



**THE OPEN UNIVERISITY OF SRI LANKA
B.Sc DEGREE PROGRAMME – LEVEL 5
COURSE TITLE – ENTOMOLOGY
COURSE CODE – ZOU 3163/5163
OPEN BOOK TEST – I
DURATION: ONE HOUR (01)**

Registration No:.....

Date: 12TH September 2009

Time: 11.00 am – 12.00 noon

ANSWER ALL QUESTIONS IN PARTS A, B, & C.

- **Part A consists of two topics with thirty five blanks (35) and the blanks should be filled with suitable words.**
- **Part B is a structured essay question consisting of ten parts from 2.1 – 2.10. Answers should be written in the space provided.**

At the end of the examination the whole paper should be handed over to the supervisor.

The Open University of Sri Lanka

B.Sc Degree Programme.

Course Title: Entomology

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PART A

2.0. Fill in the blanks in the articles given below with the most appropriate word/s.

Metamorphosis: All (1) insects undergo varying degree of transformation from the (2) to the adult phase of their life history. Some (3) such as cockroaches, show only slight morphological changes during post-(4) development, whereas the body is largely reconstructed at metamorphosis in many endopterygotes. Only the Holometabolous, (5) have a metamorphosis involving a pupal stadium, during which adult structures are elaborated from larval structures. Alterations in body shape which are the essence of metamorphosis are brought about by differential growth of various body parts. (6) that will function in the adult but that were (7) in the larva grow at a faster rate than the body average. The accelerated growth of wing pads is the most obvious example but legs, genitalia, gonads and other internal organs may increase in size and complexity to a considerable extent.

The onset of (8) is generally associated with the attainment of a certain body size which is thought to program the brain for metamorphosis, resulting in altered (9) levels. Metamorphosis in most studied beetles, however, shows considerable independence from the influence of the (10), especially during the pupal instar. In most insects, a reduction in the amount of circulating (11) hormone is essential for the initiation of (12)

The (13).....into the pupal instar is called pupation. Many insects survive conditions unfavorable for development in the "resting", non-feeding (14) stage but often what appears to be a pupa is actually a fully developed adult within the pupal cuticle, referred to as a (15) adult. Typically, a protective cell or cocoon surrounds the pupa and then prior to emergence, the pharate adult; only certain Coleoptera, Diptera, Lepidoptera, and Hymenoptera have unprotected (16)

Several pupal types are recognized and these appear to have arisen convergently in different orders. Most pupae are exarate – their appendages are not closely appressed to the body.

The dominance of Insects:

Insects are the dominant life-form on (17) Millions of insects may exist in a single acre of land. About one million species have been described, and there may be as many as ten times that many yet to be (18) Of all creatures on earth, (19)..... are the main consumers of plants. They also play a major role in the breakdown of plant and animal material and constitute a major food source for many other (20)

(21) are extraordinarily adaptable creatures, having evolved to live successfully in most environments on earth, including deserts and the Antarctic. The only place where insects are not commonly found is the (22) If they are not physically equipped to live in a stressful environment, insects have adopted behaviors to avoid such stresses. Insects possess an amazing diversity in size, form, and behavior.

It is believed that insects are so successful because they have a protective shell or (23), they are small, and they can (24) Their small size and ability to fly permits escape from enemies and dispersal to new (25) Because they are small they require only small amounts of food and can exist in very small niches or spaces. In addition, insects can produce large numbers of (26)relatively quickly. Insect

populations also possess considerable genetic diversity and a great potential for adaptation to different or changing environments. This makes them an especially formidable pest of crops, able to adapt to new plant varieties as they are developed or rapidly becoming (27) to insecticides.

Insects are directly (28) to humans by producing honey, silk, wax, and other products. Indirectly, they are important as pollinators of (29) natural enemies of pests, scavengers, and food for other creatures. At the same time, insects are major (30)of humans and (31)..... animals because they destroy crops and vector diseases. In reality, less than one percent of insect species are (32) and only a few hundred of these are consistently a problem. In the context of (33)an insect is a pest if its presence or damage results in an (34).....important loss.

The adage "know your enemy" is especially appropriate when it comes to insect (35)..... The more we know about their biology and behavior, including their natural enemies, the more likely we will be able to manage them effectively.

Registration No:.....

PART B

2.0. Answers should be written in the space provided.

2.1. List the major steps that could be identified in the process of moulting in insects.

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2.2. How do aquatic insects eliminate their excretory product/s from their body?

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2.3. What is meant by voltinism? Name the different types of voltinism.

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2.4. (a) Define the term Polyembryony.

(b) State the significance of this phenomenon.

a).....

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b).....

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2.5. (a) List the different modes through which the development of an insect is arrested in response to changes in the environment.

(b) State how the insects overcome this situation.

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b).....
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2.6. (a) What are prohaemocytes?

(b) Give two functions of prohaemocytes.

a).....
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b).....
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2.7. List the major characteristic features of the Coleopteran insects.

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2.8. Draw the different types of modifications seen among the legs present in order Coleoptera.

2.9. Draw a schematic diagram to illustrate the endocrinal control of the epidermal process that occurs in moulting and metamorphosis in an endopterygote insect.

2.10. Give the scientific name of a recently found insect order and give two characteristic features of it.

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