

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 Entomology)

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. Which abiotic factor affects the developmental rate of insect population?
 - (A) Humidity
 - (B) Temperature
 - (C) Light
 - (D) Soil Type
2. Which factor is not typically considered when modeling insect population dynamics?
 - (A) Temperature
 - (B) Humidity
 - (C) Soil pH
 - (D) Photoperiod
3. What is the effect of drought conditions on insect population?
 - (A) Increase population growth
 - (B) Decrease population density
 - (C) Stabilizes population density
 - (D) None of these
4. Intraspecific competition occurs in :
 - (A) Different species
 - (B) Same species
 - (C) Plant vs. Insects
 - (D) Predatory vs. Prey
5. Example of interspecific competition is :
 - (A) Male beetles
 - (B) Lion vs. Hyena
 - (C) Ants in colony
 - (D) Birds nesting
6. In applied entomology, what is the primary focus of studying interspecific relationships?
 - (A) Predator prey
 - (B) Crop yield
 - (C) Insect behavior
 - (D) Pest control
7. What is the Lotka-Volterra model used for an ecology?
 - (A) Weather
 - (B) Population dynamics
 - (C) Genetic variation
 - (D) Climate change
8. What is the primary method insects use to identify suitable host plants?
 - (A) Visual cues
 - (B) Chemical cues
 - (C) Sound cues
 - (D) Temperature cues
9. Physical defense mechanism used by plants against insects :
 - (A) Production of toxins
 - (B) Volatile compound
 - (C) Thorn and spines
 - (D) Symbiotic relationship

10. Which type of interaction benefits both the plants and the insects ?
 - (A) Parasitism
 - (B) Commensalism
 - (C) Mutualism
 - (D) Predation
11. How do some plants attract insect pollinators?
 - (A) By producing toxins
 - (B) By emitting specific scents
 - (C) By growing thorn
 - (D) By changing leaf colour
12. Role of secondary metabolites in plants is :
 - (A) Photosynthesis
 - (B) Defense against herbivores
 - (C) Water absorption
 - (D) Nutrient storage
13. Which of the following insects is known for its role in pollination?
 - (A) Aphids
 - (B) Beetles
 - (C) Butterflies
 - (D) Grasshoppers
14. What is the primary benefits for insects in a mutualistic relationship with plants?
 - (A) Shelter
 - (B) Protection from predators
 - (C) Enhanced reproduction
 - (D) Food resources
15. Primary function of heat shock proteins in cells is :
 - (A) DNA Replication
 - (B) Photosynthesis
 - (C) Protein folding and repair
 - (D) Cell division
16. Which of the following is a common biochemical adaptation to low oxygen environment?
 - (A) Increased chlorophyll production
 - (B) Enhanced glycolysis
 - (C) Reduced enzyme activity
 - (D) Increased water uptake
17. Which molecule is commonly produced by plants in response to drought stress?
 - (A) Glucose
 - (B) Proline
 - (C) ATP
 - (D) Chlorophyll
18. Which enzyme is crucial for detoxifying hydrogen peroxide in cells?
 - (A) Amylase
 - (B) Lipase
 - (C) Protease
 - (D) Catalase

19. Which of the following is a biochemical adaptation to cold environment?
- (A) Increased lipid saturation
 - (B) Decreased enzyme activity
 - (C) Production of antifreeze proteins
 - (D) Enhanced chlorophyll synthesis
20. Primary function of pheromones in animal behavior is :
- (A) Communication
 - (B) Digestion
 - (C) Respiration
 - (D) Excretion
21. Pheromone is involved in regulating reproductive behavior :
- (A) Alarm pheromones
 - (B) Trail pheromones
 - (C) Aggregation pheromones
 - (D) Sex pheromones
22. How do pheromones influenced the reproductive cycle in some mammals ?
- (A) By altering food intake
 - (B) By changing sleep pattern
 - (C) By synchronizing estrus cycles
 - (D) By increasing aggression
23. Which pheromone is known to attract male moths to female moths?
- (A) Alarm pheromone
 - (B) Trail pheromone
 - (C) Sex pheromone
 - (D) Aggregation pheromone
24. Which organ in insects is primarily responsible for detecting pheromones?
- (A) Antennae
 - (B) Eyes
 - (C) Legs
 - (D) Wings
25. What is the primary purpose of using synthetic pheromones in Pest Control?
- (A) To attract predators
 - (B) To disrupt mating patterns
 - (C) To enhance growth
 - (D) To improve digestion
26. First stage of insect embryonic development is :
- (A) Nymph
 - (B) Egg
 - (C) Larva
 - (D) Pupa
27. In holometabolous insects, which process involves the transformation from larva to adult:
- (A) Metamorphosis
 - (B) Molting
 - (C) Ecdysis
 - (D) Parthenogenesis

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28. What is the term for the shedding of the exoskeleton during insect development?
- (A) Pupation
 - (B) Metamorphosis
 - (C) Oviposition
 - (D) Ecdysis
29. Which hormone is primarily responsible for regulating molting in insects?
- (A) Insulin
 - (B) Adrenaline
 - (C) Ecdysone
 - (D) Thyroxine
30. What is the term for the final molt that transforms a nymph into an adult in hemimetabolous insects?
- (A) Eclosion
 - (B) Metamorphosis
 - (C) Ecdysis
 - (D) Pupation
31. Which stage of development is absent in ametabolous insects?
- (A) Adult
 - (B) Egg
 - (C) Larva
 - (D) Pupa
32. Which of the following insects undergoes complete metamorphosis?
- (A) Grasshopper
 - (B) Butterfly
 - (C) Cockroach
 - (D) Dragonfly
33. What is diapause ?
- (A) A period of active growth
 - (B) A state of arrested development
 - (C) A phase of rapid reproduction
 - (D) A time of increased feeding
34. Which environment we often triggers diapause in insects?
- (A) High Temperature
 - (B) Long day light hours
 - (C) Short day light hours
 - (D) Abundant food supply
35. What is the need of diapauses?
- (A) To enhance reproduction
 - (B) To survive unfavourable conditions
 - (C) To increase feeding efficiency
 - (D) To promote rapid growth
36. Which insect is known for its diapause during the larval stage?
- (A) Monarch butterfly
 - (B) Honey bee
 - (C) Fruit fly
 - (D) Mosquito

37. What is the function of *Corpora allata* in insects?
- (A) Produces ecdysone
(B) Regulates water balance
(C) Produces Juvenile hormone
(D) Controls flight muscles
38. Which endocrine gland is responsible for secreting the molting hormone in insects?
- (A) *Corpora cardiaca*
(B) Prothoracic gland
(C) *Corpora allata*
(D) Salivary gland
39. Which hormone triggers the tanning or darkening of the adult cuticle in insects?
- (A) Ecdysone
(B) Bursicon
(C) Juvenile hormone
(D) Eclosion hormone
40. Where are the prothoracic gland located in insects?
- (A) Abdomen
(B) Head
(C) Thorax
(D) Legs
41. Which insect is known for exhibiting viviparity?
- (A) Butterfly
(B) Honey bee
(C) Grasshopper
(D) Aphid
42. Which of the following is a characteristic of viviparous reproduction ?
- (A) External fertilization
(B) Internal fertilization
(C) No fertilization
(D) Parthenogenesis
43. What is the role of the placenta like structure in some viviparous insects?
- (A) Gas exchange
(B) Nutrient transfer
(C) Waste removal
(D) All of the above
44. Which of the following organisms commonly exhibit Parthenogenesis?
- (A) Mammals
(B) Birds
(C) Insects
(D) Fish
45. Offspring develop from an unfertilized egg in :
- (A) Sexual Reproduction
(B) Gametogenesis
(C) Oogenesis
(D) Parthenogenesis

46. What is Parthenogenesis?
- (A) Sexual reproduction
 - (B) Asexual reproduction without fertilization
 - (C) Fusion of gametes
 - (D) Budding
47. Which insecticide act on the nervous system by causing a sodium/potassium imbalance?
- (A) Organophosphate
 - (B) Organochlorine
 - (C) Carbamate
 - (D) Pyrethroid
48. Which method of application involves the insecticides being absorbed through the insects cuticle?
- (A) Stomach poisons
 - (B) Contact poison
 - (C) Fumigant's
 - (D) Systemic insecticides
49. How do fumigant insecticides typically kill insects?
- (A) By ingestion
 - (B) By contact
 - (C) By inhalation
 - (D) By systemic absorption
50. Which insecticide can be use for egg stage of insects?
- (A) Organosulfur
 - (B) Nicotinoid
 - (C) Pyrethroid
 - (D) Carbamate
51. What safety equipment is essential when handling and applying insecticides?
- (A) Gloves and goggles
 - (B) Apron and hat
 - (C) Boots and scarf
 - (D) Sunglasses and mask
52. Which is a common type of equipment used for applying insecticides in large agricultural fields ?
- (A) Hand held sprayer
 - (B) Aerosol can
 - (C) Dust applicator
 - (D) Hydraulic sprayer
53. In which stage the insect life cycle chemosterilants are most commonly applied?
- (A) Egg
 - (B) Larva
 - (C) Pupa
 - (D) Adult
54. Which chemosterila is known for its use in controlling mosquito population?
- (A) Methoprene
 - (B) Dimilin
 - (C) Thiotepa
 - (D) Malathion

55. Which one is a common chemical attractant used in insect traps?
- (A) DDT
(B) Pyrethrin
(C) Pheromone
(D) Nicotine
56. Which attractant is commonly used in fruit fly traps?
- (A) Sugar solution
(B) Vinegar
(C) Fermented fruit
(D) All of the above
57. Which attractant is specially used to lure mosquitoes in traps?
- (A) Carbon dioxide
(B) Sugar solution
(C) Light
(D) Sound
58. Which type of attractant is often used in traps for monitoring agricultural pests like moths and beetles?
- (A) Food bait
(B) Sex pheromone
(C) Light attractant
(D) Sound attractant
59. Which of the following is a common natural pest repellent derived from plants ?
- (A) DEET
(B) Pyrethrin
(C) Citronella
(D) Malathion
60. Which one is an example of a Juvenile hormone along used as an insect growth regulator?
- (A) Methoprene
(B) Melathion
(C) DDT
(D) Pyrethrin
61. What is the primary cause of insecticide resistance in pest populations?
- (A) Genetic mutations
(B) Increased use of fertilizers
(C) Climate change
(D) Natural predators
62. What is a synergist in the context of pesticide application ?
- (A) Enhancer pesticide
(B) Target multiple pests
(C) Natural predator
(D) Degrades quickly
63. Which pest is known for causing significant damage to wheat by feeding on the grains?
- (A) Aphids
(B) Wheat stem saw fly
(C) Hessian fly
(D) Armyworm

64. Which pest is commonly known as the “rice bug”?
- (A) Brown Plant hopper
(B) Rice Stem borer
(C) Rice Weevil
(D) Rice hispa
65. Which pest is known for causing “dead heart” in maize plant?
- (A) Fall army worm
(B) Pink stem borer
(C) Spotted stem borer
(D) Corn earworm
66. What is the primary damage caused by the fall armyworm in maize?
- (A) Leaf defoliation
(B) Stem tunneling
(C) Root damage
(D) Grain damage
67. Which method is effective in controlling the Pink stem borer in maize?
- (A) Use of Pheromone traps
(B) Biological control using Trichogramma
(C) Crop rotation with legumes
(D) Deep plowing
68. Which control measure is effective against the millet aphid?
- (A) Use of resistance variety
(B) Application of neem oil
(C) Biological control using lady beetles
(D) None of the above
69. Which type of damage is caused by the sugarcane root bores?
- (A) Leaf curling
(B) Root tunneling
(C) Stem tunneling
(D) Grain discoloration
70. Pest commonly known as “Cotton bollworm” is :
- (A) *Aphis gossypii*
(B) *Bemisia tabaci*
(C) *Helicoverpa armigera*
(D) *Amarasca biguttula*
71. Major pest of mustard is :
- (A) Painted but
(B) Aphid
(C) White rust
(D) Sclerotinia rot
72. Which cultural practice can help reduce pest attack in mustard?
- (A) Late sowing
(B) Deep ploughing
(C) Reduced irrigation
(D) Delayed threshing

73. *Sitophilus oryzae* is a common stored grain pest of which crop?
- (A) Sugar
(B) Wheat
(C) Sugarcane
(D) Pulses
74. Which insect is also called the lesser grain borer?
- (A) *Tragoderma granarium*
(B) *Tribolium castaneum*
(C) *Calandra oryza*
(D) *Rhizopertha dominica*
75. Which insect is primarily responsible for malaria ?
- (A) House fly
(B) Mosquito
(C) Tse-Tse fly
(D) Sand fly
76. Lyme disease in animal is caused by :
- (A) Flea
(B) Tick
(C) Mosquito
(D) Louse
77. What is the term used for young locusts that hatch from eggs ?
- (A) Larvae
(B) Pupae
(C) Nymphs
(D) Adults
78. During which stage do locusts develop wings and reproductive organs?
- (A) Egg
(B) Nymph
(C) Fledgling
(D) Adult
79. How do aphids typically overwinter in temperate climates?
- (A) As winged adults
(B) As nymphs
(C) As eggs
(D) By Migration
80. What characteristic allows aphids to produce large populations rapidly ?
- (A) Long life span
(B) High rate of sexual reproduction
(C) Parthenogenesis
(D) Slow developmental process
81. What is the purpose of the Central Insecticides Board and Registration Committee (CIBRC) ?
- (A) To develop new crop varieties
(B) To regulate the import and use of insecticides
(C) To provide training to farmer
(D) None of the above

82. What is the primary role of the Directorate of plant protection, Quarantine and Storage (DPPQS) in India?
- (A) Conducting agricultural research
 - (B) Regulating pesticide use and plant quarantine
 - (C) Promoting organic farming
 - (D) Providing financial aid to farmers
83. Forensic Entomology is :
- (A) Study of plant diseases
 - (B) Study of insects in legal context
 - (C) Study of animal behaviour
 - (D) Study of microbes
84. Which insect is commonly used in Forensic entomology to estimate the postmortem interval?
- (A) Honey bee
 - (B) House fly
 - (C) Blow fly
 - (D) Mosquito
85. What is the primary product obtained from silkworm?
- (A) Honey
 - (B) Silk
 - (C) Lac
 - (D) Wax
86. What is the primary role of worker bees in a honey bee colony ?
- (A) Laying eggs
 - (B) Producing honey
 - (C) Mating with queen
 - (D) None of the above
87. Which beneficial insect is known for its role in pollination ?
- (A) Silk worm
 - (B) Lac insect
 - (C) Termite
 - (D) Honey bee
88. Which part of the lac insects is used to produce lac?
- (A) Wings
 - (B) Exoskeleton
 - (C) Secretion from the body
 - (D) Antennae
89. What is the primary goal of using genetically modified insects in vector control?
- (A) Increase insect population
 - (B) Reduce vector population
 - (C) Enhance insect biodiversity
 - (D) Improve insect nutrition
90. Which genetic tool is commonly used to create genetically modified insects for vector control?
- (A) CRISPER –Cas 9
 - (B) PCR
 - (C) Gel Electrophoresis
 - (D) DNA sequencing

91. Which disease is commonly targeted by genetic vector control methods involving mosquitoes?
 - (A) Influenza
 - (B) Malaria
 - (C) Tuberculosis
 - (D) Cholera
92. Which technique involves releasing sterile male insects to control pest population ?
 - (A) Gene editing
 - (B) Sterile Insect Technique (SIT)
 - (C) Genetic drift
 - (D) Natural selection
93. Which of the following is not a component of IPM?
 - (A) Biological control
 - (B) Cultural Practices
 - (C) Chemical control
 - (D) Ignoring Pest Monitoring
94. Which of the following is a biological control method in IPM?
 - (A) Using insecticides
 - (B) Crop rotation
 - (C) Introducing natural predators
 - (D) Mechanical traps
95. Primary goal of IPM is :
 - (A) Complete eradication of Pests
 - (B) Reducing Pest population to tolerate levels
 - (C) Using only chemical pesticides
 - (D) Ignoring pest problems
96. Insects like beetles and ants play a crucial role in which ecological service that benefits agriculture?
 - (A) Pollination
 - (B) Pest control
 - (C) Soil aeration
 - (D) Decomposition
97. Which insect derived product is widely used in the pharmaceutical industry for its antibacterial properties?
 - (A) Silk
 - (B) Honey
 - (C) Wax
 - (D) Venam
98. Which insect is used in production of a resin used in varnish and coating?
 - (A) Honey bee
 - (B) Lac insects
 - (C) Termites
 - (D) Silk worm
99. For decomposing organic matter insect is known as :
 - (A) Butterfly
 - (B) Honey bee
 - (C) Silkworm
 - (D) Dung beetle
100. Which insect is commonly used in maggot debridement therapy to clean wounds?
 - (A) Housefly
 - (B) Blowfly
 - (C) Mosquito
 - (D) Ant

Rough Work

Rough Work

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 सिरिज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।