Code No.	T – 2110

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2024

CSS

APPLIED AQUACULTURE

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours **Max. Marks : 100**

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. What are the two main types of freshwater environments?
   A. Lentic and lotic
   B. Marine and estuarine
   C. Brackish and freshwater
   D. Wetlands and rivers

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2. What is the primary threat to freshwater systems?

   A. Deforestation
   B. Pollution
   C. Climate change
   D. Urbanization

3. Which concept emphasises the uninterrupted flow of rivers for ecological health?

   A. Freshwater Continuum Concept
   B. River Ecosystem Continuity
   C. Watershed Management
   D. Environmental Flow

4. What is the primary cause of eutrophication in lakes and reservoirs?
   A. Oil spills
   B. Sewage discharge
   C. Soil erosion
   D. Industrial runoff

5. What is the main focus of restoration ecology in freshwater ecosystems?
   A. Elimination of invasive species
   B. Enhancement of recreational activities
   C. Rehabilitation of degraded habitats
   D. Introduction of exotic species

6. Which environmental factor significantly influences intertidal community zonation?
   A. Atmospheric pressure
   B. Ocean depth
   C. Temperature
   D. Tide cycles

7. Plankton productivity is primarily influenced by which factor?
   A. Temperature
   B. Ocean salinity
   C. Wind speed
   D. Day length

8. What is the main purpose of monitoring harmful algal blooms?
   A. Enhancing fishery production
   B. Preventing ocean acidification
   C. Protecting human health
   D. Promoting coral reef growth

9. Which ecosystem is characterized by the mixture of freshwater and saltwater?
   A. Estuary
   B. Wetland
   C. Lagoon
   D. Marsh

10. What is the primary function of mangrove ecosystems?
   A. Coastal erosion control
   B. Biodiversity hotspots
   C. Carbon sequestration
   D. Aquaculture production

11. Which parameter is used to measure the N: P ratio in seawater?
   A. Nitrate: Phosphate ratio
   B. Nitrogen: Potassium ratio
   C. Nitrogen: Phosphorous ratio
   D. Nickel: Phosphate ratio

12. What is the main concern regarding marine pollution caused by antifouling paints?
    A. Thermal pollution
    B. Heavy metal contamination
    C. Oil spills
    D. Plastic accumulation

13. Which factor can contribute to the formation of harmful algal blooms?
    A. Reduced nutrient levels
    B. Decreased water temperature
    C. Unusual climatic conditions
    D. Increased predator abundance

14. What is the primary role of genetically modified microbes in marine biotechnology?
    A. Pollution prevention
    B. Energy production
    C. Disease treatment
    D. Waste degradation

15. What is the primary goal of genetic engineering in marine biotechnology?
    A. Enhancing marine biodiversity
    B. Developing new antibiotics
    C. Understanding marine ecosystems
    D. Modifying marine organisms

16. How does mangrove restoration contribute to coastal resilience?
    A. By Increasing coastal erosion rates
    B. By reducing the severity of storm surges
    C. By promoting coral reef degradation
    D. By enhancing coastal pollution levels

17. What is the primary role of bacteria in biogeochemical cycles?
    A. Energy production
    B. Nutrient cycling
    C. Oxygen production
    D. Genetic modification

18. What is the main indicator of aquatic pollution in terms of microbial analysis?
    A. Faecal coliforms
    B. Nitrate levels
    C. pH levels
    D. Dissolved oxygen

19. What is the primary mechanism responsible for biofouling in the aquatic environment?
    A. Algal blooms
    B. Bacterial growth
    C. Sedimentation
    D. Biofilm formation

20. What is the primary purpose of aquaculture?
    A. Conservation of marine species
    B. Recreational fishing
    C. Commercial fish production
    D. Coral reef restoration

21. Which term refers to the integration of fish farming with other agricultural activities?
    A. Monoculture
    B. Polyculture
    C. Aquaranching
    D. Aquaponics

22. What is the primary method used for seed production in carps?
    A. Hypophysation
    B. Polyculture
    C. Monoculture
    D. Cage culture

23. Which type of aquaculture system relies on the natural productivity of the water body?
    A. Extensive
    B. Intensive
    C. Semi-intensive
    D. Recirculating

24. Which fish species is commonly used in polyculture systems in India?
    A. Salmon
    B. Tilapia
    C. Catfish
    D. Carp

25. What is the primary focus of coastal aquaculture and mariculture?
    A. Deep-sea fishing
    B. Coral reef protection
    C. Sustainable seafood production
    D. Mangrove conservation

26. What is the primary purpose of satellite farming in aquaculture?
    A. Expansion of aquaculture sites
    B. Monitoring of aquaculture activities
    C. Remote sensing of water quality
    D. Integration with space technology

27. Which type of culture system involves raising marine organisms in submerged cages?
    A. Polyculture
    B. Pen culture
    C. Cage culture
    D. Pond culture

28. What is the primary focus of shrimp seed production in aquaculture?
    A. Larval nutrition
    B. Disease prevention
    C. Water quality management
    D. Broodstock maintenance

29. Which activity is associated with penaeid and non-penaeid shrimp fisheries?
    A. Mussel farming
    B. Lobster trapping
    C. Crab potting
    D. Shrimp trawling

30. What is the primary focus of molluscan fishery in India?
    A. Clam farming
    B. Oyster culture
    C. Squid jigging
    D. Scallop dredging

31. What technological advancement is mentioned in mariculture?
    A. Automated trawling
    B. Satellite imaging
    C. Underwater robotics
    D. Automated submersible cages

32. What is the primary step involved in the research process?
    A. Data analysis
    B. Hypothesis testing
    C. Problem identification
    D. Conclusion drawing

33. What distinguishes basic research from applied research?
    A. Funding source
    B. Research location
    C. Research objectives
    D. Research methodology

34. Which research method focuses on observing phenomena in their natural setting?
    A. Experimental research
    B. Survey research
    C. Case study method
    D. Action research

35. What is the purpose of hypothesis testing in research?
    A. To prove the hypothesis
    B. To validate the research design
    C. To identify research limitations
    D. To evaluate the validity of the hypothesis

36. Which section of a research report provides a summary of key findings?
    A. Introduction
    B. Methodology
    C. Results and discussion
    D. Abstract

37. What is the ethical concern addressed in research methodology?
    A. Data analysis techniques
    B. Participant confidentiality
    C. Research funding sources
    D. Research publication format

38. What is the term for using someone else's ideas without proper acknowledgment?
    A. Plagiarism
    B. Collaboration
    C. Citation
    D. Paraphrasing

39. What is the purpose of using bibliographic databases in research?
    A. Data collection
    B. Literature review
    C. Statistical analysis
    D. Hypothesis formulation

40. What factors contribute to the zonation of intertidal communities?
    A. Wind patterns
    B. Tidal amplitude
    C. Salinity levels
    D. Human activity

41. How does phytoplankton biomass affect zooplankton populations?
    A. Higher biomass leads to lower zooplankton populations
    B. Higher biomass leads to higher zooplankton populations
    C. Phytoplankton biomass has no effect on zooplankton populations
    D. Phytoplankton biomass and zooplankton populations are unrelated

42. What measures can be taken to mitigate the impacts of harmful algal blooms?
    A. Mechanical removal of algae
    B. Chemical treatment of affected areas
    C. Introduction of algal predators
    D. All of the above

43. How do mangroves contribute to coastal protection?
    A. By absorbing excess nutrients
    B. By acting as wave buffers
    C. By regulating water temperature
    D. By providing habitat for coral reefs

44. What is the primary role of dissolved organic matter in marine ecosystems?
    A. Energy source for heterotrophic bacteria
    B. Structural support for phytoplankton
    C. Oxygen production through photosynthesis
    D. Nutrient storage for zooplankton

45. How does oil pollution impact marine environments?
    A. It increases biodiversity
    B. It promotes coral reef growth
    C. It disrupts food webs
    D. It enhances fishery production

46. What factors contribute to the formation of harmful algal blooms?
    A. High nutrient levels
    B. Low water temperature
    C. Low light availability
    D. Low carbon dioxide levels

47. How do genetically modified microbes contribute to bioremediation?
    A. By producing enzymes that degrade pollutants
    B. By competing with native microbes for resources
    C. By absorbing pollutants through their cell walls
    D. By releasing toxins that neutralize pollutants

48. What is the significance of the 16S rRNA typing/sequencing in microbial taxonomy?
    A. It identifies functional genes in bacteria
    B. It determines the metabolic pathways of bacteria
    C. It classifies bacteria based on their genetic similarity
    D. It assesses bacterial growth rates in different environments

49. How does aquaculture contribute to food security?
    A. By reducing pressure on wild fish stocks
    B. By increasing nutrient levels in aquatic ecosystems
    C. By promoting overfishing of marine species
    D. By decreasing water pollution levels

50. What is the primary challenge associated with the site selection for aquaculture?
    A. Water temperature fluctuations
    B. Soil fertility levels
    C. Disease transmission risks
    D. Legal regulations

51. How does polyculture differ from monoculture in aquaculture?
    A. Polyculture involves multiple species, while monoculture involves a single species
    B. Polyculture requires less space than monoculture
    C. Monoculture promotes biodiversity, while polyculture does not
    D. Monoculture reduces the risk of disease outbreaks

52. What is the primary advantage of using recirculating aquaculture systems (RAS)?
    A. Reduced water usage
    B. Enhanced nutrient cycling
    C. Increased natural predation
    D. Lower operational costs

53. How does wastewater-fed aquaculture contribute to sustainability?
    A. By reducing water pollution
    B. By increasing fish yields
    C. By conserving freshwater resources
    D. By promoting nutrient recycling

54. What are the key components of a shrimp hatchery design?
    A. Broodstock tanks, larval rearing tanks, and nursery tanks
    B. Filtration systems, Lighting equipment, and heating units
    C. Aeration devices, water pumps, and UV sterilizers
    D. Feeding stations, monitoring cameras, and automated feeders

55. What factors influence the success of shrimp culture in ponds?
    A. Water quality, stocking density, and feeding practices
    B. Pond size, temperature, and salinity levels
    C. Geographical location, pond shape, and substrate type
    D. Predation pressure, disease prevalence, and weather conditions

56. What is the primary goal of aquaranching in coastal areas?
    A. To enhance coral reef resilience
    B. To promote sustainable fishing practices
    C. To restore degraded mangrove habitats
    D. To facilitate the recovery of overexploited fish stocks

57. How does pen culture differ from cage culture in mariculture?
    A. Pen culture is land-based, while cage culture is sea-based
    B. Pen culture allows for better water circulation than cage culture
    C. Pen culture involves larger enclosures than cage culture
    D. Pen culture is more expensive than cage culture

58. What are the advantages of satellite farming in aquaculture?
    A. Increased land availability and reduced environmental impact
    B. Enhanced water quality and improved disease management
    C. Diversified production and reduced transportation costs
    D. Enhanced biodiversity and improved ecosystem services

59. How does maricutture contribute to coastal economies?
    A. By generating employment opportunities
    B. By reducing coastal property values
    C. By increasing coastal pollution levels
    D. By depleting natural resources

60. How does ocean acidification affect marine biodiversity?
    A. It promotes calcification in marine organisms
    B. It enhances nutrient availability in seawater
    C. It reduces the abundance of shell-forming organisms
    D. It increases the resilience of coral reefs

61. What measures can be taken to mitigate the impacts of coastal erosion on mangrove ecosystems?
    A. Building seawalls and groins
    B. Planting additional mangrove trees
    C. Implementing coastal retreat strategies
    D. Restoring natural sediment transport processes

62. How does the distribution of coral reefs vary globally?
    A. They are concentrated in polar regions
    B. They are evenly distributed across all oceans
    C. They are primarily found in tropical regions
    D. They are absent from marine environments

63. What ecological role do herbivorous fish play in coral reef ecosystems?
    A. They prey on coral polyps for nutrients
    B. They compete with corals for space
    C. They control algal growth and maintain reef health
    D. They facilitate coral bleaching events

64. How does thermal pollution impact marine ecosystems?
    A. It increases biodiversity
    B. It promotes coral reef growth
    C. It disrupts reproductive cycles in marine organisms
    D. It enhances oxygen levels in seawater

65. What is the primary source of plastic pollution in marine environments?
    A. Land-based activities
    B. Offshore oil drilling
    C. Shipwrecks
    D. Natural disasters

66. How do marine protected areas contribute to marine biodiversity conservation?
    A. By allowing unrestricted fishing activities
    B. By reducing habitat degradation and fragmentation
    C. By promoting industrial-scale fishing operations
    D. By facilitating oil exploration and extraction

67. What are the challenges associated with the restoration of degraded coral reefs?
    A. Limited availability of coral reef species
    B. Lack of funding for restoration projects
    C. Difficulty in restoring natural water currents
    D. High resilience of degraded coral reef ecosystem

68. How does overfishing impact marine food webs?
    A. It promotes species diversity
    B. It disrupts trophic cascades
    C. It increases primary productivity
    D. It enhances ecosystem stability

69. What is the significance of Ramsar sites in wetland conservation?
    A. They promote wetland drainage for agricultural purposes
    B. They facilitate wetland reclamation for urban development
    C. They designate wetlands of international importance for conservation
    D. They prioritize wetland exploitation for commercial fishing

70. How do wetlands contribute to climate change mitigation?
    A. By emitting greenhouse gases
    B. By sequestering carbon dioxide
    C. By promoting deforestation
    D. By increasing methane production

71. What are the ecological consequences of sand mining in freshwater systems?
    A. Enhanced biodiversity
    B. Habitat destruction
    C. Improved water quality
    D. Increased sedimentation

72. How does eutrophication affect the oxygen levels in lakes?
    A. It increases oxygen saturation levels
    B. It promotes anaerobic conditions
    C. It has no effect on oxygen levels
    D. It enhances oxygen production

73. What is the primary cause of habitat degradation in freshwater systems?
    A. Deforestation
    B. Urbanization
    C. Climate change
    D. Industrial pollution

74. How does the River Continuum Concept explain changes in river ecosystems?
    A. It emphasizes the importance of upstream-downstream linkages
    B. It highlights the role of geological processes in river formation
    C. It focuses on the impacts of climate change on river hydrology
    D. It describes the effects of tidal fluctuations on river biodiversity

75. What is the significance of environmental flows in river management?
    A. They promote dam construction for hydroelectric power generation
    B. They prioritize agricultural irrigation over ecosystem needs
    C. They maintain natural flow regimes for river health
    D. They facilitate industrial wastewater discharge into rivers

76. How does climate change impact the distribution of freshwater species?
    A. It promotes species expansion into new habitats
    B. It restricts species dispersal due to habitat fragmentation
    C. It accelerates species extinction rates
    D. It enhances genetic diversity within populations

77. What is the primary role of phytoplankton in aquatic ecosystems?
    A. They serve as top predators in food webs
    B. They recycle nutrients through decomposition
    C. They produce oxygen through photosynthesis
    D. They control algal bloom formation

78. How do benthic organisms contribute to nutrient cycling in lakes?
    A. By filtering water and removing pollutants
    B. By releasing nutrients through decomposition
    C. By fixing nitrogen through biological processes
    D. By promoting eutrophication through algal blooms

79. What is the primary function of the lateral line system in fish?
    A. To detect changes in water temperature
    B. To detect changes in water salinity
    C. To detect changes in water pressure
    D. To detect changes in water pH

80. How does aerial respiration benefit fish in oxygen-deprived environments?
    A. It facilitates the exchange of gases in the air bladder
    B. It allows fish to extract oxygen from the atmosphere
    C. It enhances metabolic rates in fish tissues
    D. It prevents fish from suffocating in low-oxygen water

81. What is the primary function of chloride cells in fish osmoregulation?
    A. To excrete excess salts from the body
    B. To regulate water uptake through the gills
    C. To maintain the balance of ions in body fluids
    D. To produce hormones that control osmotic balance

82. What is the role of sex hormones in fish reproduction?
    A. To stimulate gonadal development
    B. To regulate body temperature during spawning
    C. To attract mates through pheromone production
    D. To synchronize reproductive cycles with lunar phases

83. What is the significance of photoperiod in regulating fish reproduction?
    A. It determines the availability of food resources
    B. It influences water temperature fluctuations
    C. It triggers hormonal changes associated with spawning
    D. It promotes predator-prey interactions

84. How does stress hormone secretion affect fish behavior?
    A. It promotes aggression towards conspecifics
    B. It inhibits feeding activity
    C. It enhances reproductive success
    D. It reduces susceptibility to disease

85. What is the primary purpose of pheromones in fish reproductive behaviour?
    A. To attract prey for feeding
    B. To repel potential predators
    C. To communicate mating readiness
    D. To mark territory boundaries

86. How does adaptive behaviour help fish survive in changing environments?
    A. By promoting genetic mutations
    B. By facilitating rapid population growth
    C. By enhancing physiological flexibility
    D. By reducing competition for resources

87. What are the primary sources of marine nutraceuticals?
    A. Seaweed and algae
    B. Coral reefs and mangroves
    C. Deep-sea hydrothermal vents
    D. Antarctic ice shelves

88. How does marine biotechnology contribute to drug discovery?
    A. By isolating new chemical compounds from marine organisms
    B. By synthesizing pharmaceuticals in laboratory settings
    C. By repurposing existing drugs for marine applications
    D. By enhancing drug delivery mechanisms in marine environments

89. What role do marine bacteria play in bioremediation?
    A. They metabolize organic pollutants into harmless byproducts
    B. They absorb heavy metals from contaminated sediments
    C. They neutralize oil spills through enzymatic reactions
    D. They disperse toxins through marine food web

90. How does marine nanotechnology contribute to environmental monitoring?
    A. By detecting changes in water temperature
    B. By measuring nutrient concentrations in seawater
    C. By monitoring levels of pollutants and contaminants
    D. By studying microbial communities in marine ecosystems

91. What is the significance of genome sequencing in marine biotechnology?
    A. It facilitates the development of genetically modified organisms
    B. It enhances understanding of marine biodiversity
    C. It accelerates drug discovery from marine sources
    D. It improves aquaculture breeding programs

92. How does the Bergy's Manual classify microorganisms?
    A. Based on their metabolic pathways
    B. Based on their ecological roles
    C. Based on their genetic similarities
    D. Based on their morphological characteristics

93. What are the primary methods used for microbial identification?
    A. Genetic sequencing and DNA fingerprinting
    B. Morphological analysis and biochemical testing
    C. Phylogenetic analysis and metagenomics
    D. Cell culturing and colony counting

94. What is the role of microbes in biogeochemical cycles?
    A. They regulate global climate patterns
    B. They decompose organic matter and recycle nutrients
    C. They promote soil erosion and land degradation
    D. They facilitate volcanic eruptions and tectonic movements

95. How do faecal coliforms serve as indicators of aquatic pollution?
    A. They produce toxins harmful to aquatic organisms
    B. They consume excess nutrients in aquatic environments
    C. They indicate the presence of human or animal waste
    D. They promote the growth of beneficial algae species

96. What is the ecological significance of biofilms in aquatic environments?
    A. They enhance water clarity by filtering out suspended particles
    B. They promote the growth of harmful algal blooms
    C. They contribute to nutrient cycling and sediment stabilization
    D. They inhibit the growth of pathogenic microorganisms

97. How do microbial interactions influence ecosystem dynamics?
    A. They promote species competition for resources
    B. They facilitate the breakdown of organic matter
    C. They regulate population growth rates
    D. They enhance ecosystem resilience to environmental change

98. What are primary metabolites produced by microbes?
    A. Enzymes and antibiotics
    B. Toxins and organic acids
    C. Proteins and lipids
    D. Sugars and amino acids

99. How do freshwater fishes contribute to the livelihoods of local communities?
    A. By providing recreational opportunities for tourists
    B. By serving as bioindicators of water quality
    C. By supporting artisanal and commercial fisheries
    D. By regulating nutrient cycling in freshwater ecosystems

100. What is the main function of seawalls and groins in coastal erosion mitigation?
    A. To promote sediment deposition
    B. To enhance biodiversfty in coastal areas
    C. To prevent wave erosion and protect shorelines
    D. To facilitate natural beach replenishment processes

ANSWER SHEET

1	A	B	C	D	E	26	A	B	C	D	E	51	A	B	C	D	E	76	A	B	C	D	E
2	A	B	C	D	E	27	A	B	C	D	E	52	A	B	C	D	E	77	A	B	C	D	E
3	A	B	C	D	E	28	A	B	C	D	E	53	A	B	C	D	E	78	A	B	C	D	E
4	A	B	C	D	E	29	A	B	C	D	E	54	A	B	C	D	E	79	A	B	C	D	E
5	A	B	C	D	E	30	A	B	C	D	E	55	A	B	C	D	E	80	A	B	C	D	E
6	A	B	C	D	E	31	A	B	C	D	E	56	A	B	C	D	E	81	A	B	C	D	E
7	A	B	C	D	E	32	A	B	C	D	E	57	A	B	C	D	E	82	A	B	C	D	E
8	A	B	C	D	E	33	A	B	C	D	E	58	A	B	C	D	E	83	A	B	C	D	E
9	A	B	C	D	E	34	A	B	C	D	E	59	A	B	C	D	E	84	A	B	C	D	E
10	A	B	C	D	E	35	A	B	C	D	E	60	A	B	C	D	E	85	A	B	C	D	E
11	A	B	C	D	E	36	A	B	C	D	E	61	A	B	C	D	E	86	A	B	C	D	E
12	A	B	C	D	E	37	A	B	C	D	E	62	A	B	C	D	E	87	A	B	C	D	E
13	A	B	C	D	E	38	A	B	C	D	E	63	A	B	C	D	E	88	A	B	C	D	E
14	A	B	C	D	E	39	A	B	C	D	E	64	A	B	C	D	E	89	A	B	C	D	E
15	A	B	C	D	E	40	A	B	C	D	E	65	A	B	C	D	E	90	A	B	C	D	E
16	A	B	C	D	E	41	A	B	C	D	E	66	A	B	C	D	E	91	A	B	C	D	E
17	A	B	C	D	E	42	A	B	C	D	E	67	A	B	C	D	E	92	A	B	C	D	E
18	A	B	C	D	E	43	A	B	C	D	E	68	A	B	C	D	E	93	A	B	C	D	E
19	A	B	C	D	E	44	A	B	C	D	E	69	A	B	C	D	E	94	A	B	C	D	E
20	A	B	C	D	E	45	A	B	C	D	E	70	A	B	C	D	E	95	A	B	C	D	E
21	A	B	C	D	E	46	A	B	C	D	E	71	A	B	C	D	E	96	A	B	C	D	E
22	A	B	C	D	E	47	A	B	C	D	E	72	A	B	C	D	E	97	A	B	C	D	E
23	A	B	C	D	E	48	A	B	C	D	E	73	A	B	C	D	E	98	A	B	C	D	E
24	A	B	C	D	E	49	A	B	C	D	E	74	A	B	C	D	E	99	A	B	C	D	E
25	A	B	C	D	E	50	A	B	C	D	E	75	A	B	C	D	E	100	A	B	C	D	E

ROUGH WORK

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