies fisheries, why might technical conservation measures, such as mesh size regulations, fail to prevent biological overexploitation?

   (A) Mesh size regulations are ineffective because they do not influence fishing efficiency or effort
   (B) Technical measures only work in single-species fisheries and cannot be applied in mixed-species fisheries
   (C) A single regulation may not be suitable for all species in a fishery, as different species have varying growth rates, sizes, and economic value
   (D) Bycatch is only an issue in industrial fisheries, making conservation measures unnecessary in small-scale fisheries

2. Moisture content in steam dried fish meal is

   (A) 6-10%
   (B) 15-18%
   (C) 11-14%
   (D) 20- 25%

3. Freshwater fishes have better quality than marine fishes after the same duration of storage because of absence of

   (A) TMAO
   (B) IMP
   (C) AMP
   (D) Higher fat content

4. The ice which is having very high surface area per unit mass

   (A) Block ice
   (B) Rapid block ice
   (C) Flake ice
   (D) Tube ice

5. Fish is called as frozen when the temperature of fish is reduced to

   (A) -10˚C
   (B) -20˚C
   (C) -5˚C
   (D) -8˚C

6. Increase in cell number refers to

(A) Hyperplasia
(B) Hypertrophy
(C) Metaplasia
(D) Neoplasia

7. The frozen fish is

(A) as good as dried fish
(B) as good as fresh fish
(C) near to smoked fish
(D) superior to fresh fish

8. Larvae of Brittle star is called as

(A) Ophiopluteus
(B) Echinopluteus
(C) Vitellaria
(D) Auricularia

9. The most commonly used sanitizer in fish processing plant

(A) Sodium hypochlorite
(B) Iodophores
(C) Dettol
(D) QUATs

10. The White Spot Syndrome Virus (WSSV) genome is composed of

(A) RNA
(B) Double – Stranded DNA (dsDNA)
(C) Small Interfering RNA (SiRNA)
(D) None of the above

11. The significance of correlation coefficient between length and weight in fishes is done by the test

(A) Normal
(B) t
(C) F
(D) Chi-square

12. Which of the following is the ‘smallest shark’?

(A) *Carcharodon*
(B) *Pandaka*
(C) *Mystichthys*
(D) *Squaliolus*

13. Which of the following species has a larval stage known as "elver"?

(A) Scomber spp.
(B) Anguilla spp.
(C) Mugil spp.
(D) Chimaera spp.

14. The number of degrees (^{o}F or ^{o}C) required for the TDT curve to pass through one log cycle is known as

(A) D value
(B) Fo value
(C) Z value
(D) F value

15. What fibrous structures do green mussels utilize to securely attach themselves to rocks in their marine environment?

(A) Tentacles
(B) Siphon
(C) Byssus threads
(D) Shell ridges

16. The Amino acid that is absent in vegetable protein, but present in fish is

(A) Arginine
(B) Lysine
(C) Glutamic acid
(D) Methionine

17. Which of the following is involved in blood clotting mechanism?

(A) Vitamin K
(B) Biotin
(C) Vitamin E
(D) Niacin

18. UNCLOS-I was held in Geneva, Switzerland in

(A) 1950
(B) 1952
(C) 1960
(D) 1958

19. The Indian commercial Mackerel fishery is composed of the size group

(A) 18-24cm
(B) 25-32 cm
(C) 5-10cm
(D) 10-12cm

20. Which of the following biological source serves for the extraction of the Pearl essence?

(A) Molluscan shells
(B) Sea weed
(C) Fish scales
(D) Freshwater pearls

21. Scientific name of Grey mullet is

(A) Liza parsia
(B) Mugil macrolepis
(C) Mugil cephalus
(D) Velamugil seheli

22. The ideal stocking density of carps (polyculture) in grow out pond is (in terms of fingerlings)

(A) 50000/ha
(B) 10000/ha
(C) 100000/ha
(D) 1 million/ha

23. The National Bureau of Fish Genetic Resources (NBFGR) head quarters is located at

(A) Mumbai
(B) Lucknow
(C) Cochin
(D) Bhubaneswar

24. Important application of cell line is

(A) Histology
(B) Cytology
(C) Virology
(D) Urology

25. Which of the following genera includes the largest fish species known to exist, renowned for its massive size and filter-feeding behavior?

(A) Megalodon
(B) Rhincodon
(C) Balaenoptera
(D) Leedsichthys

26. What is the function of swim bladders in fish?

(A) Food digestion
(B) Maintaining buoyancy
(C) Breathing air
(D) Absorbing nutrients

27. The area of Indian EEZ is (million Sq. Kms.)

(A) 2.02 million Sq. Kms.
(B) 2.20 million Sq. Kms.
(C) 2.15 million Sq. Kms.
(D) 0.53 million Sq. Kms.

28. Blue-green algae, also known as cyanobacteria, can sometimes produce toxins. Which of the following organisms, belonging to this group, is known for its toxic varieties?

(A) *Spirogyra*
(B) *Chlamydomonas*
(C) *Microcystis aeruginosa*
(D) *Euglena*

29. Antibodies are generally

(A) Glycoproteins
(B) Glycolipids
(C) Nucleoproteins
(D) Polysaccharides

30. Which of the following rivers belong to the West Coast river system and support commercially important fauna?

(A) Ganga and Yamuna
(B) Godavari and Krishna
(C) Narmada and Tapti
(D) Brahmaputra and Mahanadi

31. In which fishing method is the term "backing down" commonly used?

(A) Gillnetting
(B) Trawling
(C) Purse seining
(D) Traps

32. The causative agent of EMS in shrimp (*P. vannamei*) is

(A) *V. parahaemolyticus*
(B) TSV
(C) Laeme – singh virus
(D) *A. hyrophila*

33. A scientist is researching advanced fish preservation techniques. Which of the following is a non-thermal preservation method?

(A) Curing
(B) Vacuum drying
(C) High-pressure processing
(D) Brining

34. *Clarius batrachus* is commonly called

(A) Singhi
(B) Magur
(C) Butter cat fish
(D) Freshwater shark

35. Which of the following methods can be used to correct the porosity of the pond bottom?

(A) Inorganic fertilizers
(B) $KMnO_4$ (Potassium permanganate)
(C) Organic matter
(D) None of the above

36. In fish nutrition, which macronutrient primarily provides energy?

(A) Protein
(B) Carbohydrates
(C) Fats
(D) Minerals

37. The gland that helps in induced breeding of fishes is

(A) Adrenal
(B) Thyroid
(C) Thymus
(D) Pituitary

38. The primary cause of algal blooms in aquaculture ponds is

(A) High oxygen levelsz
(B) Excess nutrient input
(C) Increased fish density
(D) Low water temperature

39. Which process is used to produce fishmeal for aqua feed?

(A) Fermentation
(B) Freeze-drying
(C) Rendering
(D) Canning

40. The hormone used in fish for feminization

(A) Testosterone
(B) HCG
(C) PMS
(D) 17- β- estradiol

41. Which of the following is primarily the phytoplankton feeder?

(A) Silver carp
(B) Big head carp
(C) Grass carp
(D) Common carp

42. Which of the following is used in the preparation of traditional caviar?

(A) Fish skin
(B) Fish sperm
(C) Fish roe
(D) Fish liver

43. Who is credited with the development of tin plate technology for food preservation?

(A) Ganole
(B) Peter Durand
(C) Nicholas Appert
(D) Olson

44. Squid jigging employs the principle of

(A) Color
(B) Smell
(C) Light
(D) Electric current

45. Botulism is caused by which of the following bacteria?

(A) *Clostridium botulinum*
(B) *Clostridium perfringens*
(C) *Clostridium tetani*
(D) All *Clostridium* species

46. Low acid foods have a pH of

(A) >4.6
(B) 3.7- 4.6
(C) < 3.7
(D) 2.5- 3.7

47. Synthesis of cDNA from RNA is termed as

(A) Transformation
(B) Transduction
(C) Translation
(D) Transcription

48. Fishes possessing only maternal inheritance is known as

(A) Androgenesis
(B) Gynogenesis
(C) Oogenesis
(D) Parthenogenesis

49. The sous-vide technique of preparing fish primarily involves

(A) Cooking in a precisely controlled, low-temperature water bath
(B) Preservation and flavoring through smoke exposure
(C) Preservation by removing moisture content
(D) Cooking at extremely high temperatures for a very short time

50. Which of the following is the scientific name of the ornate spiny lobster widely cultured in Southeast Asia?

(A) *Scyllarides latus*
(B) *Panulirus ornatus*
(C) *Homarus americanus*
(D) *Panulirus argus*

51. The most commonly cited bacterial species responsible for a significant increase in histamine levels in improperly refrigerated tuna samples is

(A) *Pseudomonas*
(B) *Hafnia alvei*
(C) *Klebsiella pneumoniae*
(D) *Clostridium*

52. Which of the following is **not** an active fishing gear?

(A) Seines
(B) Dredges
(C) Electrifying gear
(D) Traps

53. Which phase of bacterial growth is extended by lowering the temperature?

(A) Log
(B) Lag
(C) Declining
(D) Stationary

54. Which term describes organisms that are adapted to thrive in environments with high salt concentrations?

(A) Xerophilic
(B) Halophilic
(C) Osmophilic
(D) Acidophilic

55. Regions with the same wind speed are often mapped to analyze wind patterns. What is this called?

(A) Isobar
(B) Isotach
(C) Heat Equator
(D) Isogonic Line

56. 'Fugu' is a delicacy in Japan prepared from which of the following?

(A) Puffers
(B) Pomfrets
(C) Mackerel
(D) Sharks

57. Which of the following is called 'Paddle Fish'?

(A) Polyodon
(B) Palaeoniscus
(C) Pangasius
(D) Polypterus

58. Hill stream loaches belong to the family

(A) Homalopteridae
(B) Cobitidae
(C) Gobidae
(D) Amblycipitidae

59. ‘Shagreen’ is derived from which language?

(A) Russian
(B) French
(C) German
(D) Japanese

60. Which of the following shows catadromous behavior?

(A) Salmon
(B) Anguilla
(C) Catostomous
(D) Gasterosteus

61. Osphronemus is the

(A) Betta
(B) Kissing gourami
(C) Giant gourami
(D) Dwarf gourami

62. 'Asphyxiation' is a term related with

(A) Harvesting
(B) Preservation
(C) Breathing
(D) Eating

63. TCBS is selective differential medium used for isolation of

(A) *Escherichia*
(B) *Salmonella*
(C) Shigella
(D) Vibrios

64. 'Gono

podium' is the characteristic of

(A) Poecilia
(B) Cynopoecilus
(C) Pterolebias
(D) Tilapia

65. As the acidity of food decreases the severity of thermal process

(A) Increases
(B) Decreases
(C) Remain unchanged
(D) None of the above

66. Magnesium ammonium phosphate hexa hydrate is the chemical formula of

(A) Struvite crystals
(B) Blue discoloration in crab
(C) Honey combing
(D) Sulphide blackening in crab

67. Which of the following statements is true regarding 'Surimi'?

(A) It refers to a traditional Japanese fish soup
(B) It is a type of deboned fish product
(C) It is a type of net specifically designed for catching tuna
(D) It is a type of bony fish known for its delicate flavor

68. The following selective medium used for isolation of *Staphylococcus aureus* from seafood is

(A) BPA
(B) BSA
(C) TCBS
(D) EMB

69. In which year was the Marine Products Export Development Authority (MPEDA) established in Kochi, Kerala?

(A) 1952
(B) 1972
(C) 1962
(D) 1982

70. Which of the following cellular organelles is primarily responsible for translating mRNA into polypeptide chains during protein synthesis?

(A) Lysosomes
(B) Endoplasmic reticulum
(C) Ribosomes
(D) Centrioles

71. Glucosamine Hydrochloride is prepared from

(A) Chitin
(B) Cuttle bone
(C) Clam shell
(D) Fish skin

72. The megalopa, a larval form with prominent eyes and claws, is a developmental stage of

(A) Lobster
(B) Crab
(C) Shrimp
(D) Squid

73. In which year was the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act enacted?

(A) 1976
(B) 1981
(C) 1985
(D) 1983

74. In a seafood processing plant, which factor is most crucial for maintaining the final product's freshness?

(A) Proper cold chain management
(B) Use of natural preservatives
(C) Packaging color and design
(D) Processing automation level

75. Which feeding category includes fish that filter plankton from water using specialized gill rakers?

(A) Predators
(B) Grazers
(C) Strainers
(D) Suckers

76. Which statement correctly describes the structure of braided netting yarn?

(A) It consists of a single continuous yarn without interwoven strands
(B) It is produced by twisting multiple strands in the S-direction to form folded yarns
(C) It is formed by interlaying strands diagonally, creating a tubular structure
(D) It is made by further twisting already twisted yarns into a compact form

77. What is a key advantage of using low water activity (aw) in fish preservation?

(A) Prevents protein denaturation
(B) Inhibits microbial growth

(C) Increases fat oxidation
(D) Enhances enzymatic activity

78. The target water activity for safe storage of dried fish is generally below

(A) 0.50
(B) 0.65
(C) 0.80
(D) 0.95

79. How do straddling stocks differ from transboundary stocks?

(A) Straddling stocks stay in the high seas, while transboundary stocks remain within EEZs
(B) Straddling stocks exist in both EEZs and high seas; transboundary stocks occur in EEZs of multiple countries
(C) Transboundary stocks are highly migratory, while straddling stocks stay localized
(D) Straddling stocks need no international management, unlike transboundary stocks

80. Which structural adaptation is most useful in identifying the feeding behaviour of a fish?

(A) Gill structure and presence of swim bladder
(B) Mouth position, shape, and presence of teeth
(C) Body shape and fin size
(D) Scales and lateral line system

81. The primary reason for using probiotics in fish farming is

(A) Enhancing coloration
(B) Improving gut health and digestion
(C) Increasing oxygen uptake
(D) All of the above

82. What is the main function of a biofilter in recirculating aquaculture systems?

(A) Remove solid waste
(B) Convert ammonia to less toxic forms
(C) Enhance fish immunity
(D) Increase water salinity

83. Which fish species is known for being anadromous, migrating from saltwater to freshwater for spawning?

(A) Tuna
(B) Salmon

(C) Eel
(D) Tilapia

84. How does the direct numbering system differ from the indirect system in yarn measurement?

(A) Direct system keeps length constant while weight varies, whereas the indirect system keeps weight constant while length varies
(B) The indirect system specifies weight in grams per 1000m, while the direct system uses hanks per pound
(C) Direct system applies only to synthetic fibers, while the indirect system applies only to natural fibers
(D) None of the above

85. Which of the following is a common method for assessing fish population abundance in marine environments?

(A) Trawling surveys
(B) Hydroacoustic surveys
(C) Mark-recapture methods
(D) All of the above

86. A major environmental concern associated with intensive fish farming is

(A) Increased biodiversity
(B) Waste accumulation and eutrophication
(C) Reduction in fish disease outbreaks
(D) Improved water quality

87. What is the term for a system where exclusive rights to fish within a specific territory are granted to individuals, communities, or organizations, allowing them to manage and benefit from the resource?

(A) Common-pool resource exploitation
(B) Open-access fishing
(C) Territorial Use Rights
(D) Individual Transferable Quotas

88. What is the term for a model that incorporates random variables to account for unexplained effects and uncertainty in predictions?

(A) Deterministic model
(B) Stochastic model
(C) Empirical model
(D) Conceptual model

89. What is the primary reason for implementing biosecurity measures in aquaculture facilities?

(A) Enhancing fish coloration
(B) Preventing disease outbreaks
(C) Increasing stocking density
(D) Reducing oxygen consumption

90. Which factor is most critical in ensuring the sustainability of fisheries?

(A) Unregulated fishing
(B) Habitat conservation
(C) Increased fishing quotas
(D) Decreasing biodiversity

91. Which of the following fish groups lack pyloric caeca?

(A) Flatfishes (Pleuronectiformes)
(B) Mackerels (Scombridae)
(C) Catfishes (Ictaluridae)
(D) Salmons (Salmonidae)

92. What is a major environmental impact of shrimp farming?

(A) Deforestation
(B) Ocean acidification
(C) Mangrove destruction
(D) Coral bleaching

93. The "tragedy of the commons" is a well-known issue in fisheries management, where individual fishers prioritize short-term gains over long-term resource sustainability. What is the fundamental reason this phenomenon occurs in open-access fisheries?

(A) Fishers lack the technological capability to control their catches, leading to uncontrolled exploitation
(B) Since fish stocks are a shared resource, individuals have little incentive to conserve them
(C) Regulations are always ineffective in controlling fishing effort, making overexploitation inevitable
(D) All of the above reasons

94. Which of the following is a PRIMARY advantage of using Recirculating Aquaculture Systems (RAS) compared to traditional aquaculture methods?

(A) Lower initial investment costs
(B) Significant reduction in water usage
(C) Increased reliance on natural weather patterns
(D) Higher susceptibility to external diseases

95. What is a significant drawback of open net-pen aquaculture?

(A) Higher operational costs
(B) Greater disease transmission risk
(C) Limited fish growth
(D) Poor water circulation

96. Which government policy is designed to promote sustainable fisheries management?

(A) Marine Protected Areas (MPAs)
(B) Increased fishing quotas
(C) Subsidies for commercial fishing
(D) Deep-sea mining incentives

97. Which of the following fins in perch contains only soft, unossified fin rays?

(A) Anterior dorsal fin
(B) Caudal fin
(C) First two rays of the anal fin
(D) Pectoral fin

98. Which is a common method for measuring fish population dynamics?

(A) Tagging and recapture studies
(B) Sonar mapping
(C) Genetic barcoding
(D) All of the above

99. The primary goal of fisheries stock assessment is

(A) Maximizing short-term profits
(B) Ensuring long-term sustainability
(C) Increasing global seafood trade
(D) Promoting wild capture fisheries

100. Which sampling method is best suited for obtaining deep, undisturbed sediment cores of over 20 meters?

(A) Gravity corer
(B) Grab sampler
(C) Piston corer
(D) Dredge

101. Which model is commonly used to estimate fish stock dynamics in a fluctuating environment?

(A) Beverton-Holt model
(B) Lotka-Volterra model
(C) Schaefer model
(D) Hardy-Weinberg equilibrium

102. What is the primary advantage of using genomic tools in fisheries management?

(A) Identification of cryptic species
(B) Enhancement of artificial breeding programs
(C) Increasing wild fish population
(D) Eliminating genetic variations

103. In the context of ecosystem-based fisheries management, what is the role of trophic cascades?

(A) Regulating predator-prey relationships
(B) Directly increasing fishery yields
(C) Eliminating invasive species
(D) Reducing fish recruitment variability

104. Which statistical method is most appropriate for assessing multi-species interactions in an ecosystem?

(A) Principal Component Analysis (PCA)
(B) Bayesian hierarchical models
(C) Pearson correlation
(D) All of the above

105. Which ecological principle explains the stability of marine food webs in response to fishing pressures?

(A) Trophic redundancy
(B) Niche differentiation
(C) Competitive exclusion principle
(D) Island biogeography theory

106. What is the most common impact of overfishing on age structure within a fish population?

(A) Increased proportion of older individuals
(B) Shift towards smaller, younger fish
(C) Enhanced reproductive success
(D) Uniform growth across all age classes

107. Which of the following statements correctly describes the rights of foreign vessels in an Exclusive Economic Zone (EEZ)?

(A) Foreign military and research vessels require permission from the coastal state to enter the EEZ
(B) Foreign vessels have freedom of navigation and overflight but must respect the right of coastal state over resource management
(C) Foreign commercial vessels can extract resources freely as long as they do not exceed sustainable limits
(D) The coastal state has the right to regulate all foreign vessel movements, just as in its territorial waters

108. Which environmental parameter is crucial for larval fish survival in marine ecosystems?

(A) Dissolved inorganic nitrogen levels
(B) Turbidity
(C) Chlorophyll-a concentration
(D) Light penetration and prey availability

109. What is the primary use of Individual Transferable Quotas (ITQs) in fisheries management?

(A) Allocating catch limits to individual fishers
(B) Reducing competition in global seafood markets
(C) Increasing vessel efficiency
(D) Enhancing aquaculture production

110. How does using electronic tagging technologies improve fisheries research?

(A) Helps track migration patterns and habitat use
(B) Increases fish survival rates
(C) Reduces genetic diversity
(D) Improved IUU fishing

111. What is a key consequence of high fishing pressure on high trophic level species on predator-prey dynamics?

(A) Increased prey population stability
(B) Reduced predator populations thus altering ecosystem balance
(C) Strengthening of top-down control
(D) All of the above

112. The dugong is a vulnerable marine mammal with a fragmented population. Despite conservation efforts, many populations are declining. Which of the following factors most significantly increases the risk of extinction for dugongs?

(A) Their ability to migrate long distances
(B) Their reliance on seagrass habitats
(C) Their rapid reproductive cycle
(D) Their ability to adapt to various marine habitats

113. Which hormone shift triggers germinal vesicle breakdown (GVBD) and final oocyte maturation?

(A) Estradiol (E2) → steroids (MIS) like 17α, 20β-diOH progesterone
(B) Progesterone → Estradiol (E2)
(C) GtH inhibition → Prostaglandin (PG)
(D) GVBD occurs independently of hormonal regulation

114. Which category of benthic organisms includes those with a size range between 60 µm and 500 µm?

(A) Macrobenthos
(B) Microbenthos
(C) Meiobenthos
(D) Nanobenthos

115. A polymer sample is subjected to a flame test, and the following observations are made regarding its residue: Hard, blackish, crumbly, irregular substance and no bead formation. Based on this residue characteristic, which of the following polymers is most likely the tested material?

(A) PA 6.6
(B) PP
(C) PVC
(D) Saran

116. Tubifex worms are a commonly used live food in aquariums, but their use requires caution. Based on the information provided, what is the primary concern when feeding Tubifex worms to fish?

(A) They live in polluted stretches of rivers and streams, and thus potential carriers of disease-causing organisms
(B) They are difficult to culture successfully
(C) They should be rinsed gently in cold running tap water for several hours before feeding to fish
(D) They should only be used as a staple diet for adult breeding fish to maintain their health

117. The Polymerase Chain Reaction (PCR) is an essential technique widely used for genetic analysis. What is its primary function?

(A) Mass production of antibiotics for pharmaceutical applications
(B) Enhancement of bacterial transformation efficiency in recombinant DNA technology
(C) Facilitation of rapid protein synthesis in cellular processes
(D) Amplification of specific DNA sequences, enabling genetic studies and diagnostics

118. What is the navigation method called where a ship's position is estimated based on previously known positions, course, and speed, without considering external factors like wind and current?

(A) Celestial Navigation
(B) GPS Navigation
(C) Dead Reckoning
(D) Visual Piloting

119. Why is urea applied to shrimp ponds before stocking, and what is the recommended application rate?

(A) Urea helps increase the salinity of the water, making the pond environment more suitable for shrimp growth, and should be applied at 10-20 kg/ha
(B) Urea is used to disinfect the pond water before stocking shrimp and should be applied at 200-300 kg/ha
(C) Urea is used to facilitate the growth of diatoms, which serve as food for shrimp post-larvae, and should be applied at 50-100 kg/ha
(D) Urea is added to stabilize the pond's pH and should be applied at 500-600 kg/ha

120. What is the scientific study of chemical processes involving metabolites, focusing on the unique chemical fingerprints left by cellular activities?

(A) Proteomics
(B) Metagenomics
(C) Metabolomics
(D) Transcriptomics

121. Eyestalk ablation is commonly performed in shrimp aquaculture to induce ovarian maturation. However, the practice has multiple physiological consequences. Based on the information, which of the following is an unintended negative effect of eyestalk ablation?

(A) It increases the number of eggs per spawning, significantly improving reproductive success
(B) It shortens the moult cycle but increases mortality rates by up to three times
(C) It enhances egg quality by ensuring more robust and disease-resistant offspring
(D) It permanently impairs vision and prevents eyestalk regeneration in all shrimp species

122. What is the name of the first genetically engineered fish sold commercially, introduced to the U.S. market in 2003?

(A) AquAdvantage Salmon
(B) Glofish
(C) Biolume Fish
(D) Luminous Guppy

123. Which of the following statements correctly describes a characteristic of mitochondrial DNA (mtDNA) in fish?

(A) It contains introns and repetitive sequences like nuclear DNA
(B) It is inherited maternally in almost all animals, with few exceptions
(C) It undergoes meiosis before replication, ensuring genetic recombination
(D) It contains only protein-coding genes and lacks ribosomal or transfer RNA genes

124. Who developed the Polymerase Chain Reaction (PCR) technique in the 1980s, revolutionizing DNA cloning?

(A) Frederick Sanger
(B) Kary Mullis
(C) James Watson
(D) Rosalind Franklin

125. What is the term for the spiral pattern formed by ocean currents due to the Coriolis effect, where each deeper layer moves more slowly and at an angle to the one above?

(A) Pycnocline effect
(B) Coriolis Drift
(C) Thermohaline Circulation
(D) Ekman Spiral

126. Fyke nets, commonly used in passive fishing techniques, are best classified under which category based on their structural design and method of capture?

(A) Entangling nets like gillnets
(B) A variant of trammel nets
(C) Enclosures designed to trap fish
(D) A circular net with large meshes

127. In maritime navigation, the term "Port side" refers to which of the following?

(A) The side of the ship that is always exposed to the dock when berthed
(B) The right-hand side of the vessel when facing forward, opposite to the starboard side
(C) The left-hand side of the vessel when facing forward, opposite to the starboard side
(D) The section of the hull that intersects with the waterline at the stern

128. After death, ATP depletion leads to rigor mortis in fish. What biochemical process drives this change?

(A) Anaerobic glycogen breakdown produces lactic acid, lowering pH and depleting ATP
(B) Aerobic respiration continues postmortem, delaying rigor mortis until glycogen is fully depleted.
(C) Fat oxidation sustains ATP production, preventing rigor mortis
(D) Carbon dioxide buildup postmortem hydrolyzes ATP, stopping rigor mortis

129. In the context of the FAO Code of Conduct, Total Allowable Catch (TAC) is a critical tool for sustainable fisheries management. Given that an indigenous fishing community traditionally relies on a stock with a Maximum Sustainable Yield (MSY) of 25,000 metric tons per year, and scientific assessments show a 20% decline in stock biomass due to overfishing, what would be the most appropriate TAC recommendation to align with the Code's sustainability principles?

(A) Maintain TAC at 25,000 metric tons to support indigenous food security and livelihoods
(B) Reduce TAC proportionally to 20,000 metric tons to allow for stock recovery while sustaining local fisheries
(C) Impose a temporary moratorium on all fishing activities until stock biomass recovers to historical MSY levels
(D) Allow unrestricted fishing for indigenous fishers while restricting commercial fishing to compensate for biomass loss

130. What is a primary responsibility of a flag state under the Port State Measures Agreement (PSMA) when one of its vessels is reported for suspected IUU fishing?

(A) The flag state must immediately impose sanctions on the vessel
(B) The flag state must notify all regional fisheries management organizations (RFMOs)
(C) The flag state must investigate the report and take appropriate enforcement action if there is sufficient evidence
(D) The flag state must allow the vessel to operate until a court finds it guilty of IUU fishing

131. In the context of port state inspections of fishing vessels, why the use of vessel monitoring systems (VMS) is considered an essential component?

(A) VMS helps determine if a vessel has complied with port entry regulations before arrival
(B) VMS replaces the need for onboard inspections by port state authorities
(C) VMS is used primarily for tax and customs verification of fishery products
(D) VMS data provides historical tracking but is not admissible as legal evidence in fisheries enforcement

132. Transshipment of tuna and tuna-like species is strictly regulated under IOTC guidelines. What key requirement must be met before transshipment is approved in an RFMO-regulated area?

(A) The transshipment must be conducted exclusively in high-seas zones to avoid jurisdictional disputes
(B) The vessel must notify the IOTC Secretariat, provide documentation, and be monitored by an authorized observer
(C) The vessel must be on the IUU vessel list to qualify for transshipment
(D) Only vessels registered under non-coastal states are permitted to transship in IOTC waters

133. Which caudal fin type is LEAST likely to be found in a species that relies on rapid acceleration and short bursts of speed?

(A) Heterocercal
(B) Homocercal
(C) Diphycercal
(D) Hypocercal

134. Which of the following fish is LEAST likely to rely on swim bladder function for buoyancy regulation?

(A) Otolithes
(B) Protopterus
(C) Clarias batrachus
(D) Mola mola

135. A fish species found in deep-sea environments has an elongated body, reduced or absent pelvic fins, and a caudal fin adapted for slow and energy-efficient swimming. Based on these characteristics, what type of caudal fin is this fish MOST LIKELY to possess?

(A) Gephyroceral
(B) Heterocercal
(C) Isocercal
(D) Hypocercal

136. Which of the following is a mandatory requirement for vessels operating under the IOTC Compliance framework?

(A) Obtaining a special permit only when targeting high-value tuna species
(B) Carrying an operational Vessel Monitoring System (VMS) that transmits location data at specified intervals
(C) Reporting catch data voluntarily, with no requirement for independent verification
(D) Using onboard observers only when fishing in territorial waters

137. In environments where environmental conditions fluctuate frequently—such as temperature, water levels, and oxygen content—which of the following reproductive strategies is most likely to provide a fish species with an adaptive advantage in terms of reproductive efficiency and the ability to cope with such environmental instability?

(A) Egg scatterers
(B) Egg buriers
(C) Bubble nest builders
(D) Egg depositors

138. Freshwater species display a higher growth rate when fed Moina rather than Daphnia. What is the **most likely** explanation for this observation?

(A) Moina has a softer exoskeleton and higher digestibility, making it more suitable for small-mouthed fish larvae
(B) Daphnia has a higher protein content but lacks essential fatty acids required for optimal larval development
(C) Moina exhibits erratic swimming behaviour, which stimulates active predation and enhances feeding efficiency in larval fish
(D) Daphnia is more resistant to gut enzymatic digestion, leading to lower assimilation efficiency compared to Moina

139. Which of the following feeding strategies would be least effective for a marine shrimp hatchery aiming to optimize larval survival and growth?

(A) Providing a diet rich in Artemia nauplii supplemented with Diatoms to enhance larval nutrition
(B) Feeding Rotifers and Copepods in early larval stages, followed by a transition to Artemia for post-larvae
(C) Relying exclusively on Daphnia as the primary feed, given its high protein content and freshwater origin
(D) Using Isochrysis as the first feed and gradually introducing Artemia to mimic wild feeding conditions

140. Which of the following bacteria are associated with gastric ulcers?

(A) Proteus
(B) Helicobacter pylori
(C) Schewanella putrefasciens
(D) Hafnia alvei

141. A seafood processing facility using high-salt brining observes microbial contamination despite salt concentrations exceeding 15%. Which of the following organisms is most likely responsible for the contamination?

(A) Achromobacter
(B) Clostridium botulinum
(C) Halobacterium
(D) Pseudomonas

142. Canned fish can showed bloating and gas formation after extended storage, despite being heat-processed. Which of the following microorganisms is the most likely cause of this spoilage?

(A) Pseudomonas
(B) Clostridium butyricum
(C) Streptococcus
(D) Listeria

143. Different freezing techniques are used to minimize ice crystal formation in high-value seafood. Which of the following methods would be most effective for achieving rapid freezing while maintaining product texture?

(A) Tunnel freezing at -18 to -34°C
(B) IQF (Individually Quick Frozen) at -40°C
(C) Super chilling at 0 to -4°C
(D) Cold store at -18°C

144. ‘Fishes of the Laccadive Archipelago’ is written by

(A) J L S Smith
(B) Jones S and M Kumaran
(C) Ian Stafford Ross Munro
(D) Vishwa Gopal Jhingran

145. Which country has the largest market for ornamental fish?

(A) Singapore
(B) Japan
(C) USA
(D) Malaysia

146. In the transportation of fresh fish over long distances without active refrigeration, eutectic crates are often used to maintain optimal temperature stability. Which of the following best explains how these crates achieve this?

(A) They utilize phase change materials that absorb and release latent heat at a fixed eutectic point
(B) They rely on continuous air circulation with ice packets within the crate to prevent temperature fluctuations
(C) They use vacuum insulation to completely block heat transfer from the surroundings
(D) They are designed with built-in cooling fans powered by onboard batteries

147. What biochemical change is most associated with the loss of fresh fish flavor and the onset of spoilage?

(A) Rise in IMP levels, indicating fish is in an advanced stage of spoilage
(B) Accumulation of inosine, enhancing the fresh taste of fish
(C) Increase in hypoxanthine, contributing to bitter off-Flavors
(D) Reduction in K-value, signaling deterioration in fish quality

148. Depensation in fish populations can lead to severe consequences for stock recovery. Which of the following best explains why depensation is a critical concern in fisheries management?

(A) At low population sizes, individual fish produce more offspring to compensate for declining numbers, preventing stock collapse
(B) When population density decreases below a certain threshold, factors such as reduced mating encounters, increased predation, and Allee effects lead to further declines in recruitment, increasing the risk of extinction
(C) Depensation occurs when recruitment remains constant regardless of population size, meaning fish stocks are resilient to overfishing
(D) Depensation enhances genetic diversity in fish populations by selecting for individuals with higher reproductive success, improving long-term stock stability

149. Based on recent assessments using FAO databases and Bayesian modelling, what is the estimated global annual discard volume in marine and estuarine capture fisheries?

(A) 5.2 million tonnes
(B) 9.1 million tonnes
(C) 15.4 million tonnes
(D) 20.8 million tonnes

150. Based on estimates of ecosystem effects for different fishing methods, which of the following has the most damaging overall impact on the ecosystem, as indicated by the lowest ecosystem effect index?

(A) Purse seine
(B) Pelagic trawl
(C) Handlining
(D) Trammel net

ANSWER KEY									
Subject Name:		**FISHERIES**							
SI No.	**Key**	**SI No.**	**Key**	**SI No.**	**Key**	**SI No.**	**Key**	**SI No.**	**Key**
1	C	31	C	61	C	91	C	121	B
2	A	32	A	62	C	92	C	122	B
3	A	33	C	63	D	93	B	123	B
4	C	34	B	64	A	94	B	124	B
5	B	35	C	65	A	95	B	125	D
6	A	36	C	66	A	96	A	126	C
7	B	37	D	67	B	97	B	127	C
8	A	38	B	68	A	98	D	128	A
9	A	39	C	69	B	99	B	129	B
10	B	40	D	70	C	100	C	130	C
11	B	41	A	71	A	101	C	131	A
12	D	42	C	72	B	102	A	132	B
13	B	43	B	73	B	103	A	133	C
14	C	44	C	74	A	104	B	134	D
15	C	45	A	75	C	105	A	135	C
16	B	46	A	76	C	106	B	136	B
17	A	47	D	77	B	107	B	137	A
18	D	48	B	78	B	108	D	138	A
19	A	49	A	79	B	109	A	139	C
20	C	50	B	80	B	110	A	140	B
21	C	51	B	81	B	111	B	141	C
22	A	52	D	82	B	112	B	142	B
23	B	53	B	83	B	113	A	143	B
24	C	54	B	84	A	114	C	144	B
25	B	55	B	85	D	115	C	145	C
26	B	56	A	86	B	116	A	146	A
27	A	57	A	87	C	117	D	147	C
28	C	58	A	88	B	118	C	148	B
29	A	59	B	89	B	119	C	149	B
30	C	60	B	90	B	120	C	150	D