

THE BRITISH BEEKEEPERS' ASSOCIATION

Founded in 1874

Registered Charity No. 212025

EXAMINATION FOR PROFICIENCY IN APICULTURE

MODULE 6 HONEYBEE BEHAVIOUR

19th March 2016

Time Allowed 1½ hours

Candidate Number:

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 and 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 Name the principal component of queen substance required to stabilise a swarm.
- Q2 With how many drones does a queen typically mate?
- Q3 Why does a young worker bee need to consume more pollen than an old worker bee?
- Q4 What part of the worker bee is used to check the thickness and smoothness of wax comb?
- Q5 What term is given to the chemical signal that enables guard bees to recognise intruders from the same locality among the returning foragers?
- Q6 How does a queen determine whether to lay a fertilized or unfertilized egg in a cell?
- Q7 What term is given to the place where drones usually mate with queens?
- Q8 Bees can be trained to extend their proboscis in response to certain substances by offering them sugar solution. What is the term given to this learning process?
- Q9 Name a parasite which induces workers to progress to foraging duties early?
- Q10 What name is given to pollen that is packed and preserved in the comb?

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

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| Q11 | (a) | Briefly outline how nectar is converted to honey. | 7 |
| | (b) | What is trophallaxis? | 1 |
| | (c) | Briefly describe how trophallaxis increases water foraging during a prolonged nectar dearth? | 7 |
| Q12 | (a) | Briefly list the factors that would encourage a swarm to occupy a cavity. | 7 |
| | (b) | How might the swarm utilise propolis to overcome deficiencies in the cavity? | 3 |
| | (c) | How does the worker collect and manipulate propolis? | 5 |
| Q13 | (a) | Draw a simple graph showing the worker and brood population throughout the year (assuming the colony does not swarm). Label the graph axes. | 8 |
| | (b) | Briefly explain when the colony would be most likely to swarm and why. | 7 |
| Q14 | (a) | List the activities that a typical worker honeybee may do throughout its life in the active season and at what age it might be expected to do them. | 8 |
| | (b) | What is this age-related division of labour called? | 1 |
| | (c) | Briefly describe how worker activities differ from those above in response to the cold of Winter. | 6 |
| Q15 | (a) | List the factors that may lead to supersedure. | 5 |
| | (b) | Explain why laying workers occur. | 4 |
| | (c) | Outline the honeybee behaviour preventing laying workers becoming a problem in a queenright colony. | 6 |

SECTION C (30 marks)

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

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| Q16 | Describe the mechanisms by which a foraging honey bee finds her way back to the colony entrance and how this is affected by experience. | 30 |
| Q17 | Discuss how information about location of nectar sources is communicated by foragers to other honey bees and how this might vary. | 30 |