

Roll. No.

Question Booklet Number

O.M.R. Serial No.

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M.Sc. (SEM.-IV) (NEP) (SUPPLE.) EXAMINATION, 2024-25

ZOOLOGY

(Applied Ichthyology)

Paper Code

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**Question Booklet
Series**

A

Time : 1 : 30 Hours

Max. Marks : 75

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction :

(Remaining instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छानना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

1. Branchial Respiration is found in which of these animals?
 - (A) Prawn and Cyclopes
 - (B) Spider and Cyclopes
 - (C) Clorias and Pavo
 - (D) Fishes and Ichthyophis
2. Keratin is not found in the epidermis of :
 - (A) Reptile
 - (B) Bird
 - (C) Fish
 - (D) Mammal
3. When taken out of Water, Fishes die because?
 - (A) They are unable to repire
 - (B) Their body temperature rise too high
 - (C) They get too much carbon dioxide
 - (D) They are unable to drink water
4. Sea-Horse is a :
 - (A) Mammal
 - (B) Fish
 - (C) Bird
 - (D) Carnivore
5. Ampullae of Lorenzini in some fishes is :
 - (A) Chemoreceptor
 - (B) Tangoreceptor
 - (C) Thermoreceptor
 - (D) A Sex organ
6. Catadromous Migration refers to movement of Fishes from :
 - (A) Salt water to Salt water
 - (B) Fresh water to Salt water
 - (C) Fresh water to Fresh water
 - (D) Salt water to Fresh water
7. Prenatal care by male is found in :
 - (A) Hippocampus fish
 - (B) Scoliodon fish
 - (C) Labeo fish
 - (D) Anabas fish
8. Scroll valve is found in :
 - (A) Pigeon
 - (B) Uromastix
 - (C) Frog
 - (D) Scoliodon
9. Which Fish is Viviparous?
 - (A) Scoliodon
 - (B) Hippocampus
 - (C) Labeo
 - (D) Protopterus

10. Dog Fish is related to which group?
 - (A) Gnathostomata
 - (B) Eucoelomata
 - (C) Agnatha
 - (D) Squamata
11. Which of the following is not a Lung Fish?
 - (A) Neoceratodus
 - (B) Protopterus
 - (C) Sardinella
 - (D) Lepidosiren
12. What is the main purpose of Induced breeding in Fish culture?
 - (A) To Produce hybrid fish
 - (B) To ensure breeding in controlled environments
 - (C) To control the fish population
 - (D) To increase natural spawning
13. Which of the following Fish products is often used as a natural Adhesive?
 - (A) Fish oil
 - (B) Fish sauce
 - (C) Fish meal
 - (D) Fish glue
14. What is the typical relationship between a fish's age and it's growth rate?
 - (A) Growth rate decreases with age
 - (B) Growth rate Increases with age
 - (C) Growth rate fluctuates unpredictably
 - (D) Growth rate remains constant
15. Fish Sauce is a traditional condiment primarily made by fermenting?
 - (A) Fish and Spices
 - (B) Fish and Salt
 - (C) Fish and Sugar
 - (D) Fish and Vinegar
16. Fish glue is mainly used in which Industry?
 - (A) Wood working and book binding
 - (B) Cosmetics
 - (C) Food processing
 - (D) Textile
17. What is Gastrulation?
 - (A) DNA replication
 - (B) Protein Synthesis
 - (C) Formation of germ Layers
 - (D) Cell differentiation
18. Embryogenesis in carp fish begins with which process?
 - (A) Fertilization
 - (B) Gastrulation
 - (C) Metamorphosis
 - (D) Cleavage

19. Which fish species constructs nests to protect their eggs?
- (A) Salmon
(B) Shark
(C) Betta
(D) Clown fish
20. The primary component that gives fish glue its Adhesive properties is:
- (A) Gelatin
(B) Collagen
(C) Protein
(D) Fat
21. In fish species exhibiting external fertilization parental care is usually provided by?
- (A) Males
(B) Both Parents
(C) Females
(D) Neither Parent
22. Which type of fish packaging is often used for frozen fish products?
- (A) Cardboard boxes
(B) Wooden crates
(C) Vacuum-sealed bags
(D) Net-bags
23. What is the primary purpose of fish marketing?
- (A) To facilitate the sale and distribution of fish
(B) To reduce fish prices
(C) To enhance fish production
(D) To Increase fish production
24. Fish oil is primarily extracted from which part of fish?
- (A) Scales
(B) Bones
(C) Liver and tissues
(D) Fins
25. Which type of fish is commonly used for producing fish oil due to its high Omega-3 fatty acid content?
- (A) Salmon
(B) Tilapia
(C) Cat fish
(D) Carp
26. In carp fish fertilization is:
- (A) External
(B) Internal
(C) Parthenogenetic
(D) Asexual

27. Which fish species is known for Mouthbrooding as a form of parental care?
- (A) Guppy
(B) Betta
(C) Seahorse
(D) Tilapia
28. Which type of Nutrient Pollution is most Problematic for Prawn fisheries?
- (A) Phosphorus
(B) Magnesium
(C) Calcium
(D) Potassium
29. Endoskeleton of scoliodon made up of:
- (A) Bones
(B) Cartilage
(C) Scales
(D) Plates
30. Which one is a true fish?
- (A) Whale
(B) Cuttle fish
(C) Silver fish
(D) Flying fish
31. The fish used for control of Malaria is:
- (A) Gambusia
(B) Rohu
(C) Both (A) and (B)
(D) None of the above
32. Fish meal is rich in which mineral?
- (A) Potassium
(B) Iron
(C) Calcium
(D) Iodine
33. One of the following is called as Industrial Fish:
- (A) Sardine
(B) Croaker
(C) Catla
(D) Magur
34. Fish meal is rich in which vitamin?
- (A) Vitamin-A
(B) Vitamin-C
(C) Vitamin-B
(D) Vitamin-D
35. In catla fish waste, the maximum component is constituted by?
- (A) Head
(B) Fish frame
(C) Scales
(D) Skin

36. Majority of fishes:
- (A) Viviparous
- (B) Oviparous
- (C) Both (A) and (B)
- (D) None of the above
37. Which of the following is not the economic importance of fishes?
- (A) Source of food
- (B) Polishing agent
- (C) Source of water
- (D) Good source of vitamins
38. National fish farmer's day is:
- (A) May 5
- (B) August 21
- (C) June 1
- (D) July 10
39. National Bureau of Fish Genetic Resources is located at:
- (A) Mumbai
- (B) Cochin
- (C) Lucknow
- (D) Bhubaneswar
40. Which of the following is a surface feeder?
- (A) Flying fish
- (B) Catla Catla
- (C) Magur
- (D) Labeo Rohita
41. Who is known as father of Indian fisheries?
- (A) Francis day
- (B) Frederick Nicholson
- (C) S. Jones
- (D) James Hornell
42. What are the methods of preservation for fish?
- (A) Vacuum Packing
- (B) Canning
- (C) Freezing
- (D) All of the above
43. Which factor is most critical in maintaining fish quality during transport?
- (A) Temperature control
- (B) Transport speed
- (C) Packaging material
- (D) Route taken
44. Which fish species exhibits biparental care?
- (A) Tilapia
- (B) Angelfish
- (C) Bettafish
- (D) Catfish

45. Endocrine gland absent in elasmobranchs:
- (A) Pituitary
 - (B) Thyroid
 - (C) Thymus and Parathyroid
 - (D) Islets of Langerhans
46. What is the primary purpose of Bund Fisheries?
- (A) Natural fish trapping
 - (B) Commercial fish farming
 - (C) Ornamental fish breeding
 - (D) Fish export
47. Which type of fish is primarily used to produce fish oil?
- (A) Salmon
 - (B) Tilapia
 - (C) Cod
 - (D) Carp
48. Which method is commonly used for preserving fish during transport?
- (A) Freezing
 - (B) Salting
 - (C) Smoking
 - (D) Canning
49. Which is the main cause of habitat destruction in Prawn fisheries?
- (A) Climate change
 - (B) Overfishing
 - (C) Urban development
 - (D) Natural disasters
50. Management and Rearing of fishes only is called as:
- (A) Aquaculture
 - (B) Apiculture
 - (C) Pisciculture
 - (D) Fishery
51. Parental care in Fish is primarily seen in :
- (A) Marine fish
 - (B) Freshwater fish
 - (C) Brackish water fish
 - (D) Both (A) and (B)
52. Which of the following fish species provides no Parental care at all ?
- (A) Salmon
 - (B) Guppy
 - (C) Betta
 - (D) Clown fish

53. In what type of environment is Parental care most beneficial for fish?
- (A) Coral Reefs
(B) Open Ocean
(C) Mangroves
(D) Freshwater Streams
54. Gastrulation in Fish results in the formation of which three primary germ Layers?
- (A) Ecotoderm, Mesoderm, Endoderm
(B) Mesoderm, Trophoblast, Endoderm
(C) Trophoblast, Ecotoderm, Mesoderm
(D) None of the above
55. Which of the following structures is not formed by the ectoderm?
- (A) Brain
(B) Heat
(C) Skin
(D) Spinal Cord
56. Which fish species is known for its extensive larval drift before Metamorphosis?
- (A) Clown fish
(B) Eel
(C) Trout
(D) Tuna
57. Which of the following processes begins gastrulation in Zebrafish?
- (A) Cleavage
(B) Epiboly
(C) Blastulation
(D) Organogenesis
58. Which germ Layer in fish is responsible for forming the digestive tract?
- (A) Mesoderm
(B) Ectoderm
(C) Endoderm
(D) Blastulation
59. What is the primary role of male seahorse in reproduction?
- (A) Providing food for the female
(B) Protecting
(C) Fertilizing eggs
(D) Carrying and birthing offspring
60. What environmental factor can significantly influence fish larval development?
- (A) Light Intensity
(B) Salinity
(C) Water temperature
(D) All of the above

61. Which Hormone is primarily involved in regulating fish metamorphosis?
- (A) Thyroxine
 - (B) Estrogen
 - (C) Cortisol
 - (D) Melatonin
62. What is the primary food source for fish larvae during the early stages of development?
- (A) Yolk Sac
 - (B) Zooplankton
 - (C) Detritus
 - (D) Phytoplankton
63. What is the first stage of fish larval development?
- (A) Embryo
 - (B) Fry
 - (C) Egg
 - (D) Zygote
64. Metamorphosis in fish involves the transition from larval to what stage?
- (A) Fry
 - (B) Adult
 - (C) Eggs
 - (D) Juvenile
65. At what stage do fish Larvae start to feed externally?
- (A) Zygote
 - (B) Post larval stage
 - (C) Pre-larval stage
 - (D) Juvenile stage
66. Which behavior is typical in fish that show no parental care?
- (A) Egg scattering
 - (B) Nest building
 - (C) Fry guarding
 - (D) Mouthbrooding
67. What is the most common method used in commercial sea water fishing?
- (A) Angling
 - (B) Trawling
 - (C) Fly fishing
 - (D) Spear fishing
68. Which of the following is a passive fishing method?
- (A) Trawling
 - (B) Purse seining
 - (C) Longlining
 - (D) Gillnetting

69. If the growth rate of a fish slows down as it ages, this is an example of?
- (A) Isometric growth
 - (B) Allometric growth
 - (C) Linear growth
 - (D) Exponential growth
70. In fisheries science, the length-weight relationship is often used to estimate?
- (A) The age of fish
 - (B) The population size
 - (C) The condition of fish
 - (D) The water quality
71. Electric organs are found in:
- (A) Sharks
 - (B) Goldfish
 - (C) Dogfish
 - (D) Torpedo
72. Lateral line-system is present in:
- (A) Fish
 - (B) Frog
 - (C) Reptiles
 - (D) Man
73. A Fish is characterised by the presence of:
- (A) Dermal Scales
 - (B) Paired fins
 - (C) Pharyngeal gills
 - (D) All of the above
74. In Hypophysation, the pituitary extract is usually obtained from?
- (A) Mature Fish
 - (B) Juvenile Fish
 - (C) Embryos
 - (D) Eggs
75. Which of the following is the most crucial factor attending the growth of fish in a fish farm?
- (A) Light intensity
 - (B) Water temperature
 - (C) pH of water
 - (D) Salinity
76. What is the primary source of ammonia in fish farms?
- (A) Water pollution
 - (B) Fish feed
 - (C) Algal blooms
 - (D) Fish excretion

77. Which of the following fish diseases is caused by a parasitic protozoan?
- (A) Columnaris
 - (B) Ichthyophthirius
 - (C) Fin Rot
 - (D) Dropsy
78. Which nutrient is often limited in fish feed, requiring supplementation for optimal fish growth?
- (A) Protein
 - (B) Carbohydrate
 - (C) Lipid
 - (D) Vitamin C
79. Which of the following is a common indicator of poor water quality in a fish farm?
- (A) Clear water
 - (B) Algal blooms
 - (C) High fish activity
 - (D) Stable pH
80. Which fish species is commonly bred using the Hapa technique?
- (A) Salmon
 - (B) Tilapia
 - (C) Catfish
 - (D) Tuna
81. What is the ideal water temperature range for most indoor hatcheries?
- (A) 10 – 15 °C
 - (B) 18 – 25 °C
 - (C) 28 – 35 °C
 - (D) 5 – 10 °C
82. How often should water be changed in an indoor hatchery?
- (A) Daily
 - (B) Weekly
 - (C) Monthly
 - (D) Every six months
83. The Hapa technique is primarily used for:
- (A) Incubating eggs
 - (B) Rearing fry
 - (C) Feeding adult fish
 - (D) Both (A) and (B)
84. During fish gastrulation which structure forms the primary germ Layers?
- (A) Blastoderm
 - (B) Blastula
 - (C) Zygote
 - (D) Morula

85. Which structure is not formed during gastrulation in fish?
- (A) Ectoderm
 - (B) Endoderm
 - (C) Placenta
 - (D) Mesoderm
86. Fish gastrulation is primarily characterized by which type of cell movement?
- (A) Ingression
 - (B) Epiboly
 - (C) Apical constriction
 - (D) Delamination
87. In Teleost fish, the thickened region of the blastoderm that plays a key role in gastrulation is called the :
- (A) Blastopore lip
 - (B) Germ ring
 - (C) Yolk plug
 - (D) Embryonic shield
88. Which of the following is the largest species of fish?
- (A) Whale Shark
 - (B) Great White Shark
 - (C) Blue Marlin
 - (D) Giant Manta Ray
89. What is the primary respiratory organ in fish?
- (A) Lungs
 - (B) Gills
 - (C) Skin
 - (D) Trachea
90. Which of these fish is known to be a filter feeder?
- (A) Whale Shark
 - (B) Barracuda
 - (C) Piranha
 - (D) Great White Shark
91. Which of the following is a function of fish marketing?
- (A) Harvesting fish
 - (B) Processing fish
 - (C) Transportation of fish
 - (D) All of the above
92. What is one of the benefits of transporting fish live?
- (A) Higher selling price
 - (B) Less need for refrigeration
 - (C) Extended shelf life
 - (D) All of the above

93. Why is it important to monitor temperature during fish transport?
- (A) To prevent spoilage
 - (B) To reduce transportation costs
 - (C) To increase delivery speed
 - (D) To maintain packaging integrity
94. Which of the following challenges is commonly faced in fish transport in rural areas?
- (A) Lack of infrastructure
 - (B) High transportation costs
 - (C) Limited access to markets
 - (D) All of the above
95. In live fish transport, what is the purpose of aeration?
- (A) To cool the water
 - (B) To maintain oxygen levels
 - (C) To remove water products
 - (D) To reduce water temperature
96. Which marketing system involves fish being sold in bulk to buyers, often through auctioning?
- (A) Wholesale
 - (B) Retail market
 - (C) Cooperative market
 - (D) Export market
97. Which of the following is post-harvest practice that adds value to fish?
- (A) Smoking
 - (B) Canning
 - (C) Freezing
 - (D) All of the above
98. In what way do catfish typically provide parental care?
- (A) Nest guarding
 - (B) Mouthbrooding
 - (C) Carrying eggs in a brood pouch
 - (D) All of the above
99. What is the primary purpose of a bubble nest in fish?
- (A) To attract mates
 - (B) To protect eggs and provide oxygen
 - (C) To store food
 - (D) To mark territory
100. Which type of parental care involves a fish carrying eggs or young in its mouth?
- (A) Nest building
 - (B) Mouthbrooding
 - (C) Guarding
 - (D) External fertilization

Rough Work / रफ कार्य

Example :

Question :

Q.1 (A) ● (C) (D)

Q.2 (A) (B) ● (D)

Q.3 (A) ● (C) (D)

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)

प्रश्न 2 (A) (B) ● (D)

प्रश्न 3 (A) ● (C) (D)

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण: प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।