Roll No. .....

Question Booklet Number

O. M. R. Serial No. | | | | | | | |

M. Sc. (Second Semester)

(NEP) EXAMINATION, 2025-26

ZOOLOGY

(Aquaculture) (Elective)

Paper Code							
B	0	5	0	8	0	7	T

Questions Booklet Series

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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. Which of the following is a limitation of gynogenesic ?

(A) Reduced genetic diversity

(B) High fertility

(C) Increased heterozygosity

(D) Rapid growth

2. Which hormone is commonly used for induced breeding ?

(A) Insuline

(B) Cortisol

(C) Pituitary extract

(D) Thyroxine

3. Conservation and culture of *Osteobrama belangeri* is important because :

(A) It lives only cold water

(B) It grows very slowly

(C) It is endangered in natural habitats

(D) It is poisonous

4. Which fish species has been successfully reproduced via androgenesis ?

(A) Zebrafish

(B) Salmon

(C) Catla

(D) Tilapia

5. The primary purpose of gynogenesis in aquaculture is :

(A) Increase heterozygosity

(B) Produce homozygous lines

(C) Enhance hybrid vigor

(D) Prevent inbreeding

6. Which molecular tool is widely used in aquaculture genetic ?

(A) PCR

(B) CRISPR

(C) Microsatellites

(D) All of the above

7. *Osteobrama belangeri* is a fish which found in this region of India :

(A) Northeast India

(B) Western ghats

(C) Eastern ghats

(D) Southern ghats

8. Androgenesis involves offspring developing from :

(A) Maternal genome only

(B) Paternal genome only

(C) Hybrid genomes

(D) Both (A) and (B)

9. Sex reversal is important for :

(A) Preventing unwanted reproduction

(B) Genetic studies

(C) Enhancing growth

(D) All of the above

10. The natural habitat of *Osteobrama belangeri* is :

(A) Deep Ocean

(B) Shallow ocean

(C) Brackish water and rivers

(D) Cold mountain streams

11. In aquaculture, temperature affects water quality by influencing :

(A) The solubility of dissolve oxygen

(B) The toxicity of ammonia

(C) The rate of organic matter decomposition

(D) All of the above

12. In which state of our country air breathing fishes are cultured ?

(A) Punjab

(B) West Bengal

(C) Gujarat

(D) Assam

13. Sex-reversal in fish is most effective during this stage :

(A) Fry

(B) Fingerling

(C) Larval

(D) Adult

14. Father of Ichthyology in India is :

(A) Dr. M. S. Swaminathan

(B) Dr. Hiralal Chaudhary

(C) Dr. Francis Day

(D) None of the above

15. When dissolved nitrite in the water is abnormally high the condition it causes in fish is ?

(A) Brown blood disease

(B) Gas bubble disease

(C) Gas bubble trauma

(D) Ichthyophthiriasis

16. The most common hormone used to induce breeding in India's major carps is :

(A) Estrogen

(B) Insulin

(C) Melatonin

(D) Ovaprim

17. Proper feeding management reduces :

(A) Oxygen

(B) Water quality

(C) Fish growth

(D) Ammonia build up

18. Extremely high or low pH may cause :

(A) Rapid growth

(B) Increase salinity

(C) Fish mortality

(D) No effect

19. A key environmental benefit of mussel and oyster farming :

(A) Increase nutrient loading

(B) Reduction of nitrogen from coastal water

(C) Reduction in water salinity

(D) Increase in CO_2 levels

20. Oyster seed is called :

(A) Spat

(B) Fry

(C) Larvae

(D) Fingerlings

21. Seed production is important for :

(A) Mining

(B) Aquaculture development

(C) Industry

(D) Forestry

22. Induced breeding is also known as :

(A) Capture fishing

(B) Natural fishing

(C) Artificial breeding

(D) Cage culture

23. Nursery ponds are used for :

(A) Catching fish

(B) Rearing fish seed

(C) Selling fish

(D) Storing equipment

24. The early life stage after larvae is called :

(A) Fry

(B) Fingerling

(C) Adult

(D) Broodstock

25. Freshwater aquaculture mainly uses :

(A) Marine

(B) Glacier

(C) Iceland

(D) Ponds, tanks, reservoirs

26. Father of composite fish culture in India :

(A) Dr. Verghese Kurien

(B) Dr. Hiralal Chaudhary

(C) Dr. M. S. Swaminathan

(D) Dr. Salim Ali

27. Which inland water body is formed due to river meandering ?

(A) Oxbow lake

(B) Canal

(C) Reservoir

(D) Glacier lake

28. A partially enclosed coastal body of river and sea is called :

(A) Delta

(B) Basin

(C) Estuary

(D) Plateau

29. Inland fisheries are mainly practiced in :

(A) Freshwater bodies

(B) Marine water

(C) Ice field

(D) None of the above

30. The most common inland water body used for aquaculture in India is :

(A) River

(B) Pond

(C) Marine

(D) Glacier

31. Fish feed contains :

(A) Protein

(B) Lipid

(C) Carbohydrates

(D) All of the above

32. Protein is important for :

(A) Growth

(B) Colour

(C) Sound

(D) Light

33. Pen culture is similar to :

(A) Cage culture

(B) Mining

(C) Foresting

(D) Farming

34. Fish health management includes :

(A) Disease control

(B) Water monitoring

(C) Feed management

(D) All of the above

35. Fish-cum-poultry system improve :

(A) Fish disease

(B) Nutrient availability

(C) Water loss

(D) Soil erosion

36. pH suitable for fish culture is :

(A) 1–2

(B) 2–3

(C) 9.5–11.5

(D) 6.5–8.5

37. The most common culture system in our country is :

(A) Ice culture

(B) Desert culture

(C) Pond culture

(D) Glacier culture

38. Composite fish culture mainly involves :

(A) Only marine fishes

(B) Only exotic fishes

(C) Only carnivorous fishes

(D) Combination of compatible species in one pond

39. The main aim of aquaculture is to :

(A) Increases forest area

(B) Produce aquatic food organisms

(C) Reduce water usage

(D) Improve soil fertility

40. Mariculture is a culture of :

(A) Pisces

(B) Apis

(C) Prawn

(D) Bombyx

41. Which water parameter is most important for fish survival ?

(A) Dissolved oxygen

(B) Wind direction

(C) Cloud cover

(D) Soil color

42. Scientific name of tiger shrimp is…….. .

(A) *Penaeus japonicus*

(B) *Penaeus monodon*

(C) *Penaeus indicus*

(D) *Penaeus vannamei*

43. Which of the following is a benefit of freshwater mullet culture ?

(A) Fast growth rate

(B) High market demand

(C) Low feed conservation ratio

(D) All of the above

44. Which of the following is the suitable area for rearing pond ?

(A) 0.06 – 0.10 ha

(B) 0.10 – 0.15 ha

(C) 0.08 – 0.12 ha

(D) 0.09 – 0.15 ha

45. In aquaculture, how much time is required for fry to attain fingerling size ?

(A) 25-50 days

(B) 30-60 days

(C) 40-65 days

(D) 50-65 days

46. The major component of shrimp feed are :

(A) Carbohydrates

(B) Minerals

(C) Protein

(D) Lipids

47. A waste product of protein digestion is :

(A) Ammonia

(B) Nitrogen gas

(C) Nitrite

(D) Nitrate

48. In a recirculating aquaculture system :

(A) Culture water is renewed

(B) Culture water is reused

(C) Fish production is less

(D) only Tilapia can be farmed

49. The optimal salinity range for tiger shrimp culture is :

(A) 10-20 ppt

(B) 20-30 ppt

(C) 30-40 ppt

(D) 40-50 ppt

50. Which of the following is a common predator of freshwater mullets ?

(A) Lagermouth bass

(B) Spotted seatrout

(C) Herons

(D) All of the above

51. Respiration by fish adds CO_2 to the water, this…….....pH of the water.

(A) increases

(B) neutralizes

(C) decreases

(D) does not change the pH

52. The most suitable Indian major carps for composite fish culture are :

(A) Betta, Catla, Mangur

(B) Catla, Rohu, Mrigal

(C) Hilsa, Prawn, Rohu

(D) Murrel, Catla, Mangur

53. In our country, famous open bundle are located in :

(A) Bankura (West Bangal)

(B) Punjab

(C) Goa

(D) Assam

54. Rearing ponds are used in rear :

(A) Adult fish

(B) Hatchling

(C) Brood stock

(D) Fry to fingerlings

55. COD is considered as :

(A) Carbon and oxygen demand

(B) Carbonic oxide demand

(C) Chemical oxygen demand

(D) None of the above

56. Which type of gene is added in fish for disease resistance ?

(A) Antifreeze gene

(B) Antimicrobial gene

(C) Receptor gene

(D) Dominant gene

57. Which of the following is not a live-bearing fish ?

(A) Tetra

(B) Molly

(C) Platy

(D) Guppy

58. Main supplementary feed used in carp production in pond is :

(A) Rice bran and oil cake mixture

(B) Mustard cake

(C) Lime

(D) Fish meal

59. Accumulation of excess feed in aquaculture ponds causes :

(A) Oxygen depletion

(B) Increase in Ammonia

(C) Both (A) and (B)

(D) None of the above

60. Breeding method which helps in maintaining genetic diversity is :

(A) Cloning

(B) Sex-reversal

(C) Inbreeding

(D) Hybridization

61. Role of genomics in aquaculture is to :

(A) enhance nutritional content

(B) study the genetic makeup of fish

(C) Both (A) and (B)

(D) None of the above

62. When dissolved Nitrite in the water is abnormally high, the condition it causes in fish is :

(A) High gas

(B) Bubbles

(C) Gas bubble disease

(D) Brown Blood Disease

63. Commercial species (Nori) in aquaculture is …… .

(A) Porphyra

(B) Eucheuma

(C) Ulva

(D) Laminaria

64. Angel fish lay eggs :

(A) As pelagic drifters

(B) Breeding trigger

(C) On vertical surfaces

(D) In floating bubblenests

65. First post-harvest step is :

(A) Brine-freezing

(B) Fermentation

(C) Washing and drying

(D) Roasting

66. The juvenile stage attached to seed strings is called :

(A) Zoospore

(B) Sporeling

(C) Smolt

(D) Parr

67. Main water quality variables monitored :

(A) N, P, light, temperature

(B) pH and salinity

(C) Humidity

(D) None of the above

68. The process of inserting nucleus into oyster is called :

(A) Implantation

(B) Seeding

(C) Nucleation

(D) Grafting

69. Mouthbrooders are :

(A) Build nests

(B) Eat Algae

(C) Scatter eggs

(D) Hold eggs in mouth for protection

70. Eggs that float near surface are called :

(A) Sessile

(B) Pelagic

(C) Demersal

(D) Benthic

71. The ideal salinity for *Pinctada* culture is :

(A) 10–15 ppt

(B) 16–26 ppt

(C) 27–35 ppt

(D) 40–50 ppt

72. Which property differs most between freshwater and marine water in aquarium ?

(A) Salinity

(B) Color

(C) Shape of Tank

(D) Hood size

73. The most common species which used for pearl culture in India is :

(A) *Pinctada margaritifera*

(B) *Pinctada radiata*

(C) *Pincatada fucata*

(D) *Pinctada maxima*

74. In seaweed aquaculture, the most widely used offshore method is :

(A) Recirculating tanks

(B) Long-line

(C) Pond cages

(D) Aerated raceways

75. Which parasite attaches to the fish skin and sucks blood ?

(A) Dactylogyrus

(B) Gyrodactylus

(C) Trichodina

(D) Argulus

76. White spot disease in fishes identify by :

(A) White cyst/boil on body

(B) Gill bleeding

(C) Swollen stomach

(D) Black patches

77. Typical salinity range for most cultured species (ppt) in aquaculture :

(A) 0–3

(B) 5–12

(C) 25–35

(D) 40–50

78. Which disease is caused by fungal infection in fish eggs ?

(A) Dropsy

(B) Saprolegniasis

(C) Vibriosis

(D) Argulosis

79. Seaweeds grow mainly in :

(A) Freshwater ponds

(B) Marine water

(C) Coastal water

(D) Both (B) and (C)

80. Swollen abdomen in fishes is symptom of :

(A) Fin rot

(B) Columnaris

(C) Dropsy

(D) Systemic mycoses

81. Dactylogyrus infects mainly :

(A) Skin

(B) Gills

(C) Eyes

(D) Intestine

82. Which organism causes white spot/Ich disease in fish ?

(A) *Ichthyophthirius multifilis*

(B) *Aeromonas*

(C) *Flavobacterium*

(D) None of the above

83. The air-breathing organ in *Clarias batrachus* is :

(A) Swim bladder

(B) Gill lamellae

(C) Accessory respiratory organ

(D) Skin

84. Aquaculture refers to :

(A) Capture fishing only

(B) Farming of aquatic organism

(C) Hunting marine animals

(D) Harvesting seaweed only

85. Which gas decreases due to organic waste decomposition in pond ?

(A) Nitrogen

(B) Oxygen

(C) Carbon dioxide

(D) Hydrogen

86. Which environmental condition is most critical for successful mollusc culture ?

(A) Stable salinity

(B) High turbidity

(C) Strong water currents

(D) Low oxygen levels

87. The mantle of molluscs plays a key role in :

(A) Reproduction

(B) Digestion

(C) Locomotion

(D) Shell formation

88. Transgenic fish technology is an application of :

(A) Classical genetics

(B) Both (A) and (C)

(C) Genetic Engineering

(D) None of the above

89. In mollusc culture, what is the primary factor influencing shell growth :

(A) Salinity

(B) Availability of calcium carbonate

(C) Temperature

(D) Light intensity

90. A transgenic fish is a fish that :

(A) has no genes

(B) contains foreign DNA inserted into its genome

(C) is produced only by hybridization

(D) lives only in marine water

91. The study of fish disease is called :

(A) Ichthyology

(B) Ichthyopathology

(C) Limnology

(D) None of the above

92. A common concern about transgenic fish is :

(A) Reduced feeding rate

(B) Low oxygen consumption

(C) Environmental risk if they escape into natural waters

(D) Increased water temperature

93. The main purpose of producing transgenic fish in aquaculture is to :

(A) Stop fish reproduction

(B) Increase growth rate and disease resistance

(C) Change fish color only

(D) Reduce size of fish

94. Market-assisted selection helps in :

(A) Faster-genetic improvement

(B) Reduced heterozygosity

(C) Random breeding

(D) None of the above

95. Which hormone gene is commonly transferred to increase fish growth ?

(A) Keratin gene

(B) Insuline gene

(C) Growth Hormone Gene

(D) Hemoglobin gene

96. Which fish species shows temperature-dependent sex determination ?

(A) Tilapia

(B) Salmon

(C) Catfish

(D) Zebrafish

97. The process of introducing foreign genes into fish is called :

(A) Hybridization

(B) Mutation

(C) Transgenesis

(D) Cloning

98. The main purpose of sex reversal is :

(A) Increase growth rate

(B) Control reproduction

(C) Produce monosex population

(D) All of the above

99. Androgenesis can be induced by :

(A) Hormonal therapy

(B) Heat shock

(C) Antibiotics

(D) UV irradiation of eggs

100. Seed production of fishes is usually done through :

(A) Cage culture

(B) Induced breeding

(C) Natural spawning

(D) Marine hatchery

(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 छाँटना 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।