



## MODULE 5 HONEY BEE BIOLOGY SYLLABUS

Applicable from January 2020

### Aims

The Modules are designed to give beekeepers the opportunity to study the craft of apiculture further with the goals of obtaining an Intermediate Theory Certificate and an Advanced Theory Certificate.

### Conditions of Entry

The Candidate is recommended to have kept and managed bees for at least 2 seasons.

Modules can be taken in any order with the exception of Module 8, which shall be the last module to be taken.

The secretary to the Board shall have received a completed Application Form and fee by the 10th February for March Series and by 30<sup>th</sup> September for the November series of the Module Examinations.

A maximum of FOUR modules can be taken at any one session

### Award of Certificates

A BBKA Certificate will be awarded for each module passed and the pass mark will be 60% for all modules. (Credit 70%, Distinction 80%)

### In addition:

- The BBKA Intermediate Theory Certificate will be awarded when modules 1, 2, 3 and one other from 5, 6 or 7 have been passed.
- The BBKA Advanced Theory Certificate will be awarded when all modules been passed.
- The BBKA Master Beekeeper Certificate will be awarded to a beekeeper who has obtained a BBKA Advanced Theory Certificate and the BBKA Advanced Certificate in Beekeeping Husbandry.
- In order to qualify for either a BBKA Intermediate or BBKA Advanced Theory Certificate the necessary modules must be passed in a time period not exceeding 12 years.

### The Examination

Each module examined consists of a written paper. There will be three sections to the paper; Section A requires one or two word answers, Section B (4 questions from a choice of 5) requires short answers in note form, Section C (1 question from a choice of 2) requires more detailed answers. Candidates will be expected to use scientific nomenclature where applicable.

The Examiners may include in any Module examination any topic from the Basic Assessment syllabus.

Candidates' papers will be retained by the Examinations Board. The candidate is able to request a résumé of their paper on payment of the appropriate fee.





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The Candidate shall be able to describe in detail and illustrate where appropriate, referring to histological features as necessary:-

- 5.1 the alimentary system including the process of digestion by enzymes and the absorption and assimilation of the products of digestion;
- 5.2 the excretory system and the substances excreted;
- 5.3 the respiratory system, including the muscular ventilation of the air sacs, the structure and operation of the spiracles and the exchange of respiratory gases: both at rest and during active flight;
- 5.4 the circulatory system, including the heart, dorsal and ventral diaphragms and the composition and functions of haemolymph;
- 5.5 The exocrine glands of all castes and sexes of adult bees and larvae, the functions and main compositions of their secretions including pheromones, (hypopharyngeal, mandibular, tergite glands of the queen (Renner-Baumann); Nasonov, sting, Arnhart post cerebral, thoracic salivary, wax glands and wax production).
- 5.6 the structure and function of the nervous system and sense organs (including the compound eyes, ocelli, organ of Johnston and the sensilla);
- 5.7 the endocrine glands and the functions of their secretions particularly the neurosecretory cells, the corpora allata, corpora cardiaca and the prothoracic glands;
- 5.8 the fat body and its storage of metabolites;
- 5.9 the reproductive system of queen and drone and the production of sperm and eggs;
- 5.10 the structure of the egg, development of the embryo within the egg and the hatching of the larva;
- 5.11 the external and internal structure of the honey bee larva;
- 5.12 the metamorphosis of the larva with outline accounts of ecdysis, larval defaecation, cocoon spinning, the external anatomy of the pro-pupa, its change to a pupa and then to an imago;
- 5.13 the effect of feeding and other factors on caste determination including discussion about the differences between brood food and royal jelly;
- 5.14 the physiological and structural differences between laying workers and normal workers and the role of pheromones in bringing about these differences;
- 5.15 the differences between summer and winter worker honey bees;
- 5.16 the structure and main constituents of the cuticle with an outline account of its invagination within the body to form linings of the gut and tracheae;
- 5.17 the external anatomy of the queen, worker and drone;
- 5.18 the function and structure of the wings, legs, feet, antennae, mouth parts and setae (hairs);
- 5.19 the structure of the sting mechanism and how this mechanism operates to penetrate human skin and deliver the venom;
- 5.20 the role of the direct and indirect muscles in flight and at rest.





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### **Arrangements**

The Assessment venue and the Invigilation are arranged by the Local Examination Secretary. Approval for these arrangements shall be obtained from the Secretary to the Board at least five weeks before the date of the Assessment.

### **Application to Enter**

This should be made through the Local Examination Secretary of the County Beekeeping Association or directly to the Secretary of the Board at the address given below. Applications are required at least six weeks before the date on which the Assessment is to be taken. Available dates for the Assessments will be on the BBKA Website or may be obtained from the Board Secretary.

### **Application Form**

Every application must be accompanied by a completed Application Form together with the Assessment Fee. Cheques should be made payable to BBKA.

### **Assessment Fees**

The current fee for any Assessment may be obtained from the Secretary to the Board or the Local Examination Secretary.

### **AUTHORITY**

The above is issued by the BBKA Examinations Board and all communications in respect of the Assessments should be addressed to:

The Secretary  
BBKA Examinations Board  
National Beekeeping Centre  
Stoneleigh Park  
KENILWORTH  
Warwickshire  
CV8 2LG

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