

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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**M. Sc. (Fourth Semester)**  
**(NEP) EXAMINATION, 2025-26**  
**ZOOLOGY**  
**(Applied Ichthyology) (Elective)**

Paper Code							
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Questions Booklet Series
<b>D</b>

Time : 1:30 Hours ]

[ Maximum 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.

**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, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

***(Only for Rough Work)***

1. Echo-sounders in marine fisheries are used to determine :
  - (A) Salinity
  - (B) Fish shoal location and depth
  - (C) Oxygen concentration
  - (D) Plankton density
2. Fish marketing means :
  - (A) Fish breeding
  - (B) Fish selling and distribution
  - (C) Fish feeding
  - (D) Fish hatching
3. Tagging is important in :
  - (A) Fisheries management
  - (B) Fish culture
  - (C) Research
  - (D) All of the above
4. Fish tagging is used to study :
  - (A) Feeding only
  - (B) Growth only
  - (C) Spawning only
  - (D) Movement and migration
5. Hatching in carp produces :
  - (A) Fry
  - (B) Fingerling
  - (C) Larva
  - (D) Juvenile
6. Blastula stage follows :
  - (A) Gastrula
  - (B) Cleavage
  - (C) Organogenesis
  - (D) Larva
7. Cleavage in fish egg is :
  - (A) Complete
  - (B) Holoblastic
  - (C) Meroblastic
  - (D) Equal
8. First stage of embryonic division is :
  - (A) Gastrula
  - (B) Blastula
  - (C) Cleavage
  - (D) Larva

9. Fertilization in carps is :
- (A) External
  - (B) Internal
  - (C) Self
  - (D) Asexual
10. Stripping is used in :
- (A) Natural breeding
  - (B) Induced breeding
  - (C) Capture breeding
  - (D) Cage breeding
11. Embryogenesis in carp begins after :
- (A) Spawning
  - (B) Fertilization
  - (C) Hatching
  - (D) Cleavage
12. Larva period depends on :
- (A) Species
  - (B) Temperature
  - (C) Food
  - (D) All of the above
13. Fish metamorphosis occurs from :
- (A) Eggs- larva
  - (B) Larva- juvenile
  - (C) Fry- egg
  - (D) Adult- egg
14. Stripping in fish breeding means :
- (A) Cutting fish
  - (B) Removing scales
  - (C) Removing eggs or milt by pressure
  - (D) Feeding brood fish
15. Electric fishing uses :
- (A) Heat
  - (B) Chemicals
  - (C) Electricity
  - (D) Light
16. The most common marine fishing gear is :
- (A) Hook
  - (B) Net
  - (C) Trap
  - (D) Spear

17. Fishing in sea water is called :
- (A) Inland fishing
  - (B) Freshwater fishing
  - (C) Marine fishing
  - (D) Pond fishing
18. Polyculture is common in :
- (A) Carp farming
  - (B) Tuna farming
  - (C) Salmon farming
  - (D) Cod farming
19. Cage culture is suitable for :
- (A) Rivers and reservoirs
  - (B) Forest soil
  - (C) Deserts
  - (D) Hills only
20. Fish farming in rice fields is called :
- (A) Cage culture
  - (B) Tank culture
  - (C) Pen culture
  - (D) Paddy-cum fish culture
21. Culture of single fish species is :
- (A) Polyculture
  - (B) Composite culture
  - (C) Monoculture
  - (D) Extensive
22. Dorsal fins are modified into suckers in :
- (A) Torpedo
  - (B) Echeneis
  - (C) Hippocampus
  - (D) Neoceratodus
23. Increased parental care generally results in :
- (A) High fecundity
  - (B) Low egg size
  - (C) Higher offspring survival
  - (D) External fertilization
24. Viviparity in fishes is commonly observed in :
- (A) Rohu
  - (B) Catla
  - (C) Scoliodon
  - (D) Hilsa

25. The most important factor in pond site selection is :
- (A) Color of soil
  - (B) Availability of perennial water source
  - (C) Proximity to forest
  - (D) Wind direction
26. The most commercially important marine prawn species in India is :
- (A) *Penaeus monodon*
  - (B) *Macrobrachium rosenbergii*
  - (C) *Channa striata*
  - (D) *Labeo rohita*
27. Hilsa migration in the Ganga is :
- (A) Catadromous
  - (B) Anadromous
  - (C) Amphidromous
  - (D) Potamodromous
28. The central inland fisheries Research Institute (CIFRI) is located at :
- (A) Kochi
  - (B) Barrack pore
  - (C) Mumbai
  - (D) Chennai
29. Main aim of pond culture is :
- (A) Ornamentation
  - (B) Recreation
  - (C) Fish production
  - (D) Capture
30. Pond culture in India mainly uses :
- (A) Marine fishes
  - (B) Carps
  - (C) Tilapia
  - (D) Trout
31. Pond culture means :
- (A) Fish rearing in tanks
  - (B) River fishing
  - (C) Sea fishing
  - (D) None of the above
32. Hapa breeding is commonly used for :
- (A) Marine fish
  - (B) Catfish only
  - (C) Carp
  - (D) Ornamental fish
33. Fish seed includes :
- (A) Eggs, larvae, fry, fingerlings
  - (B) Adults only
  - (C) Brooders
  - (D) Market fish

34. A fish hatchery is a place for :
- (A) Fish capture
  - (B) Fish breeding and seed production
  - (C) Fish marketing
  - (D) Fish preservation
35. Growth studies In fish are important for ?
- (A) Fisheries management
  - (B) Aqua culture
  - (C) Stock prediction
  - (D) All of the above
36. Growth rate decreases with :
- (A) Age
  - (B) Food
  - (C) Temperature
  - (D) Oxygen
37. Fish age is commonly determined by :
- (A) Fins
  - (B) Scales
  - (C) Skin
  - (D) Muscles
38. Growth in fish is generally :
- (A) Indeterminate
  - (B) Determinate
  - (C) Fixed
  - (D) Non-continuous
39. The relationship between length and weight in fish is :
- (A) Linear
  - (B) Cubic
  - (C) Exponential
  - (D) Logarithmic
40. Fish growth refers to increase in :
- (A) Length only
  - (B) Weight only
  - (C) Length and Weight
  - (D) Age only
41. Newly hatched carp larva is called :
- (A) Fry
  - (B) Fingerling
  - (C) Hatching
  - (D) Alevin
42. The eggs of carp fish are :
- (A) Pelagic non-adhesive
  - (B) Demersal adhesive
  - (C) Viviparous
  - (D) Non-Yolky

43. Fertilization in carp fish is :
- (A) Internal
  - (B) Parthogenesis
  - (C) Both (A) and (B)
  - (D) External
44. Fish meal is rich in :
- (A) Carbohydrates
  - (B) Protein
  - (C) Fiber
  - (D) Starch
45. Fish liver oil is good source of vitamin :
- (A) Vitamin C
  - (B) Vitamin D
  - (C) Vitamin B12
  - (D) Vitamin K
46. Cod liver oil is obtained from :
- (A) Rohu
  - (B) Tuna
  - (C) Cod
  - (D) Sardine
47. Parental care is absent in :
- (A) Tuna
  - (B) Tilapia
  - (C) Betta
  - (D) Seahorse
48. Male Seahorse carries eggs in :
- (A) Mouth
  - (B) Gill chamber
  - (C) Brood Pouch
  - (D) Intestine
49. Bubble nest building is a characteristic of :
- (A) Flying fish
  - (B) Betta
  - (C) Tuna
  - (D) Sardine
50. Parental care in fishes mainly increases :
- (A) Mutation rate
  - (B) Competition
  - (C) Survival of off spring
  - (D) Predation

51. The structure that covers and protects the gills in Bony fish is the :
- (A) Gill raker
  - (B) Operculum
  - (C) Spiracle
  - (D) Cloaca
52. The scales of cartilaginous fishes are :
- (A) Ctenoid scales
  - (B) Ganoid scales
  - (C) Placoid scales
  - (D) Cycloid scales
53. Global marine fish production is highest in :
- (A) South-America
  - (B) North-America
  - (C) Asia
  - (D) Australia
54. Where is Central Institute Of Fisheries Education located ?
- (A) Bihar
  - (B) Chennai
  - (C) Cochin
  - (D) Mumbai
55. Which of the following is NOT an Indian major carp ?
- (A) *Labeo rohita*
  - (B) Catla
  - (C) *Cirrhina mrigala*
  - (D) *Hypophthalmichthys molitrix*
56. Migrate from freshwater down into sea to spawn is called :
- (A) Catadromous
  - (B) Anadromous
  - (C) Amphidromous
  - (D) Potamodromous
57. Which of the following is an Osteichthyes ?
- (A) Dog fish
  - (B) Flying
  - (C) Great white shark
  - (D) Both (B) and (C)
58. Rearing of fish in a volume of water enclosed on all sides is :
- (A) Pen culture
  - (B) Pond culture
  - (C) Cage culture
  - (D) Ras culture

59. What is the stocking rate in semi intensive pond culture ?
- (A) Moderate
  - (B) Maximum
  - (C) Higher than extensive
  - (D) Lower than extensive
60. Fish soluble is also known as :
- (A) Fish meal
  - (B) Stick water
  - (C) Fish oil
  - (D) Fish manure
61. National fish of India is :
- (A) Tuna
  - (B) Catla catla
  - (C) Indian mackerel
  - (D) Rohu
62. Parental care in fishes refers to :
- (A) Migration
  - (B) Feeding only
  - (C) Spawning
  - (D) Egg/young protection
63. External fertilization occurs in :
- (A) Oviparity
  - (B) Viviparity
  - (C) Ovoviviparity
  - (D) Parthenogenesis
64. Catla's scientific name is ?
- (A) Labeo rohita
  - (B) Cirrhinus mrigala
  - (C) Catla catla
  - (D) Clarias batrachus
65. Fertilization in most oviparous fishes is ?
- (A) Internal
  - (B) External
  - (C) Both (A) and (B)
  - (D) None of the above
66. Preservation during transport is mainly by :
- (A) Colling
  - (B) Heating
  - (C) Drying
  - (D) Fermentation
67. Oviparity means :
- (A) Live birth
  - (B) Egg laying
  - (C) Budding
  - (D) Fragmentation

68. Pristis belongs to which class ?
- (A) Elasmobranchii
  - (B) Dipnoi
  - (C) Teleostomi
  - (D) Holocephali
69. Viviparity in fish means :
- (A) Egg laying outside
  - (B) Live young
  - (C) External fertilization
  - (D) No fertilization
70. Which of the following is viviparous ?
- (A) Salmon
  - (B) Shark
  - (C) Lamprey
  - (D) Chimera
71. Indian major carps belong to family :
- (A) Cyprinidae
  - (B) Siluridae
  - (C) Clupeidae
  - (D) Scombridae
72. Fishes living in sea water are called :
- (A) Freshwater fish
  - (B) Marine fish
  - (C) Brackish fish
  - (D) Coldwater fish
73. Which of the following is NOT the economic importance of fishes ?
- (A) Source of food
  - (B) Source of water
  - (C) Source vitamins
  - (D) Polishing agent
74. Which one of the following is exotic Indian fish ?
- (A) Labea
  - (B) Daphnia
  - (C) Clarias
  - (D) Cypris
75. Indian major carp bred by induced breeding is :
- (A) Rohu
  - (B) Tuna
  - (C) Shark
  - (D) Eel
76. Induced breeding is done by using :
- (A) Antibiotics
  - (B) Vitamins
  - (C) Hormones
  - (D) Minerals

77. Fish sauce is an example of :
- (A) Frozen fish product
  - (B) Fermented fish product
  - (C) Frozen fish product
  - (D) Smoked fish product
78. Fish sauce is prepared by :
- (A) Fermentation of fish with salt.
  - (B) Boiling fish
  - (C) Drying fish
  - (D) Smoking fish
79. Fish glue is a type of :
- (A) Lubricant
  - (B) Pigment
  - (C) Fertilizer
  - (D) Adhesive
80. Main protein present in fish glue is :
- (A) Keratin
  - (B) Collagen
  - (C) Elastin
  - (D) Casein
81. Mermaid purse is :
- (A) A colony of skates and rays
  - (B) A lovely fish
  - (C) Egg case of skate fishes
  - (D) A brood pouch of male sea horse for carrying eggs
82. Main nitrogenous toxic compound in prawn pond is :
- (A) Ammonia
  - (B) Sodium
  - (C) Silica
  - (D) Iron
83. Pollution in prawn culture mainly affects :
- (A) Soil only
  - (B) Water quality
  - (C) Air only
  - (D) Light
84. The study of fish is called :
- (A) Ichthyology
  - (B) Ornithology
  - (C) Herpetology
  - (D) Entomology

85. The fish where the male carries the eggs in brood pouch is the :
- (A) Clown fish
  - (B) Guppy
  - (C) Sea horse
  - (D) Betta
86. The scientific name of the Rohu is :
- (A) *Labeo rohita*
  - (B) *Catla catla*
  - (C) *Cirrihinus mrigala*
  - (D) *Heteropneustes fossilis*
87. Hippocampus (Sea horse) belongs to which class ?
- (A) Agnatha
  - (B) Osteichthyes
  - (C) Chondrichthyes
  - (D) Mammalia
88. Heart of fish is of :
- (A) One chamber
  - (B) Three chambers
  - (C) Two chambers
  - (D) Four chambers
89. Ampullae of Lorenzini are present in :
- (A) Fish
  - (B) Lizard
  - (C) Rabbit
  - (D) Frog
90. *Pristis* belongs to which class ?
- (A) Dipnoi
  - (B) Telostomi
  - (C) Itolocephali
  - (D) Elasmobranchii
91. Which of the following animals is a fish ?
- (A) Shark
  - (B) Star fish
  - (C) Silver fish
  - (D) Jelly fish
92. Which one of the following is an exotic Indian fish ?
- (A) *Clarias*
  - (B) *Labeo*
  - (C) *Daphnia*
  - (D) *Cypris*

93. Which one of the following is an example of a lung fish ?
- (A) Scoliodon
  - (B) Coelacanth
  - (C) Labeo
  - (D) Protopterus
94. A Fish is characterized by the presence of :
- (A) Dermal scales
  - (B) Paired fins
  - (C) Pharyngeal gills
  - (D) All of the above
95. Electric organs are found in :
- (A) Sharks
  - (B) Porpoises
  - (C) Goldfish
  - (D) Rays (torpedo)
96. Mouth brooding is observed in :
- (A) Tilapia
  - (B) Rohu
  - (C) Catla
  - (D) Hilsa
97. Viviparity in fishes is commonly observed in :
- (A) Rohu
  - (B) Catla
  - (C) Scoliodon
  - (D) Hilsa
98. Fish age determination is commonly done using :
- (A) Liver
  - (B) Intestine
  - (C) Gills
  - (D) Otoliths
99. Gill nets operate on the principle of :
- (A) Gilling mechanism
  - (B) Entangling by teeth
  - (C) Poisoning
  - (D) Electrocutation
100. The most common inland fishing craft in India is :
- (A) Steam trawler
  - (B) Canoe
  - (C) Submarine
  - (D) Yacht

***(Only for Rough Work)***

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 :

**Example :**

**Question :**

- Q. 1 (A) ● (C) (D)  
 Q. 2 (A) (B) ● (D)  
 Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

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 and 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.

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 छँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

**उदाहरण :**

**प्रश्न :**

- प्रश्न 1 (A) ● (C) (D)  
 प्रश्न 2 (A) (B) ● (D)  
 प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. 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. ओ. एम. आर. 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 के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, 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 प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।