Syllabus of Examination for Proficiency in Apiculture: Senior Practical written Syllabus for Examination 2023

Although the following is a comprehensive outline of the syllabus, the student is also expected to be up to date with modern research on the honeybee, particularly where this research is dealt with in newer textbooks or in lectures that (s)he has attended. Note this syllabus is indicative not exhaustive (look on both scientific and practical for completeness)

**Natural History**

The student will be able to:

* describe the signs and the causes of a “drone laying queen” in a colony
* describe the signs of laying workers in a colony and give an account of the circumstance in which they are produced and the pheromones involved **Bee Behaviour**

The student will be able to give a detailed account of:

* the conditions leading to swarming
* the conditions leading to supersedure
* the student will be able to give
* an illustrated description of the shape, structure and colour of pollen grains with reference to their diversity of shape and size as an aid to identification
* a detailed account of the use of honeybees in orchards and fields of seed crops with particular reference to honeybee behaviour

**Disease, Pests and Poisoning**

The student will be able to give:

* a detailed account of viruses and their detection
* a detailed account of the life cycle of the Varroa mite, its detection and treatment
* a detailed account of the life cycle of the Small Hive Beetle and Asian Hornet, its detection and treatment
* a detailed account of the signs and symptoms of American Foul Brood (AFB) and European Foul Brood (EFB)
* a detailed account of the development of AFB and EFB within the colony
* an outline account of the life cycle of the causative organisms of AFB and EFB and the development within the larva
* a detailed account of the ways in which AFB and EFB are spread
* a detailed account of the statutory requirements relating to honeybee pests and diseases and their implementation in Ireland

a detailed account of the treatment of AFB and EFB including methods of destruction of colonies and sterilisation of equipment

* an outline account of the signs and symptoms of varroosis and methods of detection, treatment and any subsequent problems that might arise
* a detailed account of Addled Brood, Chalk Brood, Sac Brood and Stone Brood; their causes, signs and symptoms and recommended treatment
* a detailed account of the signs and symptoms (if any) of all adult honeybee diseases found in Ireland
* an outline account of the life cycle of the causative organisms of adult honeybee diseases
* a detailed account of the various treatments for adult bee diseases
* a detailed account of the laboratory diagnosis of Acarine, Nosema and Amoeba disease
* an outline account of the life cycle of braula coeca and its effect upon the colony
* an outline account of the signs and symptoms of poisoning by natural substances, pesticides and herbicides
* a list of crops most likely to be sprayed thereby causing damage to honeybee colonies
* examples of methods of spraying and the sprays which are likely to be least detrimental to honeybee colonies, a detailed account of the methods which can be used by the beekeeper to diminish the problem of spray poisoning
* an account of the action to be taken when spray damage is suspected

**Historical Aspects of Beekeeping**

The student will be able to give a detailed account of:

* the history of bee keeping in Ireland and of leading contributors to the knowledge of honeybee and of bee keeping practices
* bee keeping methods of the past and modern developments from these
* the evolution of the moveable from hives in Ireland and their frames and components
* the discoveries of some the more famous beekeepers outside of Ireland such as Bro Adam, Huber, von Frisch, Langstroth etc. **Apiary and Honeybee Management**

The student will be able to:

* give a description of the various hives in use in Ireland
* give the main features in their construction and the principles which govern their design
* describe and give the measurements of various types of frame used in Ireland today
* define and describe the concept of “the bee space”
* give a detailed account of the use of wax foundation and its manufacture both commercially and by home production
* describe methods of fitting frames with wax foundation including wiring and embedding
* give a detailed account of the various methods of spacing frames in hives
* give the usual dimensions for the spacing of frames, and the advantages and disadvantages of varying the spacing

give a detailed account of how to begin beekeeping, including the acquisition of bees, sources of equipment and costs, and any precautions necessary particularly in suburban areas

* give a detailed account of good apiary work practice and any precautions that must be taken in accordance with the Health and Safety Act
* give a detailed account of the setting up and management throughout the season of a observation hive and the various uses to which observation hives can be put
* describe in detail the factors to be considered in the sitting of colonies in both home apiaries and out apiaries, describe in detail the criteria used in the selection of out apiaries
* give a detailed account of drifting of honeybees
* the dangers caused and methods of apiary layout to minimise this problem
* give a detailed account of the year’s work in the apiary and describe how this is dependent upon the annual colony cycle and the timing of local bee forage
* give a detailed account of the principles involved in feeding bees, including types of feeder, amounts of food, types of food and timing of feeding
* give a detailed account of the nutritional value of honey and of pollen to the honeybee colony
* give an outline account of the use of pollen substitutes
* give a detailed account of the principles of supering honeybee colonies, and the relationship of supering to swarm control
* give a detailed account of the use of the queen excluder and the types in general use
* give a detailed account of the various methods of swarm control used in Ireland in both small and large scale beekeeping enterprises
* give a detailed account of methods of taking and hiving swarms of honeybees
* give a detailed account of methods of making nuclei and the various uses to which nuclei can be put
* give a detailed account of how swarms and nuclei are built up into colonies for honey production
* give a detailed account of the various methods of uniting colonies of honeybees, of the underlying principles of these methods and the precautions to be taken
* give a detailed account of the various methods of queen rearing
* give the principles of the selection of breeder queens
* give an outline account of the methods of instrumental insemination of queen honeybees and the use of the technique in honeybee breeding
* give a detailed account of the methods of queen introduction; the principles underlying the processes involved; the precautions to be taken; and the attendant difficulties in relation to different strains of bee and colony condition
* give a detailed account of robbing in its various forms, its prevention, dangers, and methods of termination once it has started
* give a detailed account of spring management of colonies
* give a detailed account of the assessment of the quality of a colony for honey production
* give a detailed account of the methods of marking queens and the value of the practice
* give a detailed account of the methods of clipping queens and the value of the practice
* give a detailed account of summer management including the control and prevention swarming
* give a detailed account of the management needed to cope with different districts, weather conditions and the timing of flowering of forage plants

give a detailed account of the management of colonies for the production of comb honey, sections, cut comb and heather honey

* give a detailed account of methods of moving colonies and the difficulties and dangers involved
* give a detailed account of the management of colonies used for migratory beekeeping for both honey production and pollination services
* give a detailed account of the various methods used to “clear” bees from supers
* give a detailed account of the preparation of colonies for the winter period and the principles underlying the preparations
* give a detailed account of methods of excluding mice from colonies and of the damage they can cause
* give a detailed account of woodpecker damage to hives and methods of prevention
* give a detailed account of wax moth damage and of the life cycle of both Lesser and

Greater Wax Moths (Achroia Grisella and Galleria Mellonella)

* give a detailed account of the proper storage of comb including fumigation and methods of preventing wax moth damage

**Honeybee Products**

The student will be able to:

* give a detailed account of the main requirements of the statutory regulations affecting handling, preparation for sale, composition, labelling, and weight of packs of honey
* give a detailed account of the various methods used to decap honey combs, and of separating the cappings from the honey
* give a detailed account of the extraction of honey, including heather honey, from comb and the various types of extractor used
* give a detailed account of the straining and settling of honey after extraction
* give a detailed account of the storage of honey including the underlying principles of storage
* give a detailed account of the preparation and bottling of extracted honey (liquid, creamed or granulated) for sale
* give a detailed account of sieving, straining and filtration of honey for sale
* give a detailed account of the preparation of sections and cut comb honey for sale
* give a detailed account of the bottling of chunk honey for sale
* give a detailed account of the process of granulation in honey including its cause, initiation, speed, texture and size of crystal
* give a detailed account of fermentation in honey, approximate results which would be obtained from an analysis of a typical sample of honey and an outline account of the range of variations of the main constituents
* give a detailed account of the properties of honey including specific gravity, viscosity hydroscopicity and reactions to heat
* give a detailed account of the methods of recovering beeswax, a description of the main constituents and physical properties of beeswax
* give a detailed account of the uses for, and marketing of, beeswax
* give a detailed account of the use of other bee products such as pollen, royal jelly, venom, and propolis
* give a detailed account of the preparation of bee products for the show bench.