EXAMINATION FOR THE NATIONAL DIPLOMA IN BEEKEEPING AND THE UNITED KINGDOM CERTIFICATE IN BEEKEEPING.

Paper A.

March 2000.

Time allowed 3 hours.

Instructions to Candidates: -
Answer FOUR questions only.
Use only BLACK pen for the text.
Pencil may be used for the diagrams.
Marks will be awarded for clear diagrams where relevant.

1. a) Give reasons for equalising honey bee colonies in spring.
   b) Explain when and how this can be done and explain the precautions that will need to be observed.
   c) Describe how colonies should be managed to optimise the possibility of obtaining a good crop of honey from a late season flowering crop such as heather.

2. The term "wintering" has been applied to beekeeping (Encyclopaedia of Beekeeping, Hooper and Morse) to mean those things that a beekeeper should do to ensure the successful survival of the colony through the cold winter months when the bees cannot be inspected.
   a) List the important factors for successful wintering.
   b) Explain what the beekeeper can do to satisfy these requirements.

3. "Supering" is the adding, to a hive of honey bees, of extra boxes of comb for storing honey above the queen excluder. Discuss in depth the different ways that supers should be:-
   a) Added.
   b) Removed.

4. a) Make a list of the factors to consider when setting up an apiary.
   b) Write short notes on each of the above factors.
   c) Draw a plan of an apiary containing 10 stocks, demonstrating how the factors listed are implemented.
   d) Discuss what extra criteria would be required for a teaching apiary where up to 20 students attend a teaching session.

5. a) Describe how a beekeeper can provide additional protein to colonies of honey bees.
   b) Why might such a supplement be used?
   c) What safety measures should be observed when using these methods?

6. a) Discuss the factors involved in initiating the urge to swarm in a colony of honey bees.
   b) Explain the reasoning behind the so called "10 day inspection system" and the important criterion upon which it relies.
   c) On a routine inspection what action should be taken on discovering:-
   i) A small number of queen cells containing eggs and young larvae?
   ii) A large number of emergency queen cells?
   d) What preparations should be made for the next inspection?

7. a) Describe the different types of queen cells that can be found in a colony of honey bees.
   b) With each type of queen cell state the probable recent past history of the colony and its probable future.

c) What should the beekeeper do, in each case, to keep the colony together as an effective honey producing unit?

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Paper B.

March 2000.

Time allowed 3 hours.

Instructions to Candidates:-
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1. a) Discuss the outbreak of *Varroa Jacobsoni* in the United Kingdom under the following headings:-
   i) Initial outbreaks.
   ii) Statutory legislation.
   b) Outline a national strategy for dealing with the introduction of a new exotic disease into the British Isles.

2. a) Discuss the setting up and management of:-
   i) An observation hive and
   ii) Demonstration hives to be used during a 3 day County Agricultural Show.
   b) Describe how to demonstrate the various components of the hive and the bees to the public.
   c) Describe the human (a person's) physiological reaction to a bee sting from the mildest to the most severe.

3. a) State the main sugars found in nectar.
   b) Describe, giving examples, how the relative proportion of these sugars vary between different nectar bearing plants.
   c) List the factors external to the plant which influence the production and / or composition of nectar.
   d) Describe the chemical and physical processing the bee undertakes to convert the nectar into honey.

4. Tabulate the signs and the action that should be taken on discovery of honey bee brood diseases. Use the table provided:-

Disease.	Scientific name & type of causative organism.	Time / stage brood affected and of death.	Abnormal brood signs including all stages.	Action or treatment.

5. a) Discuss the development of the nervous system of the honey bee from its juvenile to adult form and describe the hormones involved.
   b) Discuss the main components of a particular sense organ.

6. Briefly discuss the physical appearance and behavioural characteristics of four sub-species (races) of *Apis mellifera.*

7. a) Define what is meant by a pheromone.

b) Tabulate the known pheromones of *Apis mellifera* and list:-
i) The principal components of each pheromone,
ii) The source of each pheromone,
iii) The action on the individual bee or the colony as a whole. Use the example below for guidance:-

Pheromone.	Composition.	Location on bee.	Action in colony.