

Board of National Diploma in Beekeeping

SYLLABUS

For the qualification of the

NATIONAL DIPLOMA IN BEEKEEPING

<http://www.national-diploma-bees.org.uk/>

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INTRODUCTION

The National Diploma in Beekeeping had its origins as a qualification intended for County Beekeeping Instructors. Although these posts no longer exist, there is still an important role for what is the highest beekeeping qualification available in the UK.

Beekeeping is not just a hobby, it is an industry, and the NDB is not merely a vocational qualification. It provides evidence of a broad based competence in beekeeping at the highest level, the ability to communicate to others, and teaching ability.

The beekeeping related skills required of the NDB holder are: KNOWLEDGE, COMPETENCE, COMMUNICATION and TEACHING.

Holders of the NDB qualification should be intelligent, articulate, open minded, enthusiastic and possess good analytical skills. The particularly desirable attributes relevant to beekeeping are:-

- A good working knowledge of honey bee biology
- Competent practical bee handling abilities in all situations.
- Expert colony reading.
- Preparation and assessment of honey bee products,
- Disease diagnosis and knowledge of the correct remedies.
- An ability to communicate.
- Demonstration of training ability.
- Asset management.

COMPOSITE PARTS OF THE NDB

In order to be awarded the National Diploma in Beekeeping the candidate must have achieved a successful assessment in the following parts which comprise the NDB.

- A three hour written paper.
- A written assignment on a topic provided,
- The preparation of a portfolio of beekeeping experience.
- A practical assessment involving bee handling, disease recognition and general biology.
- A *viva voce* including a presentation on the assignment and a short spontaneous presentation.

It should be noted that the NDB is not a modular qualification and normally candidates are expected to achieve successful assessments in all the constituent parts in the year of their assessment. The Board of the NDB reserves the right to use its discretion to vary this requirement.

GUIDANCE NOTE TO CANDIDATES.

Candidates for the NDB are normally required to hold the Senior Certificate of their National Beekeeping Association. The Board recognises that access to appropriate tuition may present problems for some subjects, and to help aspiring candidates, it runs advanced beekeeping courses to cover these subjects and to acquire the appropriate knowledge and techniques.

The list of topics which come under the scope of the NDB is very extensive, and to help candidates select appropriate study material, suggestions for reading can be found at the end of this document. Candidates are recommended to compare the list of subjects they covered in studying for their Senior Certificates with those listed in the Appendix to this document. Some of the subjects covered by the syllabus change rapidly, so the candidate is required to be up to date with important developments, and also with current scientific literature as reported in the beekeeping press. Especially important is keeping abreast of changes in legislation concerning beekeeping and associated subjects, for example with reference to bee health management and the preparation and sale of honey bee products. The candidate is expected to be familiar with the legislation in force in his or her own country. In the UK, legislation relating to bees is devolved to the separate administrations in each country, but is usually the result of legislation passed by the European Union, so the relevance of the EU to the UK should be understood. Candidates should note that the NDB is concerned primarily with beekeeping in the British Isles, so the candidate will only be expected to be knowledgeable on any developments that take place elsewhere which have the potential to impact on beekeeping in the British Isles.

Written Paper.

The Written paper (3hours) consists of a number of questions which candidates are required to answer in an essay format. There is a requirement for the candidate to be up to date with both legislation and practice, particularly in the field of bee diseases. Typical questions can be found on the NDB website.

Assignment

Candidates will be given short project assignment. This will usually include some fact finding, collation and interpretation of the data, drawing conclusions and making

practical recommendations on how the conclusions could be applied to beekeeping. The assignment will be discussed during the *viva voce*.

Portfolio of beekeeping experience

Candidates are required to produce a portfolio demonstrating their beekeeping activities, evidence of teaching and other involvement in beekeeping.

Practical Assessment.

The Practical Assessment is held over one day, with four sections to be undertaken. Two examiners conduct each section. Typical subjects dealt with under each section are described below:-

1. In the 'bee handling' section the candidate must be able to work three or four colonies that he or she will be viewing for the first time. The major test here is to be able to accurately diagnose the condition of the colonies, and recommend any action to be taken.

2. The 'biology' section requires a good knowledge of bee plants, and candidates can request a check list of those plants that may be presented for identification and classification. In addition the ability to set up a microscope and to identify pollen slides from flowers, and to identify the sources of selected honey samples is required. The identification of specimens of the Class Insecta to Order level is a requirement.

3. The 'disease' section requires the candidate to have experience in the handling of diseased combs both in the apiary and in laboratory situations. This component of the examination cannot be learned from books and candidates are advised to seek the assistance of their Bee Diseases Officer and to take advantage of any courses available.

4. The *Viva voce* tests the ability of the candidate to provide answers to recurring situations in beekeeping. The candidate is also required to give a short talk (10 minutes) on a subject given to them at the *viva*. A short time for preparation of the talk is provided. Topical beekeeping subjects will usually be discussed during the *viva*. Candidates will also be expected to critically assess and judge samples of honey bee products. A short presentation of the assignment will be required and the candidate asked to answer questions from the Examiners / Assessors.

APPENDIX

Topics in the Scope of the National Diploma in Beekeeping

Candidates are advised to look at some of the questions previously set for the Written Papers as this will help the approach taken to studying the topics listed below. Candidates may also be asked to demonstrate their knowledge of these topics in the Practical Assessment and during the *Viva voce*.

1. Honey bee Anatomy and Physiology.

1.1. The candidate will be able to give an in depth account, with illustrations where appropriate, of:-

1.1.1. the structure of the egg of the honey bee.

1.1.2. the development of the embryo within the egg of the honey bee and the hatching of the larva.

1.1.3. the external and internal anatomy of the honey bee larva.

1.1.4. the metamorphosis of the honey bee larva, including the effects of juvenile hormone.

1.1.5. ecdysis (moulting) and its control by hormones.

1.1.6. the sealing of the cell, larval orientation in the cell, defecation and cocoon spinning.

1.1.7. the anatomy and metamorphosis of the propupa and pupa.

1.1.8. the moult from pupa to imago.

1.1.9. the emergence of the imago from the cell.

1.1.10. the structure and main constituents of the cuticle of both larval and adult honey bees, including internal cuticular structures.

1.1.11. the external anatomy of all castes.

1.1.12. the structure of the wings of the honey bee, their articulation and action in flight.

1.1.13. the muscles associated with the wings of the honey bee and their control.

1.1.14. the structure of the legs of the honey bee, their articulations, associated muscles, action when walking and special uses.

1.1.15. the mouth parts of the honey bee, their structure, associated muscles, glandular connections, methods of use, comparative sizes and shapes for different castes and tongue length for different races.

1.1.16. the antennae, their structure, associated muscles, and functions.

1.1.17. the sting, its structure, associated muscles, glandular connections and method of use.

1.1.18. the composition of honey bee venom and its effect upon the insect, animal or human stung.

1.1.19. the structure and function of the hairs of the honey bee.

1.1.20. the function of enzymes.

1.1.21. the structure and function of the alimentary canal.

1.1.22. the histology of the alimentary canal and the production of the enzymes of digestion.

- 1.1.23. ingestion, digestion, assimilation, and excretion in the honey bee.
- 1.1.24. the structure, function, and histology of the fat body of the honey bee.
- 1.1.25. the changes which occur in the fat body of the worker honey bee both during its life and at different times of the year.
- 1.1.26. the structure, function and histology of the respiratory system.
- 1.1.27. the diffusion of oxygen through the trachea and its supply to tissues.
- 1.1.28. the basis of cell respiration, glycolysis and energy transfer.
- 1.1.29. the production of carbon dioxide and its excretion from the body.
- 1.1.30. the structure, function, and histology of the circulatory system.
- 1.1.31. the histology, composition and function of the blood of the honey bee.
- 1.1.32. the exocrine glands of the honey bee, including their structure, histology and function.
- 1.1.33. the substances produced by the exocrine glands including a basic account of their chemical composition.
- 1.1.34. the structure and position of the main endocrine glands, namely the corpora allata and the prothoracic gland of the larva.
- 1.1.35. the source, production, and effects of juvenile hormone.
- 1.1.36. the source, production, and effects of the moulting hormone ecdysone.
- 1.1.37. the structure of the nervous system of the honey bee.
- 1.1.38. the basic function of nerve cells.
- 1.1.39. the brain, its structure, function and histology.
- 1.1.40. the eyes of the honey bee, including development, structure and histology.
- 1.1.41. the sight of the honey bee and of its perception of colour, polarised light and form.
- 1.1.42. the structure of the sensory receptor organs of the honey bee.
- 1.1.43. the main senses of the honey bee namely smell, taste, touch, hearing, gravity perception, heat perception and time sense.
- 1.1.44. the major research upon which our knowledge of the senses of the honey bee rests.
- 1.1.45. the reproductive system of the drone honey bee including structure, development and histology.
- 1.1.46. the reproductive system of the queen and worker honey bee, including structure, development and histology.
- 1.1.47. spermatogenesis in the drone honey bee.
- 1.1.48. oogenesis in the queen and worker honey bee.
- 1.1.49. the fertilisation of the egg of the honey bee.
- 1.1.50. the storage of sperm in the spermatheca of the queen honey bee.
- 1.1.51. the effect of feeding on caste determination in females of the honey bee.
- 1.1.52. the composition of royal jelly and of brood food.

2. Honey bee Behaviour.

2.1. The candidate will be able to give an in depth account of:-

2.1.1. pheromones (ectohormones) and their effects in the honey bee colony.

2.1.2. the production of queen cells and the influence of queen substance in their production.

2.1.3. the signs of a drone laying queen in a colony and the causes of this condition.

2.1.4. the signs of laying workers in a colony, the circumstances in which they are produced and of the pheromones involved and their influence.

2.2. The candidate will be able to give an in depth account of:-

2.2.1. mating behaviour in the honey bee, including multiple mating, drone assembly areas and the pheromones involved.

2.2.2. egg laying by the queen honey bee, including causes of fluctuation in the number of eggs laid.

2.2.3. variation in size of honey bee colonies and of the causes.

2.3. The candidate will be able to give an in depth account of:-

2.3.1. the behaviour of the worker honey bee during its period as a house bee.

2.3.2. the internal organisation and control of the honey bee colony.

2.3.3. the methods of communication used by the honey bee.

2.3.4. the use of dance communication to recruit new foragers to productive crops.

2.3.5. food transfer and its social significance.

2.3.6. the behaviour of the foraging honey bee, of its work methods in the field and its criteria for selecting a forage plant species.

2.3.7. the collection of nectar, its carriage home and storage.

2.3.8. the collection and use of water by the honey bee.

2.3.9. the conversion of nectar to honey by the honey bee.

2.3.10. the interrelationship of water, nectar and honey in the honey bee colony.

2.3.11. the collection and storage of pollen by the honey bee.

2.3.12. the comparative nutritional value of different pollens to the honey bee and of the types of substances they provide.

2.3.13. the collection and use of propolis by the honey bee.

2.3.14. the production of beeswax by the honey bee.

2.3.15. the construction of honey comb by the honey bee.

2.3.16. the factors which control the building of comb and the type of cells built by the honey bee.

2.3.17. the process of swarming by the honey bee, including finding and moving to a new home.

2.3.18. supersedure in the honey bee colony.

3. Microscopy.

3.1. The candidate will be able to give:-

3.1.1. a simple account of the light microscope (both high power compound and binocular dissecting), its components and its use.

3.1.2. a definition and show an understanding of the following terms used in light microscopy: Numerical Aperture; Magnification; Useless Magnification; Critical illumination; Koehler Illumination; Condenser Aperture; Oil Immersion.

3.1.3. a simple account of the electron microscope and its uses.

3.2. The candidate will be able to give an in depth account of:-

3.2.1. the preparation of objects for examination using both temporary and permanent mounts.

3.2.2. simple routine staining methods used for animal and plant material.

3.2.3. the use of the microscope in beekeeping for disease diagnosis and pollen identification.

3.2.4. the techniques used to dissect the honey bee.

4. Genetics.

4.1. The candidate will be able to give an in depth account of:-

4.1.1. Mendelian genetics and of the way in which inherited characteristics are passed from one generation to the next.

4.1.2. mitosis and meiosis including crossover.

4.1.3. the effect of selection in a breeding population.

4.1.4. sex determination in the honey bee, its genetic basis, and an explanation of the production of diploid drones.

4.1.5. parthenogenesis in the honey bee.

4.1.6. the application of biometric and molecular techniques to the study of honey bee taxonomy.

4.1.7. breeding schemes used for the improvement of strains in honey bees.

4.1.8. the criteria used in the selection of breeder queen honey bees for both queen and drone production.

4.1.9. the techniques of instrumental insemination of queen honey bees.

4.2. The candidate will be able to give:-

4.2.1. a definition of, and show an understanding of, the following terms used in Genetics: Diploid; Haploid; Polyploid; Gene; Chromosome; Genome; Allele; Dominance; Partial Dominance; Recessive; Polygenes; Filial Generation; Hetrozygous; Homozygous; Hemizygous; Heterosis; Linkage; Phenotype; Genotype; Mutation.

4.2.2. a definition of the Hardy Weinburg Rule and an in depth account of the inheritance and distribution of genes in a population of animals or plants.

5. Honey bee Health.

5.1. The candidate will be able to give an in depth account of:-

5.1.1. the statutory requirements relating to pests and diseases of honey bees in the United Kingdom, and their implementation.

5.2. The candidate will be able to give an in depth account of:-

5.2.1. the virus diseases of the honey bee, and methods for their laboratory and field diagnosis.

5.2.2. the symptoms of American Foul Brood (AFB) and European Foul Brood (EFB).

5.2.3. the life cycle of *Paenibacillus larvae* and *Melissococcus pluton*, the causative organisms of AFB and EFB, and their development within the larva.

5.2.4. the development of AFB and EFB within the colony.

5.2.5. the development of EFB within the apiary.

5.2.6. the ways in which AFB and EFB are spread between colonies.

5.2.7. the distribution of AFB and EFB in the British Isles.

5.2.8. the methods of laboratory and field diagnosis of AFB and EFB.

5.2.9. the treatment of colonies with AFB and EFB, methods of destruction of diseased colonies and the sterilization of equipment.

5.2.10. Chalk Brood, its symptoms, cause and treatment.

5.2.11. Stone Brood, its symptoms, cause, treatment and effect on humans.

5.2.12. those fungi which attack pollen and comb.

5.2.13. the laboratory diagnosis of *Nosema*, an in depth account of the life histories of *Nosema apis* and *Nosema ceranae*, their effect upon individual bees and upon the colony, and their treatment.

5.2.14. the laboratory diagnosis of *Malpighamoeba mellifica*, an in depth account of its life history its effect upon individual bees and upon the colony, and its treatment.

5.2.15. the laboratory diagnosis of the tracheal mite *Acarapis woodi*, an in depth account of its life history, its effect upon individual bees and upon the colony, and its treatment.

5.2.16. the life cycle and natural history of *Varroa destructor*, its role in vectoring viruses and treatment methods.

5.2.17. the life cycle and effect upon colonies of the exotic pest *Tropilaelaps clareae*.

5.2.18. pollen mites and their effects on stored pollen.

5.2.19. the life cycle of *Braula coeca* and its relationship with the honey bee.

5.2.20. the life cycles of the two wax moths *Galleria mellonella* and *Achroia grisella*, the damage they do to colonies and to combs, the effect of wax moth faeces on honey bee brood.

5.2.21. the prevention of wax moth damage.

5.2.22. the life cycle and effect upon colonies of the exotic pest *Aethina tumida*

5.2.23. the damage caused by birds to the honey bee colony and methods of prevention.

5.2.24. the damage caused to colonies by mice and shrews and methods of prevention.

5.2.25. the following abnormalities of the honey bee; "Addled Brood", white eyed drones, red eyed drones, "cyclops bees", undeveloped wings on honey bees, and bald brood.

5.3. The candidate will be able to give an in depth account of:-

5.3.1 the symptoms of poisoning by natural substances, pesticides and other man made chemicals.

- 5.3.2 the crops most likely to be sprayed causing damage to honey bee colonies.
- 5.3.3. the methods of spraying and the sprays which are likely to be most detrimental to honey bee colonies.
- 5.3.4. methods used to diminish the problem of spray poisoning.

6. Botany.

6.1. The candidate will be able to give an in depth account:-

- 6.1.1. of the Plant Kingdom and its classification into Divisions.
- 6.1.2. in brief of the classification of the flowering plants (Angiosperms) and of a representative member of each of the main Families into which the British flora is divided.
- 6.1.3. in brief of the structure and physiology of the flowering plants.
- 6.1.4. of the process of pollination and fertilisation in flowering plants.
- 6.1.5. of the ecology of the main nectar and pollen producing plants worked by the honey bee in the British Isles.
- 6.1.6. of the structure, nectar secretion, pollen presentation and pollination requirements of the main nectar and pollen producing plants worked by the honey bee in the British Isles.
- 6.1.7. of the composition of nectar, its variation and the causes of variation.
- 6.1.8. of extra floral nectaries and where and on what plants they may be found.
- 6.1.9. of the criteria used for the identification of pollen grains found in honey and the structure and recognition points of the pollen of the main nectar and pollen producing plants of the British Isles.
- 6.1.10. of the techniques used in the pollen analysis of honey.
- 6.1.11. of the uses to which the knowledge gained by pollen analysis of honey can be put.

6.2. The candidate will be able to give an in depth account of:-

- 6.2.1. the agricultural crops worked by the honey bee.
- 6.2.2. the effects upon beekeeping of changing agricultural practices and land use.
- 6.2.3. the pollination requirements of agricultural and horticultural crops.
- 6.2.4. the use of other insects other than honey bees to pollinate crops for both commercial and research purposes.

7. Zoology and Entomology.

7.1. The candidate will be able to give a brief account of:-

- 7.1.1. the Animal Kingdom and its classification into the major Phyla.
- 7.1.2. the Phylum Arthropoda and its classification into Classes.

7.2. The candidate will be able to give a brief account of:-

- 7.2.1. the class Insecta and its classification into Orders.
- 7.2.2. the life history of a representative member of the following orders Hemiptera, Lepidoptera, Coleoptera, and Diptera.

7.2.3. the order Hymenoptera and of the life history of a representative common British member of the Symphyta, Parasitica and Aculeata (other than the honey bee.)

7.2.4. the structure, life history, and ecology of the social Hymenoptera occurring in the British Isles.

7.2.5. all the species in the genus *Apis*, other than *A. mellifera*.

7.2.6. of the sub-species and races of *Apis mellifera*.

8. Apiculture

8.1. The candidate will be able to describe:-

8.1.1. the various hives commonly used in the British Isles.

8.1.2. the various frames used in the British Isles.

8.1.3. methods of fitting frames with wax foundation including wiring and embedding.

8.1.4. the use of wax foundation and its manufacture, both commercially and by home production.

8.1.5. methods of spacing frames in hives, the dimensions of frame spacing, and the effects upon the colony of the spacing.

8.1.6. a detailed account of how to begin beekeeping, including the acquisition of bees, sources of equipment and costs, and any precautions necessary.

8.1.7. all the factors involved in layout of colonies in both home and out apiaries.

8.1.8. the criteria used in the selection of out apiaries.

8.1.9. the drifting of honey bees, the problems created, and the methods used to mitigate them.

8.1.10. the principles involved in feeding honey bees, and the types of feeder, types of food, timing of feeding, and the effects of feeding on the colony.

8.1.11. the use of pollen substitutes, supplements, and their composition.

8.1.12. the principles of supering honey bee colonies, and the relationship of supering to summer queen rearing by the colony and swarm control.

8.1.13. the uses of the queen excluder and the types in use.

8.1.14. the methods of swarm control.

8.1.15. the methods of taking and hiving swarms of honey bees.

8.1.16. the principles and practice of making nuclei.

8.1.17. the methods used to build swarms and nuclei into colonies for honey production.

8.1.18. the methods used to unite colonies of honey bees and the principles underlying these methods.

8.1.19. the methods of queen rearing used by both large and small scale enterprises: including management of mating nuclei.

8.1.20. the setting up and management of colonies for drone production.

8.1.21. the principles involved in queen introduction, practical methods used, and difficulties which might occur.

8.1.22. robbing in its various forms, its prevention, dangers and control.

8.2. The candidate will be able to describe for both large and small scale enterprises in the British Isles:-

8.2.1. the management of colonies to maintain good bee health.

8.2.2. the spring management of colonies.

8.2.3. ways of assessing the value of a colony for honey production or as a pollinating unit.

8.2.4. summer management, including swarm prevention and control.

8.2.5. the variation of management needed to cope with different districts, weather conditions and types of honey bee forage plants available.

8.2.6. the use of clipped and marked queens and the reasons for and methods of clipping and marking.

8.2.7. methods of moving colonies and the problems and dangers involved.

8.2.8. the management of colonies used for migratory beekeeping for both honey production and pollination services.

8.2.9. the methods used to clear bees from supers, the equipment used, and the principles underlying the techniques.

8.2.10. the preparation of colonies for winter and the underlying principles involved.

8.2.11. the storage of combs and the methods used to prevent damage.

8.2.12. the management of colonies for all types of comb honey production.

8.2.13. the economics of honey production.

8.2.14. the organisation of buildings required, site and internal layout of buildings and of equipment needed for a honey production enterprise.

8.2.15. the economics, and organisation of a pollination enterprise.

8.2.16. the economics and organisation of a queen rearing enterprise including buildings required and their layout, and the equipment needed.

8.3. The candidate will be able to give a brief description of methods used:-

8.3.1. for the production of royal jelly, beeswax, propolis, venom and pollen, and the uses to which these are put.

8.3.2. for the production of honey, queens, package bees, and nuclei by overseas enterprises.

8.3.3. by overseas enterprises for the provision of honey bee colonies for pollination services.

8.4. The candidate will be able to give an in depth account of:-

8.4.1. the beekeeping appliance industry in the British Isles.

8.4.2. the marketing of honey bee queens, colonies, nuclei and package bees in the British Isles.

8.4.3. the importation of honey bee queens and honey bees into the British Isles.

8.4.4. the legislation affecting the importation of honey bees and honey bee queens into the United Kingdom.

8.4.5. the organisation and purposes of Beekeeping Associations.

8.4.6. the organisation of beekeeping Educational and Advisory services in the United Kingdom.

8.5. The candidate will be able to give an in depth account of:-

8.5.1 . the history of beekeeping in the British Isles.

8.5.2. major works of beekeeping literature of the past.

8.5.3. the work of famous beekeepers and scientists in relation to beekeeping and the honey bee.

9. Honey bee Products.

9.1. The candidate will be able to give an in depth account of:-

9.1.1. the sugars which occur in honey.

9.1.2. the inversion of sucrose to its component monosaccharides.

9.1.3. the composition of honey, and the variations which occur.

9.1.4. the physical properties of honey and their variation.

9.1.5. the process of crystallization of honey and variations which can occur in rate of crystallization, crystal size and final texture.

9.1.6. the change in Hydroxymethylfurfuraldehyde (HMF) level and diastase activity in honey during storage and heating.

9.1.7. the extent to which honey is sterile and of the production and level control of peroxide in honey.

9.1.8. the fermentation of honey.

9.1.9. the composition of beeswax and its physical properties.

9.2. The candidate will be able to give in respect of both large and small scale enterprises in the British Isles a detailed account of:-

9.2.1. methods and equipment used to decap honey comb and to separate the cappings from the honey.

9.2.2. the methods and equipment used to extract honey (including heather honey) from honey comb.

9.2.3. the methods and equipment used to strain or settle honey.

9.2.4. the methods of storing honey, the underlying principles of storage and the buildings required.

9.2.5. the preparation of honey for small scale bottling, and the equipment used.

9.2.6. the preparation of honey and the flow path of honey, bottles, caps, labels in a large scale packing line.

9.2.7. the preparation of all types of comb honey for sale.

9.3. The candidate will be able to give an in depth account of:-

9.3.1. the world honey market.

9.3.2. the different types of honey imported into the British Isles.

9.3.3. the methods of recovery of beeswax from cappings and comb, and the types of equipment used.

9.3.4. the uses of beeswax and products in which it is used.

9.3.5. the importation of beeswax into the British Isles.

9.3.6. the preparation of honey bee products for the show bench.

9.3.7. methods of judging honey bee products.

9.4. The candidate will be able to give an in depth account of:-

9.4.1. common contaminants of honey and their implications for honey trading.

9.4.2. the legislation in the United Kingdom appertaining to the composition, packing and sale of honey bee products.

10. Health and Safety

10. 1. The candidate will be able to give an in depth account:-

10.1.1 of United Kingdom Health and Safety Legislation affecting both amateur and commercial beekeepers, including Public Liability, and be familiar with examples of case law.

10.1.2 of First Aid treatment methods for people who have been stung.

10.1.3 of the risks of back injury associated with beekeeping and the methods used to minimise them.

Reading.

The reading list prepared by the British Beekeeping Association Examination Board contains most of the books that should be consulted by candidates studying for the NDB. The list can be accessed on their website (www.britishbeekeepers.com) or obtained from the National Beekeeping Centre.

Some of the books listed are now out of print or are expensive to purchase. Many can be borrowed from Beekeeping Association or public libraries. Candidates are recommended to tackle sections of the syllabus at one time having got the literature sources together and then to prepare their notes. There is also much information available on the internet, and if candidates have access to the web they should try to benefit from it.

Further advice can be sought from the Secretary to the NDB.

Website address: <http://national-diploma-bees.org.uk>