

**PARUL UNIVERSITY**  
**COLLEGE OF AGRICULTURE**  
**B.Sc.(Hons.)Agriculture Summer 2018- 2019 Examination**

**Semester: 3**  
**Subject Code: 20104201**  
**Subject Name: Insect Morphology and Systematics**

**Date:18/04/2019**  
**Time: 10:30am to 01:00pm**  
**Total Marks: 60**

**Instructions**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Do as Directed.****A. Fill in the blanks. (Each of 1.0 marks)****(10)**

1. A respiratory system in which all ten pairs of spiracles are functional is called \_\_\_\_\_
2. The right mandible is absent in \_\_\_\_\_ type of mouth parts
3. The male genital appendages are situated at \_\_\_\_\_ abdominal segment in insect
4. The antennae is situated at \_\_\_\_\_
5. The forewing of coleopteran insects modified in to \_\_\_\_\_ for protection of membranous hind wings.
6. Adult mite have \_\_\_\_\_ pairs of legs
7. The wings of insects arises from \_\_\_\_\_
8. The amount of uric acid in excreta of insects is \_\_\_\_\_ percent
9. In house fly, hind wings are reduced to slender knob and a stalk structure known as \_\_\_\_\_
10. Aquatic nymph is called \_\_\_\_\_

**B. Multiple choice type questions. (Each of 1.0 mark)****(10)**

1. Cornicles are found in \_\_\_\_\_
 

a) Whitefly	c) Aphids
b) Lac insect	d) Jassids
2. The cuticle is made up of
 

a) Epicuticle, Procuticle	c) Pro, Epi and Endocuticle
b) Procuticle, Endocuticle	d) None of these
3. The wax layer is the part of
 

a) Procuticle	Exocuticle
b) Epicuticle	Endocuticle
4. In grasshopper which type of head is found?
 

a) Prognathous	c) Opisthognathous
b) Hypognathous	d) None of these
5. Clypeus is situated at \_\_\_\_\_
 

a) Cephalothorax	c) Abdomen
b) Head region	d) Thorax
6. What is the shape of the epicranial suture?
 

a) Inverted Y shaped	c) Inverted V shaped
b) Inverted U shaped	d) None of these
7. The Johnston's organ works as
 

a) Auditory organ	c) Gustatory organ
b) Olfactory organ	d) None of these
8. Bipectinate type antennae found in
 

a) Leaf hopper	c) Mantid
b) Silk moth	d) Sugarcane root borer
9. The mouth parts in order Lepidoptera is
 

a) Piercing & Sucking type	c) Siphoning type
b) Biting and chewing type	d) Sponging type
10. The legs of insects arises from \_\_\_\_\_

- a) Prothorax
- b) Mesothorax

- c) Metathorax
- d) All of these

**Q.2 Do as Directed.**

**A. Define the following. (Any five)**

**(05)**

1. Agricultural Entomology
2. Exoskeleton
3. Moulting
4. Metamorphosis
5. Respiratory System
6. Nocturnal
7. Nomenclature

**B. Answer the following. (Any Five)**

**(05)**

1. On which segments of insect's body the spiracles are located?
2. What is hypermetamorphosis?
3. Draw well labelled diagram of typical structure of insect leg
4. Draw the labelled diagram of female reproductive system
5. What is insect?
6. What is entomology?
7. How insects are harmful (Enemy)?

**Q.3 Write short notes. (Any five)**

**(15)**

1. Draw the labelled diagram of tracheal respiration system
2. Write the Steps of moulting
3. Explain the types of metamorphosis with example
4. Write the types of neurons according to number of axons
5. Write the stages of taxonomy
6. Enlist the the excretory organs

**Q.4 Attempt any Three/Long Questions/Example**

**(15)**

1. Explain the digestive system of insect with labelled diagram
2. Enlist the excretory organ of insect and explain the Malpighian tubules
3. What is metamorphosis? Explain the types of metamorphosis with example
4. Explain the body wall its structure and function with labelled diagram