

**BRITISH BEEKEEPERS' ASSOCIATION
MODULE 1 HONEYBEE MANAGEMENT**

This is an example of questions used in past papers. It is also an example of how the question paper is laid out. **To be fair to candidates the markers are instructed to accept any answers to questions that are correct even if they are not mentioned in the mark scheme. It is not possible to consider all methods in the mark scheme.**

Do remember to read the question carefully and only answer what is asked. Additional information will take time to write down and not score any marks.

Do write the answers to Section A on the question paper and hand that in at the end of the examination.

In Section B the instruction is to use short phrases. This can be interpreted as 'bullet points', so full sentences are not required. Just get down the facts.

However in Section C, a longer answer is required, an essay type answer.

This examination is called Module 1, but actually as it is about management, it is best attempted after some experience. Other modules such as 5 and 3, the information for most can be looked up and studied from the relevant literature. There is no need to do the modules in number sequence.

SECTION A : Questions 1-10 (10 marks, 1 for each question) on the question paper please!!!!

Q1 Name one type of hive used in the UK which employs top bee space
(1.1) Langstroth. Dadant, Commercial special order

Q2 What should be put into a brood box to test for queenlessness?
(1.35) Frame eggs **and young larvae** (*Note eggs are often eaten by workers*)

Q3 Give one time when robbing is most likely to be a problem?
(1.26) Late July/August, or at cessation of major honey flow, or when supers of honey are removed

Q4 What is anaphylaxis?
(1.33) Life-threatening allergic reaction

Q5 Why are bees unable to store nectar as a Winter food?
(1.17) Nectar water content is too high, or nectar would ferment

Q6 Give one use to which bees put propolis.
(1.17) To seal small cracks. To reduce entrance in winter, or to help combat pathogens, or to embalm items which might rot.

Q7 Approximately how many worker cells are in a standard National brood frame?
1.1 approx 5,000 *Thornes catalogue*

Q8 What do bees need to enable them to convert wax foundation to comb?
(1.5) Plentiful incoming nectar, or supply of sugar syrup

Q9 What size, in millimetres, is bee space?
(1.2) 6 – 9mm

Q10 Give one reason for adding supers in early Spring
(1.27) Space for expanding colony or to provide storage for nectar/honey, or swarm prevention

SECTION B

- Q11 Starvation and poor Varroa control are two major causes of winter losses.
- (a) For each, describe briefly how such problems can be *avoided* giving a simple account of method and timing as a pre-winter preparation 12
- (b) List 3 other jobs that may be carried out prior to the onset of Winter. 3

(Syllabus 1.32, 1.16)

(a)

Varroa:

- Monitor Varroa drop for 1 week count mites, calculate daily mite drop on mesh floors
- **OR** Sugar roll 300 bees
- Assess number of mites in using a Varroa fork to look at drone brood
- Treat with one from MAQS or (Apiguard or Thymovar or Apitraz or Apilife-VAR)
- MAQS 7 days. (Apiguard 2x2weeks, Thymovar 3-4 weeks, Apilife-VAR 8 weeks)
- most work best above 15°C.
- Must not exceed 30°C
- MAQS OK down to 10°C
- Most require restricted ventilation, eg MAQs
- Apiguard needs eke.
- Timing: Early August
- Feed when not treating as reluctant to take feed if treating

Fera: Managing Varroa

Feeding:

- Estimate the amount of honey in the hive (5lb per full brood fame), deduct this from 35-40 lb
- 8lbs sugar = 10lb stores
- Feed remainder as thick syrup (2:1) in contact, rapid, Miller feeder etc.
- as rapidly as possible
- Timing: Beginning of September unless bees are starving earlier

Hooper: Guide to bees and honey

(b)

Any of the following

1. Top insulation if mesh floor fitted
2. Mouse protection
3. Woodpecker protection
4. Reduce vegetation round hive
5. Wind and water tight
6. Move poor frames to outside for removal in spring

Williams: Starting out with bees pp 59-62, Hooper

- Q12 (a) Describe briefly, including equipment required and precautions to be observed, how to remove a swarm situated in a low, one meter high, half a metre thick hedge bordering a public road. 10
- (b) Describe briefly one method of hiving a swarm. 5

(a) (Syllabus: 1.24)

- Box or skep or other container
- smoker and fuel
- large cotton sheet
- move any onlookers away to a safe distance
- spread sheet on the ground as close as possible to swarm, preferably not near road.
- put piece of wood /stone on the sheet.
- place container (upside down) above swarm on top of hedge
- gently smoke bees below until they start to move up
- patience is needed as they may take to flight if rushed
- when all bees are in container lower it, upside down onto sheet above wood/stone
- wrap sheet round box and remove from site, preferably in the evening.
- clipping the hedge may not be possible to facilitate shaking bees into skep

(b)

EITHER

- board sloping up to entrance of empty hive with frames of foundation
- spread out sheet
- shake bees onto sheet
- gently use smoke to drive bees
- once bees fanning at entrance the bees will adopt the hive

OR

- Remove 2/3 frames from middle of brood box
- Place empty super on top
- Shake bees into hive/empty super
- When all in, remove super
- allow frames to sink down on top of bees. and close up hive.
- Should initially close the entrance so swarm does not come straight out, remove after while
- Or place queen excluder over floor

*Note as feeding should not be done till 24/48 hours have elapsed this is not part of hiving the swarm.
Ref: Hooper: Guide to bees and honey*

- Q13 (a) List 3 uses to which a 5-frame nucleus can be put. 3
 (b) For one of these uses describe briefly how to make up a nucleus for swarm control, assuming it is to be kept in the same apiary. 6
 (c) Outline 1 method for uniting two 5-frame nucs. 6
 (Syllabus: 1.22. 1.25)

(a) *Any three of the following*

- Making increase
- Sale
- introducing new queens to colonies
- storing a spare queen
- queen mating
- swarm control
- hive a swarm

(b)

Dependent on one chosen but general principle:

-
- plug entrance with green grass
- 1, 2 frames of mainly sealed brood
- 1 frame containing some unsealed brood
- 1/2 frames food (liquid + pollen)
- shake in another 2/3 frames **young bees**
- queen from donor colony
- No queen cells on any frames

(c) **Outline 1 method for uniting two 5-frame nucs.**

6

- Transfer nucs to full brood boxes, dummy down
- Colonies close together
- decide which queen wants keeping and kill the other one during the day
- in the evening, piece of newspaper on top of one containing queen
- other one on top
- leave for 1 week

OR

- colonies close together
- Lift frames from one nuc into a brood box and push to one side
 - Or alternate frames from both nucs, but queen between 2 of her own frames
- spray bees with water or weak sugar syrup
- queen between frames of brood may be caged
- spray all bees and place on other side of brood box
- leave for a week

(alternating frames works but queen must be between 2 frames of her own brood for her safety.)

Ref: Morse & Hooper: Encyclopedia of beekeeping,

Q14	(a)	State why attention should be paid to hygiene in the apiary.	1
	(b)	(i) Outline a method for getting a colony onto clean comb without any loss of brood.	8
		(ii) Describe briefly a method for dealing with the old brood box and frames which have been removed	6

(Syllabus: 1.11. 1.7)

(a) To reduce the spread of disease between hives and between apiaries

(b) (i)

- clean brood box and foundation
- find queen and put her, on frame, in middle of clean box
- put Q excluder and eke with entrance on top of original box.
- Remove and fumigate (or destroy) all combs not containing brood
- Put clean box on top.
- Feed unless strong nectar flow
- Inspect lower box at normal times for swarming
- After 3 weeks drop top box down and remove lower box
- Destroy old comb
- *Artificial Swarm allowed as it did fulfil the brief*

(ii)

- all scrapings must be collected and burnt
- flame inside of box with blowtorch
- pay close attention to crevices and corners
- if frames in good condition strip wax from frames
- burn wax
- scrape frames and scrub in hot soda solution
- 1kg soda /5l water

Allow steam and solar

Not allow: blow torching the frames, a fire risk!!!

Ref: (NBU leaflets 'Apiary and hive hygiene and Hive cleaning and sterilisation)

Q15	(a)	List four important criteria to be used when selecting a site for an out-apiary.	4
	(b)	Describe how 2 active hives could be transported to such a site from a garden apiary 20 miles away in early July. (Only a car is available for transport).	11

(Syllabus: 1.9. 1.30)

(a)

- **Accessibility by vehicle or barrow**
- **distance from houses, human activity and footpaths**
- **protection from farm animals**
- **availability of forage**
- shelter from prevailing winds, whether it is in a frost pocket, non liability to flood
- availability of water
- distance from other apiaries
- permission from the owner of the land

(Note first 3 are essential, then 1 other)

(b) Describe how 2 active hives could be transported to such a site from a garden apiary 20miles away in early July. (Only a car is available for transport). 11

Note: I don't think candidates appreciated how strong colonies could be in July and how much ventilation they need

- Site ready in advance
- Plan to travel when cool, at night or early morning
- hive parts fastened together during the day
- straps in parallel or staples in opposing directions or other device with method of use
- ventilated screen put on to replace crown board
- Seal any gaps foam or gaffer tape
- If several supers need to split hives into 2 so that they can be accommodated/lifted
- When bees stop flying / before bees start to fly close the entrance completely with a foam rubber strip
- remove roof immediately
- load into car with frames fore and aft in direction of travel.
- Have available a bottle/spray of water to use if get overheated
- At site unload immediately
- Take out sponge rubber
- replaced supers(if removed) using smoke
- replace roof
- Update BeeBase

Ref: C & A Waring: Haynes Bee Manual, Williams: Starting out with bees

SECTION C

- Q16 (a) Name 3 types of sealed queen cell 3
- (b) On inspection of a hive in mid-May, 10 unsealed queen cells are found. The unmarked queen cannot be found, although there are eggs present. Describe in detail one course of action that the beekeeper can take to ensure that the colony is ready for the honey flow in July. 15
- (c) A beekeeper has twice removed all queen cells from a hive, at weekly intervals, in early June. 6 days later there are several sealed, small queen cells and the queen is missing. Why is this and what can the beekeeper do next to stabilise this colony and get maximum honey from it? 5
- (d) In late August a hive is found to have 2 sealed queen cells and a marked queen. What does this indicate and what course of action should the beekeeper take? 7

(Syllabus: 1.18. 1.35)

(a) Swarm, supersedure, emergency

(b) *As there are eggs assume the queen is still present until proved otherwise by the action taken*

- Move hive to one side
- put, in its place, clean box containing foundation (or preferably clean drawn comb)
- select 1 queen cell
- remove each frame and shake/brush all the bees into the clean box
- do not shake the queen cells you wish to keep but remove all the others
- when all the frames are empty and bees from box brushed in,
- put queen excluder on top of clean box
- replace suppers above queen excluder

either

- add another queen excluder
- then add eke with entrance facing different direction to allow the drones to escape.
- add the original box containing all the brood and the chosen queen cell on top
- replace crown board and roof
- after 5 (or so) days check the lower box for eggs, if present the queen was present and shaken into this box with the workers
- if not then check the upper box for eggs, she may have got up with brood by mistake
- if so she should be easier to locate as most flying bees will be in the lower box
- inspect the brood, cut back queen cells to 1 previously selected
- allow the queen to emerge mate and lay
- Run as a two queen colony or unite on new queen having killed or nuc'd the old queen

or

1. add the original box containing all the brood and the chosen queen cell on top
2. next morning take off top box onto a floor and place to one side
3. inspect bottom box for queen and leave on original site
4. after 7 days inspect the box containing brood, cut back Q cells to 1 previously selected
5. remove any emergency cells
6. Allow new queen to mate and unite or run as two separate colonies

or suitable variation

Ref: C & A Waring: Haynes Bee Manual

(c) why?

- bees have raised queen cells on older larvae
- swarm had left after 5/6 days

how to rectify?

- remove extra queen cells leaving only 1
- could add frame of brood to boost the colony
- or remove all cells and introduce a mated laying queen
- or remove all queen cells and unite to another queenright colony

Ref: Morse & Hooper: Encyclopaedia of beekeeping

(d)

- indicates supersedure

Many variations

- beekeeper could do nothing hope for a perfect supersedure
- bees may tear down the cells
- or remove one or both cells to made up nucs
- There may not be enough drones to fertilise virgin so lead to drone laying queen
- or remove the queen to a nuc
- or put one cell and the old queen in two separate nucs
- once a new queen laying remove old queen
- unite nuc to original hive with new queen or unite bees back

Ref: C & A Waring: Haynes Bee Manual

- Q17 (a) A beekeeper has 4 hives located next to a field of Autumn-sown oilseed rape.
- (i) Describe, with timings, the procedures that can be carried out to maximise the honey crop . 9
 - (ii) List 5 problems that might be encountered by the beekeeper while the crop is in flower 5
 - (c) Describe 2 different methods of clearing bees from supers giving the advantages and disadvantages of each method. 14
 - (d) Name two other methods for clearing bees 2

(Syllabus: 1.28)

(a) Well fed previous autumn and treated for disease.

Healthy and young queens

colonies need to be stimulated into starting to lay as early as possible, *approx 42 days ahead of flowering ie end Feb*

Feed colonies pollen patties or stored pollen for protein to assist in rearing brood and Ambrosia (or other) feed or fondant to assist in carbohydrates.

Don't use sugar syrup too early. March / April sugar syrup can be used weak solution which acts like a nectar flow.

Use contact feeder not rapid.

Need approx. 6 to 8 frames of brood prior to taking bees to rape and plenty of foraging bees.

As colony increases extra space in the form of drawn supers will be needed, some undrawn can be added to provide work for young bees to prevent swarming due to large early build up.

Enough stores on hive for a week. If there are poor foraging conditions bees will starve.

(b) swarming

poisoning by pesticides

running out of supers

honey crystallising in frames especially if temperature is variable

bees may become aggressive

poor weather

(c) Any two of those described below

Shake and Brush:

Colony smoked and crown board removed.

Empty super placed on upturned roof.

Super frames removed one at a time and bees shaken back into box

The few remaining bees on the frame brushed off.

Super frame free of bees placed in empty box and covered.

Advantage – quick and easy to remove a few supers.

Disadvantage – If flow has finished bees will be in defensive mode, not ideal for suburban area where unprotected members of public may get stung.

Easier with 2 people

Escape or Clearer boards *Note that all clearer board are ONE type, ie Porter, Canadian or modification of this type*

Two types of board: one using Porter Bee Escape other type using modification of Canadian Supers to be cleared are removed.

Board placed with escape correctly placed in right direction.

Supers replaced with solid crown board on top.

Supers checked for holes and cracks which are sealed.

Porter Escape left for 48 hours, Canadian Escape left for 12 to 24 hours.

Advantages – Bees clear readily in good weather from sealed honey.

Disadvantages – Second visit required to take the supers off, drones in super may block Porter Escape, in non-flying weather bees will be reluctant to clear from unsealed honey, not suitable for OSR or crucifer honey.

Chemical repellents

Chemicals (benzaldehyde no longer legal or butyric anhydride [Bee-Go, bee-quick]) applied to a cloth pinned to a solid board. *Also carbolic acid (phenol) is in some of the old books. Do not allow carbolic acid.*

This avoids spontaneous combustion if crushed

Empty super placed under super to be cleared and bees smoked to get them moving.

Fume board placed on top of super to be cleared and left for about five minutes.

Cleared super removed and covered.

Advantages – Supers removed in one journey.

Disadvantages – Process slow in cold weather, chemical may taint the honey.

Mechanical Blowers

Air stream should be large volume moving rapidly but not under high pressure.

Supers to be cleared taken off colony, bees blown out onto ground in front of entrance.

Advantages – Supers removed in one journey.

Disadvantages – High cost of equipment,

produces large numbers of flying bees therefore unsuitable for suburban areas.

Do not use in drizzle, rain or cold weather as bees cannot get back and die

(d) Two not described

Other methods:

Ref (1.31) Hooper p 237 – 239