

Course I: Entomology (Morphology Physiology & Development Biology) (MSZO611)

UNIT WISE CONTENTS

Block I: General organization of insect body

Unit 1: Head

- 1.1 Objectives
- 1.2 Introduction
- 1.3 Structure of typical eye
 - 1.3.1 Modification of eye
 - 1.3.2 Structure of ommatidium
 - 1.3.3 Mechanism of image formation
 - 1.3.3.1 Diurnal insects
 - 1.3.3.2 Nocturnal insects
- 1.4 Structure and modification of antennae
- 1.5 Mouth parts of typical insects
- 1.6 Modifications of mouth parts in different insects
- 1.7 Summary
- 1.8 Terminal questions and Answers

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- 2.1 Objectives
- 2.2 Introduction
- 2.3 Structure of typical Leg
 - 2.3.1 Modification of different Legs
- 2.4 Structure of a typical Wing
 - 2.4.1 Types of Wings
 - 2.4.2 Hypothetical Wing Venation
 - 2.4.3 Wing Coupling Mechanisms
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- 3.3 Structure of Genitalia
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Block II: Insect Physiology

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- 4.8 Nutritional Requirements
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- 5.3 Circulation
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- 6.7 Production of Urine and its Hormonal Regulation
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- 6.9 Control of Diuresis
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- 7.4 Structure and functions of Various Respiratory Organs
- 7.5 Respiratory system and its Modifications
- 7.6 Respiration in Terrestrial, Aquatic and Endoparasitic Insects.
- 7.7 Aquatic Respiratory Adaptations
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- 8.3 Generalized plan of Nervous System in Insects
- 8.4 Modifications of Nervous System in Terrestrial and Aquatic Insects
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- 9.3 Structure and functions of different types of Sensory Organs
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- 9.5 Sound producing Organs
- 9.6 Light Producing Organs: Mechanism, Control and Significance

- 9.7 Chemoreceptor and Mechanoreceptor: Functions and physiology
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- 10.3 Structure and Modification of Male and Female Reproductive Organs
- 10.4 Spermatogenesis and Oogenesis
- 10.5 Mating
- 10.6 Inseminations
- 10.7 Oviposition
- 10.8 Special Modes of Reproduction
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- 11.3 Neuroendocrine System in Insects
- 11.4 Role of Neurosecretion in Various Metabolic Activities
- 11.5 Metamorphosis and Development of Insects
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- 12.4 Different types of Pheromones
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- 13.4 Structure of Egg
- 13.5 Maturation
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- 13.9 Different types of Larvae and Pupae
- 13.10 Polyembryony and Parthenogenesis in Insects
- 13.12 Summary
- 13.14 Terminal Questions and Answers

Suggested Readings:

1. The Insect: Structure and function by R.F. Chapman
2. Comparative Insect physiology, Biochemistry and Pharmacology .Vol :1-13.
Edited by G.A. Kerkut and L.I. Gilbert.
3. Entomophagous Insect by Clausen
4. Entomology by Gilbert
5. Principles of Insect Physiology by Wigglesworth.
6. Fundamentals of Entomology by Elzinga
7. Insect Physiology by Wigglesworth.
8. Insect morphology by Mat Calf and Flint
9. Applied Agricultural Entomology by Dr. Lalit Kumar Jha