

# THE BRITISH BEEKEEPERS' ASSOCIATION

Founded in 1874

Registered Charity No. 212025

## EXAMINATION FOR PROFICIENCY IN APICULTURE MODULE 5 HONEYBEE BIOLOGY

Candidate Number:

14<sup>th</sup> November 2015 Time Allowed 1½ hours

### *Instructions to Candidates*

Read the questions carefully. Answer All Sections. It is recommended not to spend more than 10 minutes on Section A, 50 minutes on Section B or 30 minutes on Section C.

Unless stated otherwise questions apply to Honeybees.

Use **BLACK** pen for text. **Black** pencil may only be used for diagrams. **DO NOT USE COLOURS.**

### Examiner Use Only

Question	Sec A	B11	B12	B13	B14	B15	C16	C17	Total
Mark									
Moderated									

## SECTION A (10 marks, 1 for each question)

Answer **ALL** the questions in this section. Use one or two word or short phrase answers. Please write your answers on the question paper.

- Q1 What is the name of the large muscles that enable the bee to fly? .....
- Q2 Name the shield shaped area of the honey bees head below the antennae. ....
- Q3 How many sections make up the flagellum of the Drone? .....
- Q4 Where are sperm stored in the Drone? .....
- Q5 Name the valve between the ventriculus and the small intestine. ....
- Q6 Name a pigment in the ommatidium reacting to light. ....
- Q7 What is the anatomical name of the flattened hollow at the end of the basitarsus known as the pollen press? .....
- Q8 Name the tergite glands of the queen which produce pheromones. ....
- Q9 How many ovarioles are usually found in a laying worker? .....
- Q10 What is the name of the hormone that initiates larval moulting? .....

**PLEASE HAND IN THIS SHEET AT THE END OF THE EXAMINATION**

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## SECTION B (60 marks, 15 for each question)

Answer any **FOUR** questions from this section. Write short notes for your answers.

Marks

- |     |     |   |    |
|-----|-----|---|----|
| Q11 | (a) | Label five parts on the diagram provided.   | 5  |
|     | (b) | Describe briefly the action of the sting.   | 10 |
| Q12 | (a) | Label B, C, D, E on the diagram provided.   | 4  |
|     | (b) | List five functions of the cuticle.   | 5  |
|     | (c) | Outline the differences in the cuticular structure of the trachea, tracheoles and air sacs.   | 6  |
| Q13 | (a) | Distinguish between an endocrine gland and an exocrine gland.   | 4  |
|     | (b) | Write notes on the production and secretion of wax including the structure and position of the wax glands (chemical components are not required). | 11 |
| Q14 | (a) | Describe briefly the structure and function of the ventriculus.   | 11 |
|     | (b) | How can a bee manage without a cleansing flight for several weeks during winter?  | 2  |
|     | (c) | At which stage during its development does a worker larva defecate for the first time and why didn't this occur before this stage?                | 2  |
| Q15 |     | Write notes on each of the following:   |    |
|     | (a) | Arolium;  | 5  |
|     | (b) | Petiole;  | 5  |
|     | (c) | Ocelli.   | 5  |

## SECTION C (30 marks)

Answer **ONE** question from this section. Give *labelled* diagrams where applicable.

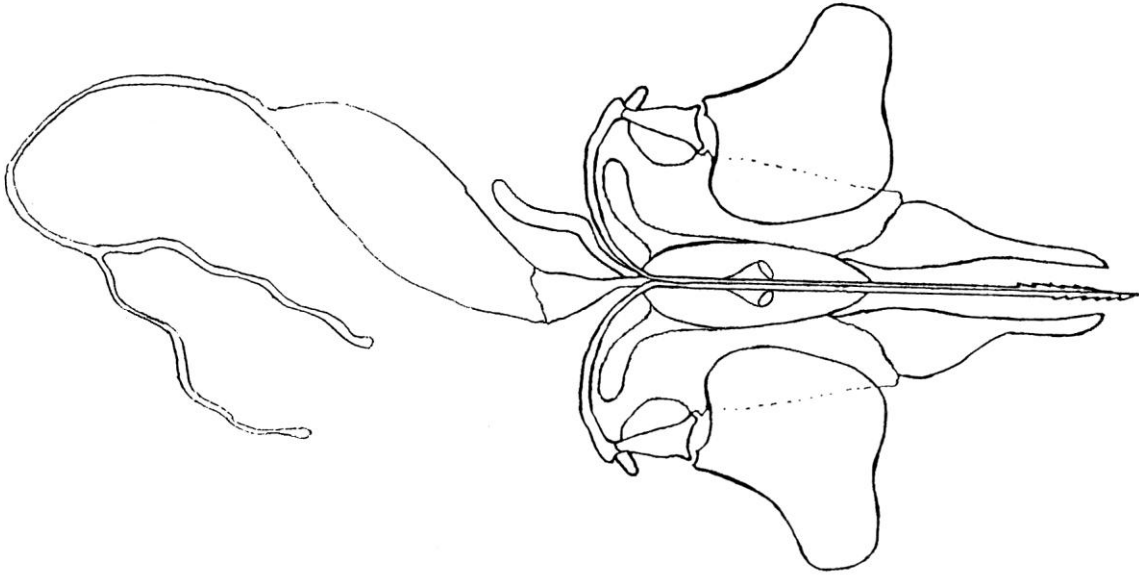
- |     |   |    |
|-----|---|----|
| Q16 | Discuss the nitrogenous excretory system of the adult honeybee.                                     | 30 |
| Q17 | Discuss the structure and function of the fat body throughout the lifecycle of the worker honeybee. | 30 |

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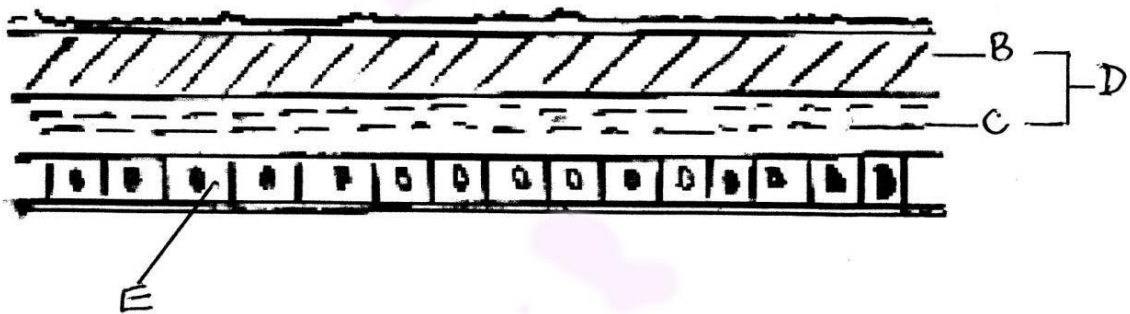
Q11 (a) Label five parts on the diagram below.

5



Q12 (a) Label B, C, D, E on the diagram below.

4



- B .....
- C .....
- D .....
- E .....

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