E-Book

ENTOMOLOGY MCQs

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Entomology MCQs

Zoology

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Preface

Entomology, the scientific study of insects, forms an integral part of biological and agricultural sciences. Insects, being the most diverse group of organisms on Earth, play a crucial role in maintaining ecological balance, pollination, biological control, and in some cases, causing economic losses through pests and disease transmission. A solid understanding of entomology is essential for students pursuing careers in agriculture, biology, environmental sciences, and pest management.

This book, "Entomology MCQs for Undergraduate Students", is designed as a comprehensive resource for students preparing for competitive exams, university assessments, and entrance tests in agricultural and biological sciences. The book covers fundamental concepts of entomology in a concise, objective format to facilitate quick learning and self-assessment.

The Multiple Choice Questions (MCQs) in this book are carefully curated, covering key topics such as insect classification, morphology, physiology, behavior, ecology, and economic importance. Special emphasis is also given to applied entomology, including pest control methods, beneficial insects, and recent advancements in the field.

Key Features of the Book:

- Over 1000 MCQs covering core and applied aspects of entomology.
- Questions categorized topic-wise for systematic learning.
- Inclusion of questions from previous university and competitive examinations.
- Simple, clear language suitable for undergraduate students.

- A useful resource for B.Sc. Agriculture, B.Sc. Zoology, and related disciplines.
- We hope this book will serve as an effective tool for students to strengthen their knowledge of entomology and succeed in academic as well as professional pursuits.
- We extend our sincere gratitude to educators, subject experts, and students whose valuable feedback contributed to the development of this book.

—Authors

MCQs QUESTIONS ON ENTOMOLOGY

1. Which structure(s) would be found on an insect's pretarsus?

(a) Trochanter (b) Furca
(c) Empodium (d) All of these

2. Indirect flight muscles cause wing movement by:

(a) Moving thoracic sclerites
(b) Pulling on axillary sclerites
(c) Exerting hydrostatic pressure
(d) All of these

3. What is the maximum number of ocelli that may be found in an adult insect?

(a) Zero (b) Five
(c) Three (d) Twenty

4. A type of parasitism where the host is attacked by two or more species of parasitoids is termed as

(a) Multiple parasitism (b) Superparasitism
(c) Hyperparasitism (d) Adelphoparasitism

5. Which sclerite lies below (ventral to) the frons?

(a) Gena (b) Occiput
(c) Clypeus (d) Labium

6. A tormogen cell is always associated with a(n):

(a) Spine (b) Apodeme
(c) Gland (d) Seta

7. Chitin is a very important part of the insect's exoskeleton because:

(a) It is impermeable to water.
(b) It is rigid and inflexible.
(c) It is not digested by common enzymes.
(d) It is flexible and elastic.

8. Sub-imaginal moulting is present in

(a) Stonefly (b) Caddisfly
(c) Mayfly (d) Lanternfly

9. Where is the genital opening found on a typical insect?

(a) Just above the epiproct. (b) Just below the anus.
(c) Between the paraprocts. (d) Inside the tentorium.

10. Parapsidal furrows are grooves found on the mesonotum of some parasitic wasps. These grooves would be located:

(a) Above and between the front wings.
(b) Under the halteres.
(c) On the epimeron.
(d) No way to tell.

11. Which part of the exoskeleton lies between the wax layer and the cement layer?

(a) Exocuticle (b) Cuticulin layer
(c) Endocuticle (d) None of these

12. Which suture is not found on the head capsule?

(a) Pleural suture (b) Subgenal suture
(c) Epistomal suture (d) Frontal suture

13. Which statement about valvulae is incorrect?

(a) They are part of the female genitalia.
(b) They lie just inside the valvifers.
(c) They are arranged in three pairs.
(d) They guide the egg during oviposition.

14. The cibarium is best described as:

(a) Thoracic muscles that move the wings.
(b) A structure on the pretarsus.
(c) The innermost layer of the epicuticle.
(d) A muscular pump that sucks food into the mouth.

15. Elastic regions of the exoskeleton:

(a) Are generally known as sclerites.
(b) Are found only at the joints.
(c) Lack a well-defined exocuticle.
(d) Contain high concentrations of quinones.

16. Which layer(s) of the exoskeleton is (are) secreted by the epidermis?

(a) Endocuticle (b) Epicuticle
(c) Exocuticle (d) All of these

17. Which structure is not part of the central nervous system?

(a) Frontal ganglion
(b) Circumesophageal commissure
(c) Tritocerebrum
(d) Subesophageal ganglion

18. An insect must use both of its compound eyes (simultaneously) in order to perceive:

(a) Distance or depth (b) Ultraviolet light
(c) Shape or size (d) Polarized light

19. The chemical trail produced by foraging ants would be classified as a(n):

(a) Kairomone (b) Allomone
(c) Pheromone (d) None of these

20. Which statement about the insect's nervous system is incorrect?

(a) The ventral nerve cord controls the heart and gut.
(b) The caudal ganglion controls the external genitalia.
(c) The brain controls the eyes and antennae.
(d) The subesophageal ganglion controls the mouthparts.

21. The deutocerebrum innervates the:

(a) Mouthparts (b) Antennae
(c) Compound eyes (d) Heart

22. An ommatidium is best defined as a:

(a) Subdivision of the ventral nerve cord.
(b) Functional unit of the compound eye.
(c) Mechanoreceptor used for proprioception.
(d) Ventral lobe of the insect's brain.

23. Fly larvae (maggots) move away from a bright source of light. This is an example of a

(a) Taxis (b) Reflex
(c) Kinesis (d) Transverse orientation

24. In insects, myosin and actin are proteins of

(a) Nervous system
(b) Muscular system
(c) Male Reproductive system
(d) Female reproductive system

25. The circumesophageal connective joins the:

(a) Deutocerebrum with the tritocerebrum.
(b) Tritocerebrum with the subesophageal ganglion.
(c) Two lobes of the tritocerebrum.
(d) Frontal ganglion with the hypocerebral ganglion.

26. Compared to most learned behaviors, instinctive (innate) behavior is:

(a) More stereotyped
(b) Less complex
(c) Not subject to evolutionary change
(d) All of these

27. When laying eggs, a female insect returns to her larval host plant, even though she has not fed upon this plant during her adult life. This is an example of:

(a) Conditioning (b) Habituation
(c) Imprinting (d) Instrumental learning

28. In most insects, the sense of smell is localized in the:

(a) Tarsi (b) Antennae
(c) Maxillary palps (d) Frons

29. In insects with dichromatic (2 pigment) color vision, maximum color discrimination is in the range from:

(a) Red to green (b) UV to green
(c) Yellow to blue (d) Bee violet to bee purple

30. The mandibular gland substance of the queen honey bee inhibits ovarian development among worker bees in the same hive. This is an example of a(n):

(a) Allomone (b) Synomone
(c) Pheromone (d) Kairomone

31. If a nerve impulse started in the tritocerebrum and passed through the stomodeal nervous system until it reached the heart, it would not pass through the:

(a) Recurrent nerve (b) Subesophageal ganglion
(c) Frontal nerve (d) Hypocerebral ganglion

32. An insect's mechanoreceptors would NOT be sensitive to:

(a) Body movement (b) Sound vibrations
(c) Wind speed (d) Water vapor

33. Stridulation is a method of producing sound by:

(a) Vibrating the wings.
(b) Vibrating a resonant membrane.
(c) Striking the substrate.
(d) Rubbing body parts together.

34. In an ant nest, all workers are:

(a) Adult males (b) Immature males
(c) Adult females (d) Immature females

35. Which pair of structures have the most similar sensory functions?

(a) Chordotonal organs and tympana
(b) Stemmata and pressure receptors
(c) Flex receptors and cerci
(d) Antennae and hair beds

36. A firefly would most likely be classified as a insect.

(a) Crepusular (b) Eusocial
(c) Diurnal (d) Solitary

37. Female pseudergates may molt into determinant nymphs whenever:

(a) Soldier pheromone is too high
(b) Queen substance is too high
(c) King substance is too high
(d) None of these

38. All insects must communicate in order to:

(a) Find a mate (b) Survive the winter
(c) Locate food (d) Avoid predation

39. Any chemical used to repel predators would always be classified as a(n):

(a) Pheromone (b) Hormone
(c) Kairomone (d) Allomone

40. Insects that share a common nest site but do not care for their young are said to be

(a) Quasisocial (b) Semisocial
(c) Communal (d) Solitary

41. In insects, a term "Sectorials" is associated with:

(a) Wings (b) Legs
(c) Antenna (d) Mouthparts

42. Which event might initiate nocturnal behavior in an insect whose activity cycle is under exogenous control?

(a) Sunrise (b) Solar eclipse
(c) Rainfall (d) None of these

43. Which communication signal has low information content, but can be long-lasting in the environment?

(a) Wing color patterns (b) Light flashes
(c) Stridulation (d) Marking pheromones

44. The main excretory product found in insect is:

(a) Allantoin (b) Uric acid
(c) Ammonia (d) Urea

45. If the acute dermal LD-50 of an insect is 50 mg/kg, then:

(a) 50 insects can be killed with 50 mg of the product.
(b) One insect can be killed with 50 mg of the product.
(c) 50% of the insects can be killed with 50 mg of the product.
(d) None of these

46. Anaphylactic shock is best described as an extreme type of:

(a) Entomophibia (b) Allergic reaction
(c) Parasitosis (d) Envenomization

47. *Vibrio cholerae*, the causal agent of cholera, can be carried from one place to another on the feet of flies. This is an example of which type of transmission?

(a) Obligatory (b) Mechanical
(c) Transovarial (d) Facultative

48. Compared to first generation pesticides, the newer second and third generation compounds are:

(a) More selective and less persistent.
(b) More toxic and less selective.
(c) More persistent and less selective.
(d) None of these.

149. What is the generally accepted mode of action for organophosphate insecticides?

(a) Chitin inhibitor (b) Cholinesterase inhibitor
(c) Stomach poison (d) Respiratory toxin

50. Which of these denotes a type of host plant resistance characterized by the ability of the plant to outgrow and/or repair damage resulting from an insect attack?

(a) Antibiosi (b) Symbiosis
(c) Antixenosis (d) Tolerance

51. If an insect's developmental threshold is 15 degrees F, how many degree-days DD. does it on a day when the average temperature is 72 degrees F?

(a) 87 DD (b) 57 DD
(c) 30 DD (d) No way to tell

52. Broad-spectrum detoxification enzymes are commonly found in:

(a) Blood feeding insects (b) Polyphagous herbivores
(c) Insect parasitoids (d) All of these

53. If a population's intrinsic rate of increase ("r") is less than one, then the population is:

(a) Growing rapidly (b) Stable
(c) Growing slowly (d) Declining

54. An insect pest which GEP remains well above the DB and EIL is called:

(a) Major pest (b) Key pest
(c) Minor pest (d) Occasional pest

55. When a newly emerged queen honey bee hears the sound of "piping and quacking" from unemerged queens, she will find and destroy their cells. Apparently, these sounds are an example of:

(a) A releaser (b) A transverse orientation
(c) Appetative behavior (d) A fixed action pattern

56. Behavior patterns that change drastically over the lifetime of an insect are probably:

(a) Learned (b) Innate
(c) Imprinted (d) Afferent

57. What information could NOT be determined from a life table?

(a) Significant mortality factors
(b) Intrinsic rate of increase
(c) Environmental carrying capacity
(d) Stage-specific mortality rate

58. A certain insect usually becomes active each day at dusk. If kept in the dark all day, it will still become active around sunset even though it cannot see the sun. This behavior is an example of:

(a) A circadian rhythm (b) Transverse orientation
(c) Diurnal behavior (d) Exogenous entrainment

59. Worker ants remember landmarks around their nest entrance & use these as a guide when returning home. This behavior is an example of:

(a) Imprinting (b) Conditioning
(c) Habituation (d) Instrumental learning

60. Chemicals released by threatened aphids elicit defensive behavior among the ants that tend these aphids. Such chemicals would be best described as:

(a) Allomones (b) Hormones
(c) Pheromones (d) Kairomones

61. Substances in the frass produced by bark beetles attract predators & parasites to trees that are infested by these beetles. Such substance would be best described as

(a) Allomones (b) Hormones
(c) Pheromones (d) Kairomones

62. When predator changes its search image in response to a change in the density of prey, it exhibits a(n):

(a) Conditioned response (b) Functional response
(c) Numerical response (d) None of these

63. Which insects are most likely to pollinate foul-smelling flowers?

(a) Hover flies (b) Honey bees
(c) Carrion beetles (d) Stink bugs

64. If an insect's subesophageal ganglion were paralyzed, it would be unable to:

(a) Eat (b) See
(c) Fly (d) Walk

65. A type of parthenogenesis in insects in which only females are produced is termed as:

(a) Arrhenotoky (b) Amphytoky
(c) Thelytoky (d) Paedogenesis

66. Ants remember a food trail by the location of landmarks along the way. This is an example of:

(a) Conditioning (b) Imprinting
(c) Habituation (d) Instrumental learning

67. A male empiid fly courts a female for 20 minutes and then gives up after he fails to elicit any response. This is an example of:

(a) Conditioning (b) Imprinting
(c) Habituation (d) Instrumental learning

68. The central nervous system of an insect controls the:

(a) Mandibles and maxillae (b) Legs and wings
(c) Heart and foregut (d) None of these

69. The major differences between European and Africanized honey bees are:

(a) Physical (size)
(b) Behavior (agressiveness)
(c) Ecological (habitat)
(d) All of these

70. The information content of a sound signal is based on changes in:

(a) Amplitude (loudness) (b) Duration (pulsation)
(c) Frequency (pitch) (d) All of these

71. An ommatidium is the functional unit of the:

(a) Protocerebrum
(b) Compound eye
(c) Subesophageal ganglion
(d) Male reproductive system

72. Which of these could be an example of an entrainment cue?

(a) Odor of a predator (b) Darkness after sunset
(c) Odor of a host plant (d) Darkness before sunrise

73. It is possible that an immature insect might imprint on:

(a) Odor of a predator (b) Darkness after sunset
(c) Odor of a host plant (d) Darkness before sunrise

74. Which of these is a primary ecological event?

(a) Competition (b) Parasitism
(c) Immigration (d) None of these

75. Which of these is a secondary ecological event?

(a) Emigration (b) Mortality
(c) Predation (d) None of these

76. Which of these is an example of a Mullerian mimic?

(a) A bee that looks like a wasp
(b) A fly that looks like a bee
(c) A katydid that looks like a leaf
(d) A caterpillar that looks like a snake

77. Family of the *Helicoverpa armigera*

(a) Noctuiidae (b) Plutellidae
(c) Chrysomelide (d) Pyraustidae

78. Visceral (stomodaeal) Nervous System consists of:

(a) Frontal ganglion (b) Hypocerebral ganglion
(c) Recurrent nerve (d) Subesophageal ganglion

79. Which one of the following is a part of insect brain:

(a) Optic lobes
(b) Neurosecretory cells
(c) Circumesophageal commissure
(d) Tritocerebrum

80. Which digestive organ prevents regurgitation in insects:

(a) Gizzard (b) Crop
(c) Oesophagous (d) Cibarium

81. What is bee-bread?

(a) Honey & pollen
(b) Pollen & nectar
(c) Honey & wax
(d) pollen and nectar or honey

82. Which one of the following has haploid chromosomes?

(a) Queen (b) Drone
(c) Workers (d) All of these

83. Which one is a beetle?

(a) Caddisfly (b) Cicada
(c) Firefly (d) Midges

84. Which of the following order constitutes the largest bioluminescent group of insects?

(a) Homoptera (b) Hemiptera
(c) Coleoptera (d) Diptera

85. All species of order .....show hypermetamorphosis

(a) Diptera (b) Strepseptera
(c) Hymenoptera (d) Coleoptera

86. Which color shows moderately hazardous toxicity?

(a) Blue (b) Yellow
(c) Brown (d) White

87. *Tanymecus indicus* feed on the crop

(a) Paddy (b) Maize
(c) Sorghum (d) Mustard

88. Which one is used as an antidote of organochlorine insecticides?

(a) Diazepam (b) Atropine
(c) Sodium sulphate (d) All of these

89. Active ingredient in Tracer is:

(a) Chlorpyrifos (b) Fenvalerate
(c) Spinosad (d) Chlorantriniliprole

90. Chemicals which kill the pests are called.

(a) Insecticides (b) Pesticides
(c) Acaricides (d) Avicides

91. Immature stage of beetle is termed as

(a) Larva (b) Caterpillar
(c) Grub (d) Maggot

92. Mites have pairs of legs and two distinct body regions

(a) 2 (b) 4
(c) 6 (d) 3

93. Predator has type of mouthparts:

(a) Sponging (b) Rasping & sucking
(c) Chewing (d) Piercing

94. Instar is …….

(a) Immature of moths (b) Stage b/w two moults
(c) A larva (d) Crop pest

95. Cotton jassid belongs to order of insect

(a) Homoptera (b) Thysanoptera
(c) Coleoptera (d) Orthoptera

96. If an insecticide has 170 ml / acre dose rate and a pack size of 700 ml, how much acre it will spray?

(a) 4 (b) 2
(c) Several (d) Single

97. If 500 m^2 sprayed with 16 liter of knapsack sprayer, how much spray volume is used per acre?

(a) 80 liter (b) 128 liter
(c) 150 liter (d) 130 liter

98. PB-rope L is ……. .

(a) Novel insecticide (b) Sex pheromone
(c) Carbamate (d) Organophosphate