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**MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE**  
**SEMESTER END EXAMINATION**

**B.Sc. (Agri.)**

<b>Semester</b> : III (New)	<b>Term</b> : I	<b>Academic Year</b> : 2016-17
<b>Course No.</b> : ENTO 231	<b>Title</b> : Insect Morphology and Systematics	
<b>Credits</b> : 3(2+1)		
<b>Day &amp; Date</b> : Tuesday, 15.11.2016	<b>Time</b> : 9.00 to 12.00	<b>Total Marks</b> : 80

- Note :**
1. Solve ANY EIGHT questions from SECTION "A".
  2. All questions from SECTION "B" are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagrams wherever necessary.

**SECTION "A"**

- Q.1 Enlist important characteristics of Phylum Arthropoda and differentiate between the Class Insecta and Arachnida.
- Q.2 Draw a well labeled diagram of insect integument and enlist its various functions.
- Q.3 Enlist different types of mouth parts in insects and describe the mouth parts of cockroach with a labeled diagram.
- Q.4 Describe the structure of a typical antenna of an insect with a well labeled diagram and enlist the various types of antenna with one example each.
- Q.5 Draw a well labeled diagram of typical wing venation and describe the various modifications of wings.
- Q.6 Give the significance of metamorphosis and differentiate between complete and incomplete type of metamorphosis.
- Q.7 a) Write in short the characteristic features responsible for dominance of Class Insecta.  
b) Give the non-productive and productive appendages of abdomen in insects.
- Q.8 State the distinguishing characteristics of Order Coleoptera and mention any four agriculturally important families of Coleoptera with example.
- Q.9 Write short notes (Any two).
- 1) Excretion in insects
  - 2) Functions of blood in insects
  - 3) Photoreceptors in insects
- Q.10 Give two differences of each of the following.
- 1) Campodeiform and Scarabaeiform larvae
  - 2) Butterflies and moths
  - 3) Beetles and weevils
  - 4) Spurs and spines

**SECTION "B"**

- Q.11 Choose the correct answer.
- 1) Hypognathus type of head is found in \_\_\_\_\_.
- a) Bugs
  - b) Beetles
  - c) Weevils
  - d) Grasshoppers

**(P.T.O.)**

2) ICAR- National Bureau of Agricultural Insect Resources (NBAIR) is located at \_\_\_\_\_.

- a) Bangalore
  - b) Hyderabad
  - c) New Delhi
  - d) Coimbatore
- 3) The Respiratory system in which the first and last pair of spiracles are functional is called \_\_\_\_\_.
- a) Amphipneustic
  - b) Metapneustic
  - c) Propneustic
  - d) Peripneustic
- 4) Nephrocytes are related with \_\_\_\_\_.
- a) Reproduction
  - b) Respiration
  - c) Excretion
  - d) Digestion
- 5) The phenomenon where the immature insects or stages give birth to young ones is known as \_\_\_\_\_.
- a) Parthenogenesis
  - b) Viviparity
  - c) Paedogenesis
  - d) None of these
- 6) Dr. Kerr published an account of research pertaining to \_\_\_\_\_.
- a) Termites
  - b) Lac insects
  - c) Honey bees
  - d) Silk worms
- 7) Juvenile hormone which controls metamorphosis in insects is produced by \_\_\_\_\_.
- a) Prothoracic glands
  - b) Corpora cardiaca
  - c) Corpora allata
  - d) All of these
- 8) Filter chamber is present in insects belonging to Order \_\_\_\_\_.
- a) Odonata
  - b) Isoptera
  - c) Diptera
  - d) Homoptera

**Q.12** Match the following pairs.

**"A"**

**“B”**

- |                  |                            |
|------------------|----------------------------|
| 1) Ephemeroptera | a) Caddisfly               |
| 2) Odonata       | b) Mustard sawfly          |
| 3) Mecoptera     | c) House fly, midge fly    |
| 4) Trichoptera   | d) Whitefly                |
| 5) Hymenoptera   | e) Mayfly                  |
| 6) Lepidoptera   | f) Dragonfly and damselfly |
| 7) Diptera       | g) Scorpionfly             |
| 8) Hemiptera     | h) Butterfly               |

