

Mid term examination - 2023

B.Sc (AG) 1st year 2nd semester

Subject - fundamental of entomology

1. Moniliform type of antennae is found in which insect?

- (a) Blister beetle (b) Damselfly (c) Termite (d) Grasshopper

Ans - (c) Termite

2. The spider, ticks and mites belong to which class of Arthropod?

- (a) Pauropoda (b) Uniremia (c) Arachnida (d) Diplopoda

Ans - (c) Arachnida

3. Alary muscles found in which system of insect body?

- (a) Digestive system (b) Circulatory system (c) Respiratory System (d) Secretory System

Ans - (b) Circulatory system

4. Which part of the alimentary canal of cockroach contributes to crushing of food?

- (a) Gizzard (b) Crop (c) Rectum (d) Caecae

Ans - (a) Gizzard

5. The major excretory organ in insects is:

- (a) Malpighian tubules (b) Green glands (c) Cuticle (d) Fat body

Ans - (a) Malpighian tubules

6. Facial area below the vertex and above clypeus is known as:

- (a) Frons (b) Occiput (c) Gena (d) Labrum

Ans - (a) Frons

7. The linear invaginations of the exoskeleton between two sclerites are called:

- (a) Occiput (b) Clypeus (c) Frons (d) Suture

Ans - (d) Suture

8. Exocuticle layer is made up of:

- (a) Chitin & Sclerotin (b) Sclerotin (c) Chitin & arthropodin (d) Arthropodin

Ans - (a) Chitin & Sclerotin

9. Pollen basket found in:

- (a) House fly (b) Wasp (c) Honey bees (d) Beetle

Ans - (c) Honey bees

10. Change in the growth and development in an insect during its life cycle from birth to maturity is known as:

- (a) Diapause (b) Dormancy (c) Metamorphosis (d) Moulting

Ans - (c) Metamorphosis

11. The proboscis in the mouthparts of the butterfly is formed from:

- (a) Labium (b) Galea of maxillae (c) Maxillary pulp (d) Vesicular seminalis

Ans - (b) Galea of maxillae

12. The process of shedding the old cuticle is known as:

- (a) Sclerotization (b) Apolysis (c) Ecdysis (d) Tanning

Ans - (c) Ecdysis

13. In insects, ganglion is a part of which system?

- (a) Nervous (b) Muscular (c) Reproductive (d) Respiratory

Ans - (a) Nervous

14. The meso and metathorax jointly called:

- (a) Prothorax (b) Proboscis (c) Pterothorax (d) Haustellum

Ans - (c) Pterothorax

15. The forewing of beetles is known as:

- (a) Hemelytra (b) Tegmina (c) Elytra (d) Halteres

Ans - (c) Elytra

Descriptive Type Questions Answers

Q1. Write about the structure of an antenna along with well labelled diagram.

Answer : The antenna is an important sensory organ in insects. It helps in smelling, touching and detecting vibrations.

An antenna consists of three main parts :

- Scape - Basal first segment attached to the head
- Pedicel - Second segment
- Flagellum - Long terminal part made of many segments

Functions :

- Smell perception
- Touch sensation
- Detection of vibrations

Diagram :

Flagellum

Pedicel

Scape

Head

Q2. Reasons for insect dominance / abundance.

Answer : The main reasons for insect dominance are :

- Small body size
- Ability to fly
- High reproductive capacity
- Adaptability to different environments
- Presence of metamorphosis
- Protective exoskeleton
- Ability to survive on different kinds of food

Q3. Write about the types of head based on position of mouthparts.

Answer : Based on the position of mouthparts, insect heads are of three types :

1. Hypognathous head - Mouthparts directed downward. Example : Grasshopper
2. Prognathous head - Mouthparts directed forward. Example : Beetle
3. Opisthognathous head - Mouthparts directed backward. Example : Aphid and bugs

Q4. Write the different functions of insect body wall.

Answer : Functions of insect body wall are :

- Protects internal organs
- Gives shape to the body
- Prevents water loss
- Provides attachment to muscles
- Bears sensory organs
- Provides body colour
- Protects from external injury

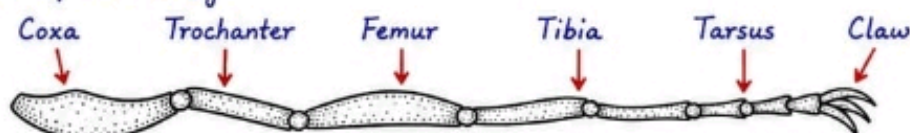
Q5. Write about the modification of leg with well labelled diagram.

Answer : Insect legs are modified for different functions.

Types of modified legs :

1. Cursorial leg - Used for walking Example : Cockroach
2. Saltatorial leg - Used for jumping Example : Grasshopper
3. Fossorial leg - Used for digging Example : Mole cricket
4. Natatorial leg - Used for swimming Example : Water beetle
5. Raptorial leg - Used for catching prey Example : Praying mantis

Diagram of insect leg :



MID TERM EXAMINATION 2022

BSc (AG) First Year Second Semester Subject Fundamental of Entomology

OBJECTIVE TYPE QUESTIONS

1. Which type of antennae is found in Honey bee?
(a) Filiform (b) Geniculate (c) Moniliform (d) Setate
Ans - (d) Setate ✓
2. Aristate antennae is found in
(a) Mosquito (b) Moths (c) Honey bee (d) House fly
Ans - (d) House fly ✓
3. Millipede comes under which class of phylum Arthropoda?
(a) Diplopoda (b) Onychophora (c) Arachnida (d) Chilopoda
Ans - (a) Diplopoda ✓
4. Body cavity of insect is called?
(a) Hemolymph (b) Haemocoel (c) Diaphragm (d) Heart
Ans - (b) Haemocoel ✓
5. Mites, scorpion, spiders and ticks belong to which class of phylum Arthropoda?
(a) Diplopoda (b) Onychophora (c) Arachnida (d) Chilopoda
Ans - (c) Arachnida ✓
6. All individuals of class Insecta are characterized by:
(a) 4 pairs of leg (b) 3 pairs of leg (c) 6 pairs of leg (d) 2 pairs of leg
Ans - (b) 3 pairs of leg ✓
7. Plate like gizzard is found in which of the following insect?
(a) Cockroach (b) Honeybee (c) Flea (d) Plant bug
Ans - (a) Cockroach ✓
8. Pharynx, oesophagus and crop are the parts of which region of alimentary canal?
(a) Midgut (b) Foregut (c) Hindgut (d) Mesentron
Ans - (b) Foregut ✓
9. Who was appointed as the India's first Entomologist to Govt. of India?
(a) T.B Fletcher (b) S. Pradhan (c) R.H Painter (d) Lionel de Niceville
Ans - (a) T.B Fletcher ✓
10. Which organ in insect is related to excretion?
(a) Johnston's organ (b) Ocelli (c) Tympanum organ (d) Malpighian tubules
Ans - (d) Malpighian tubules ✓
11. More than 200 malpighian tubules are present in which of the following insect?
(a) Aphid (b) Bugs (c) Cockroach (d) Locust
Ans - (d) Locust ✓
12. In grasshoppers, the sclerite on the front of the head located between the frons and the labrum is:
(a) Clypeus (b) Maxilla (c) Vertex (d) Gena
Ans - (a) Clypeus ✓
13. Which type of head orientation found in bug?
(a) Prognathous (b) Hypognathous (c) Opisthognathous (d) Nubgnathous
Ans - (c) Opisthognathous ✓
14. Endocuticle and exocuticle put together are called-
(a) Epicuticle (b) Procuticle (c) Cuticle (d) Cuticula
Ans - (b) Procuticle ✓
15. Campodeiform type of larva is found in which of the following?
(a) Rhinoceros beetle (b) Moth (c) Butterfly (d) Lady bird beetle
Ans - (d) Lady bird beetle ✓

Descriptive Type Questions Answers

Q1. Enlist the factors responsible for insect dominance / abundance.

- Answer :
- Small body size helps insects survive easily.
 - High reproductive capacity increases population rapidly.
 - Presence of wings helps in dispersal.
 - Metamorphosis reduces competition between stages.
 - Strong adaptability to different environments.
 - Protective exoskeleton prevents water loss and injury.

Q2. Describe about the different parts of insect antenna.

Answer : An insect antenna is divided into three main parts :

- Scape - Basal first segment attached to the head.
- Pedicel - Second segment containing Johnston's organ.
- Flagellum - Terminal part made of many small segments called flagellomeres.

Antennae mainly help in smell, touch and sensing vibrations.

Diagram :

Flagellum

|

Pedicel

|

Scape

|

Head

Q3. Write in brief about wing coupling apparatus in insect.

Answer : Wing coupling apparatus helps forewings and hindwings work together during flight.

Types include :

- Hamulate coupling - Hooks (hamuli) present in bees and wasps.
- Frenulum-retinaculum - Present in moths.
- Jugate coupling - Found in primitive moths.
- Amplexiform coupling - Wings overlap without hooks.

Q4. Write in brief about different types of metamorphosis in insect.

Answer : Metamorphosis is the developmental change from egg to adult.

Types :

1. Ametabolous - No metamorphosis (Silverfish).
2. Paurometabolous - Egg → Nymph → Adult (Grasshopper).
3. Hemimetabolous - Aquatic nymph stage present (Dragonfly).
4. Holometabolous - Egg → Larva → Pupa → Adult (Butterfly).

Q5. Define reproduction? Write in brief about the different types of reproduction found in insects.

Answer : Reproduction is the process by which insects produce young ones of their own kind.

Types of reproduction in insects :

- Sexual reproduction - Male and female both involved.
- Parthenogenesis - Development from unfertilized egg.
- Viviparity - Young ones are born alive.
- Oviparity - Eggs are laid outside the body.
- Polyembryony - Many embryos develop from one egg.

Mid term examination 2018-19

B.Sc (AG)first year second semester

Subject - fundamental of entomology

OBJECTIVE TYPE QUESTIONS

1. The number of segments in insect head is

- A) 7 B) 6 C) 5 D) 4

Answer: B) 6

2. In which type of head the mouth parts are continuous in series with the legs?

- A) Hypognathous B) Prognathous C) Opisthognathous D) None of the above

Answer: C) Opisthognathous

3. The basal segment of the insect leg is

- A) Trochanter B) Pedicel C) Coxa D) Scape

Answer: C) Coxa

4. The rasping and sucking mouth parts are present in

- A) Thrips B) Whitefly C) Jassid D) White grub

Answer: A) Thrips

5. The number of stylets in female mosquito is

- A) 2 B) 4 C) 6 D) 8

Answer: C) 6

6. Saltatorial legs are found in

- A) Cockroach B) Praying mantis C) Grasshopper D) Mole cricket

Answer: D) Mole cricket

7. The longest part of insect leg is

- A) Trochanter B) Femur C) Tibia D) Tarsus

Answer: B) Femur

8. One occurring on a crop almost throughout the year and difficult to control is known as

- A) Occasional pest B) Sporadic pest C) Seasonal pest D) Persistent pest

Answer: D) Persistent pest

9. The science which deals with the study of insect and environment is called

- A) Ecology B) Physiology C) Microbiology D) Embryology

Answer: A) Ecology

10. Which of the following is not head sclerite

- A) Gena B) Frons C) Epicranium D) Vertex

Answer: D) Vertex

FILL IN THE BLANKS SOLVED

1. A pad like structure present at the base of each tarsal claws is called Pulvillus.

2. In adult insects female genitalia are present in 8th and 9th segments.

3. The hind wing modified into dumbbell shaped structure is called Halteres.

4. The aquatic nymphs are known as Naiads.

5. Proventriculus or gizzard is a part of Digestive system.

MID TERM EXAMINATION 2018-19

B.Sc (AG)First Year Second Semester Subject - Fundamental of Entomology

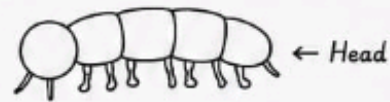
1. Types of Larvae with Examples

Larvae are immature stages of insects. Main types are:

(i) Polypod Larva

Have thoracic legs and abdominal prolegs.

Example: Caterpillar of butterfly.



(ii) Oligopod Larva

Only thoracic legs are present.

Example: Beetle grub.



(iii) Apodous Larva

Legs absent.

Example: Maggot of housefly.



2. Difference between Exopterygota and Endopterygota

Exopterygota	Endopterygota
Wings develop externally	Wings develop internally
Incomplete metamorphosis	Complete metamorphosis
Pupal stage absent	Pupal stage present
Nymph resembles adult	Larva differs from adult
Example: Grasshopper	Example: Butterfly

Diagram

Exopterygota

Egg → Nymph → Adult

Endopterygota

Egg → Larva → Pupa → Adult

3. Types of Metamorphosis with Example

(i) Ametabolous

No metamorphosis.

Example: Silverfish.

Egg → Young → Adult

(ii) Paurometabolous

Incomplete metamorphosis.

Example: Grasshopper.

Egg → Nymph → Adult

(iii) Holometabolous

Complete metamorphosis.

Example: Butterfly.

Egg → Larva → Pupa → Adult

4. Difference between Bug and Mosquito Type Mouthparts

Bug Type	Mosquito Type
Piercing and sucking type	Piercing and sucking type
Rostrum short and strong	Proboscis long and slender
Mandibles and maxillae modified into stylets	Six stylets present
Used for sucking plant sap	Used for sucking blood
Example: Jassid	Example: Female mosquito

Diagram

Bug Mouthpart



Mosquito Mouthpart

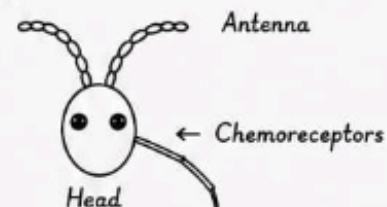


Diagram

5. Chemoreceptor

Chemoreceptors are sensory organs that detect chemicals.

They help insects in smelling and tasting food. These receptors are mainly present on antennae, mouthparts, and legs. They help insects find food, mates, and host plants.



Mid Term Examination
B.Sc. (Ag) First Year – Second Semester
Subject: Fundamental of Entomology

A. Fill in the Blanks

1. Lionel de Niceville was appointed as the first entomologist to the Govt. of India.
Answer: Lionel de Niceville
 2. Indian Insect Pests and Indian Insect Life books were written by Professor Maxwell Lefroy.
Answer: Professor Maxwell Lefroy
 3. Indian Lac Research Institute was established in the year 1925.
Answer: 1925
 4. In 1946 Government of India started the Directorate of Plant Protection Institute.
Answer: Directorate of Plant Protection Institute
 5. In 1916 the Natural History section of the Indian Museum was formed as the Zoological Survey of India.
Answer: Zoological Survey of India
-

B. Multiple Choice Questions

1. The female mosquitoes possess:
A) Filiform antennae B) Moniliform antennae C) Plumose antennae D) Serrate antennae
Answer: C) Plumose antennae
2. The Grasshopper possesses:
A) Natatorial legs B) Foragial legs C) Saltatorial legs D) Ambulatorial legs
Answer: C) Saltatorial legs
3. Which of the following is not head sclerite?
A) Gena B) Frons C) Epimeron D) Vertex
Answer: C) Epimeron
4. The spider, ticks and mites belong to the Arthropod class:
A) Pauropoda B) Uniremia C) Arachnida D) Diplopoda
Answer: C) Arachnida
5. Body and wings covered by overlapping scales found in order:
A) Lepidoptera B) Coleoptera C) Hymenoptera D) Diptera
Answer: A) Lepidoptera
6. Type of antennae found in Housefly:
A) Aristate B) Capitate C) Geniculate D) Aristate
Answer: A) Aristate
7. Filiform antennae found in:
A) Termite B) Grasshopper C) Red flour beetle D) Moth
Answer: B) Grasshopper
8. The proboscis in the mouthparts of butterfly is formed from:
A) Labium B) Galea of maxillae C) Maxillary pulp D) Vesicular seminalis
Answer: B) Galea of maxillae
9. Hamulate type of wing coupling apparatus is found in:
A) Grasshopper B) Butterfly C) Bug D) Honeybees
Answer: D) Honeybees
10. The insects are able to maintain the balance while walking due to:
A) Hexapod B) Small-size C) Exo-skeleton D) Wings
Answer: A) Hexapod

C. True or False

1. Millipedes fall under the Chilopoda class of Arthropoda.
Answer: False
 2. In bees and ants clavate type of antennae is found.
Answer: False
-



Department of Entomology

JNKVV - College of Agriculture, Rewa (M.P.)



Subject: Fundamental of Entomology
B.Sc. (Ag) 1st Year, 2nd Semester
Examination: Progressive-I

Multiple Choice Questions

1. The word "Entomology" is derived from which language?

- A) Latin B) French C) Greek D) Arabic

Answer: C) Greek

2. The suffix "-logos" means:

- A) Collection B) Study of C) Classification D) Observation

Answer: B) Study of

3. Which of the following is not a principal character of Phylum Arthropoda?

- A) Segmented body B) Paired segmented appendages
C) Bilateral symmetry D) Closed circulatory system

Answer: D) Closed circulatory system

4. Largest segment of the antennae is:

- A) Scape B) Flagellum C) Pedicel D) Coxa

Answer: B) Flagellum

5. Antennae help in insects mainly in:

- A) Digestion B) Sensation and communication C) Blood circulation D) None of these

Answer: B) Sensation and communication

6. Chewing and lapping type mouth parts commonly found in:

- A) Mosquito B) Honey bee C) Grasshopper D) All of these

Answer: B) Honey bee

Fill in the Blanks

7. Body wall is also known as Integument.

8. A tongue-like structure in insects is called Glossa.

9. YK Mathur and KD Upadhaya book name is A Textbook of Entomology.

Write the Correct Answer in One Word

10. The spider ticks and mites belong to the arthropod class:

Answer: Arachnida

Jawaharlal Nehru krishi vishwavidyalay

Mid Term Examination – Second Semester (B.Sc. Ag 1st Year 2018)

Subject: Fundamentals of Entomology

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5. In 1916 the Natural History section of the Indian Museum was formed as the Zoological Survey of India.

B. Multiple Choice Questions

1. The female mosquitoes possess:
A) Filiform antennae B) Moniliform antennae
C) Plumose antennae D) Serrate antennae
Answer: C) Plumose antennae
2. The Grasshopper possesses:
A) Natatorial legs B) Foragial legs
C) Saltatorial legs D) Ambulatorial legs
Answer: C) Saltatorial legs
Example: Grasshopper uses jumping legs for movement.
3. Which of the following is not head sclerite?
A) Gena B) Frons C) Epimeron D) Vertex
Answer: C) Epimeron
4. The spider, ticks and mites belong to the Arthropod class:
A) Pauropoda B) Uniremia
C) Arachnida D) Diplopoda
Answer: C) Arachnida
Example: Spider, tick, mite, scorpion.
5. Body and wings covered by overlapping scales found in order:
A) Lepidoptera B) Coleoptera
C) Hymenoptera D) Diptera
Answer: A) Lepidoptera
Example: Butterfly and moth.
6. Type of antennae found in Housefly:
A) Aristate B) Capitate
C) Geniculate D) Aristate
Answer: A) Aristate
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10. The insects are able to maintain balance while walking due to:
A) Hexapod B) Small-size
C) Exo-skeleton D) Wings
Answer: A) Hexapod

C. Write Down True or False

1. Millipedes fall under the Chilopoda class of Arthropoda.
Answer: False
Correct Class: Diplopoda.
2. In bees and ants clavate type of antennae is found.
Answer: False
Correct Type: Geniculate antennae.
3. Natatorial legs are known as walking legs.
Answer: False
Natatorial legs are swimming legs.
4. Hypognathous type of mouthparts found in Grasshopper.
Answer: True
5. Haltere present in Strepsiptera order.
Answer: False
Halteres are present in Diptera.

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Mid Term Examination – Second Semester (B.Sc. Ag 1st Year 2018)

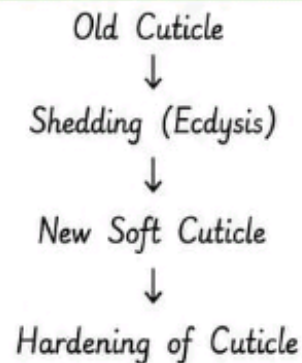
Subject: Fundamentals of Entomology

D. Short Notes

1. Moulting

- Moulting is the process of shedding the old exoskeleton in insects to allow growth.
- The old cuticle is removed and a new cuticle is formed.
- The hormone ecdysone controls moulting.
- The stage between two moults is called an instar.

Diagram of Moulting

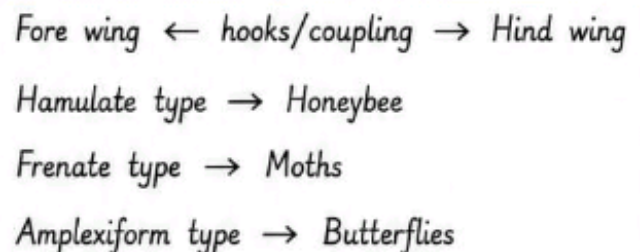


2. Types of Wing Coupling

Types:

- Hamulate type
- Frenate type
- Jugate type
- Amplexiform type

Diagram

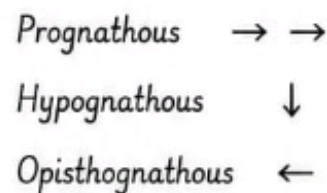


3. Modification of Insect Head

Types:

- Prognathous → mouthparts directed forward
- Hypognathous → mouthparts directed downward
- Opisthognathous → mouthparts directed backward

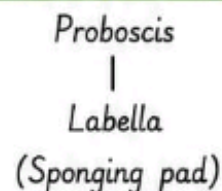
Diagram



4. Sponging Type of Mouthparts

- Found in housefly.
- Adapted for sucking liquid food.
- Labium forms proboscis with sponge-like labella.

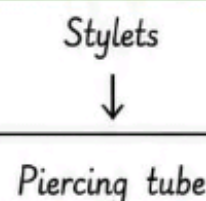
Diagram



5. Piercing and Sucking Type of Mouthparts

- Found in mosquito, bug and aphid.
- Mouthparts modified into needle-like stylets.
- Used for piercing tissues and sucking fluids.

Diagram



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Mid Term Examination – Second Semester (B.Sc. Ag 1st Year 2018)

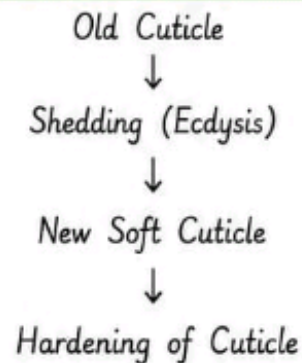
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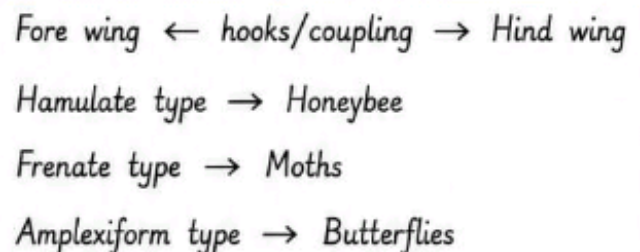


2. Types of Wing Coupling

Types:

- Hamulate type
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- Jugate type
- Amplexiform type

Diagram

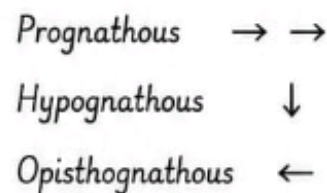


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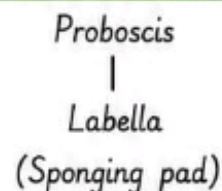
Diagram



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