

**BRITISH BEEKEEPERS' ASSOCIATION**  
**MODULE 1 HONEYBEE MANAGEMENT**  
**Sample Paper Marking Scheme**

- Marks should only be awarded for points which answer the question.
- The allocation of points to be included are a guide to what should be included and are not necessarily definitive.
- Where more points are provided than the number requested eg 8 points when only 6 are asked for, then first 6 answers should be taken.
- 0 marks if answer doesn't work
- Do not penalise poor spelling so long as the meaning is clear other than technical terms.
- **How the answer is phrased is not important but that aspect must be understood from the answer rather than just mentioning the words.**

**SECTION A : Questions 1-10 (10 marks, 1 for each question)**

- Q1 Name one type of hive used in the UK which employs top bee space.  
A Langstroth. Dadant, commercial special order
- Q2 What should be put into a brood box to test for queenlessness?  
A Frame of eggs and young larvae
- Q3 Give one time when robbing is most likely to be a problem?  
A Late July/August. At cessation of major honey flow. When supers of honey are removed
- Q4 What is anaphylaxis?  
A A life-threatening allergic reaction to a bee sting
- Q5 Name two methods of frame spacing.  
A Hoffman, Manley, castellated, metal or plastic ends, Yorkshire spacers, etc  
Any two from list - ½ mark each.
- Q6 Suggest one action that might prevent bees from causing a nuisance to neighbours.  
A Careful site location so bees face away from people activity, bees in shed, high hedge or fence to encourage bees to fly upwards quickly, well screened site to diffuse bee flight, provision of water supply, not too many colonies in one place, (*developing good neighbour relations, etc*)
- Q7 Approximately how many worker cells are in a standard National brood frame?  
A *approx 5,000*
- Q8 Give one use to which a nucleus colony of honeybees can be put.  
A Queen introduction, mating queens, checking queen mating, storing spare queens, requeening a large or difficult stock, assisting in swarm control (removing brood and queens) (any other valid uses)
- Q9 What size, in millimetres, is bee space?  
A 6 – 9mm
- Q10 Give one reason for adding supers in early Spring  
A Space for expanding colony or to provide storage for nectar/honey.

## 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. 12
  - (b) List 3 other jobs that may be carried out prior to the onset of Winter. 3

**(a) For each, describe briefly how such problems can be avoided giving a simple account of method and timing. 12 Marks**

### Varroa:

1. Monitor Varroa drop for 1week
  2. Count mites and calculate daily mite drop
- OR** Sugar roll 300 bees
- Assess number of mites in the hive
3. Treat with one from MAQS. Apiguard Thymovar. Apitraz. Apilife-VAR
  4. MAQS 7 days. Apiguard 2x2weeks, Thymovar 3-4 weeks, Apilife-VAR 8 weeks
  5. most work best above15°C. Must not exceed 30°C MAQS OK down to 10°C
  6. Most require restricted ventilation. MAQS needs good ventilation. Apiguard needs eke.
  7. Timing: Early August

*1 mark per line, max 6 marks*

### Feeding:

1. Estimate the amount of honey in the hive
2. Deduct this from 35-40 lb
3. Feed remainder as thick syrup (2:1)
4. in contact, rapid, Miller feeder etc.
5. as rapidly as possible
6. Timing: Beginning of September unless bees are starving earlier

*1 mark per line, max 6 marks*

**(b) List 3 other jobs that may be carried out prior to the onset of Winter. 3 Marks**

1. Top insulation if mesh floor fitted
2. Mouse protection
3. Woodpecker protection
4. Reduce vegetation round hive

*1 mark per line, max 3 marks*

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

**(a) Describe briefly, including equipment required and precautions to be observed, how to remove a swarm situated in a low hedge bordering a public road. 10 Marks**

1. Box or skep or other container
2. a frame of used comb
3. smoker and fuel
4. large cotton sheet
5. move any onlookers away to a safe distance
6. spread sheet on the ground as close as possible to swarm, preferably not near road.
7. put piece of wood /stone on the sheet.
8. wedge frame in box
9. place box above swarm on top of hedge
10. gently smoke bees below until they start to move up
11. patience is needed as they may take to flight if rushed
12. when all bees are in box lower it, upside down onto sheet above wood/stone
13. once flying at a minimum wrap sheet round box and remove from site.

*1 Mark each line Max 10 marks*

**(b) Describe briefly one method of hiving a swarm. 5 marks**

**EITHER**

1. board sloping up to entrance of empty hive with frames
2. place box/sheet on board
3. spread out sheet
4. shake bees onto sheet
5. gently use smoke to drive bees if necessary

**OR**

1. Remove 2/3 frames from middle of brood box
2. Place empty super on top
3. Shake bees into hive/empty super
4. When all in, remove super
5. allow frames to sink down on top of bees. and close up hive.

*1 Mark each line Max 5 marks*

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

**(a) List 3 uses to which a 5-frame nucleus can be put. 3 Marks**

1. Making increase
2. Sale
3. introducing new queens to colonies
4. storing a spare queen
5. queen mating
6. swarm control

1 mark per line, max 3 marks

**(b) Describe briefly how to make up a nucleus for swarm control, assuming it is to be kept in the same apiary. 6 Marks**

Dependent on one chosen but general principle:

1. plug entrance with green grass
2. 1, 2 frames of mainly sealed brood
3. 1 frame containing some unsealed brood
4. 1/2 frames food (liquid + pollen)
5. shake in another 2/3 frames **young bees**
6. queen from donor colony

1 mark per line, max 6 marks

**(c) Outline 1 method for uniting two 5-frame nucs. 6 Marks**

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

1 mark per line, max 6 marks

**OR**

1. colonies close together
2. Lift frames from one nuc into a brood box and push to one side
3. spray bees with water or weak sugar syrup
4. queen between frames of brood may be caged
5. spray all bees and place on other side of brood box
6. leave for a week
7. (alternating frames works but queen must be between 2 frames of her own brood.)

1 mark per line to maximum of 6 marks

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

**Q 14. (a) State why attention should be paid to hygiene in the apiary. 1 Marks**

To reduce the spread of disease between hives and between apiaries

*1 mark*

**(b) (i) Outline a method for getting a colony onto clean comb without any loss of brood. 8 Marks**

1. clean brood box and foundation
2. find queen and put her, on frame with brood, in middle of clean box
3. put Q excluder and eke with entrance on top of original box.
4. Put clean box on top.
5. Feed unless strong nectar flow
6. Inspect lower box at normal times for swarming
7. After 3 weeks drop top box down and remove lower box
8. Destroy old comb

*1 Mark each line maximum 8 marks*

**(ii) Describe briefly a method for dealing with the old brood box and its frames, which have been removed. 6 Marks**

1. Scrape to remove all wax and propolis from empty box
2. all scrapings must be collected and burnt
3. flame inside of box with blowtorch
4. pay close attention to crevices and corners
5. if frames in good condition strip wax from frames
6. burn wax
7. scrape frames and scrub in hot soda solution
8. 1kg soda /5l water

*1 Mark each line maximum 6 marks*

- 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

**(a) List the important criteria to be used when selecting a site for an out-apiary. 4 Marks**

1. Accessibility
2. distance from houses, human activity and footpaths
3. protection from farm animals
4. availability of forage
5. shelter from prevailing winds, whether it is in a frost pocket, non liability to flood
6. availability of water
7. distance from other apiaries

*1 mark per line, max 4 marks*

**(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 Marks**

1. hive parts fastened together during the day
2. straps in parallel or staples in opposing directions or other device with method of use
3. ventilated screen put on to replace crown board
4. If several supers need to split hives into 2 so that they can be accommodated/lifted
5. When bees stop flying / before bees start to fly close the entrance completely with a foam rubber strip
6. remove roof immediately
7. load into car with frames facing direction of travel.
8. Have available a bottle/spray of water to use if get overheated
9. At site unload immediately
10. Take out sponge rubber
11. Replace roof

*1 Mark each line max 11 marks*

## SECTION C

- Q16 (a) Name 3 types of 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

### Q 16. (a) name 3 types of queen cell . 3 Marks

1. swarm
2. supersedure
3. emergency

*1 mark per line, max 3 marks*

**(b) On inspection of a hive in mid-May 10 unsealed queen cells are found. The queen cannot be found, and is unmarked, 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 Marks**

1. Move hive to one side
  2. put, in its place, clean box containing foundation (or preferably clean drawn comb)
  3. select 1 queen cell
  4. remove each frame and shake/brush all the bees into the clean box
  5. do not shake the Q cells you wish to keep but remove all the others
  6. when all the frames are empty and bees from box brushed in,
  7. put Q excluder on top of clean box
  8. replace suppers above qx
- either
9. add another Q excluder
  10. then add eke with entrance facing different direction to allow the drones to escape.
  11. add the original box containing all the brood and the chosen Q cell on top
  12. replace crown board and roof
  13. after 5 days inspect the box containing brood, cut back Q cells to 1 previously selected
  14. allow the queen to emerge mate and lay
  15. Run as a two queen colony or unite on new queen having killed or nuc'd the old queen
- or
9. add the original box containing all the brood and the chosen Q cell on top
  10. next morning take off top box onto a floor and place to one side
  11. inspect bottom box for queen and leave on original site
  12. after 7 days inspect the box containing brood, cut back Q cells to 1 previously selected
  13. remove any emergency cells
  14. swap locations of the hives
  15. after a further 7 days swap the hives over again

*or suitable variation*

*1 Mark each line max 15 marks*

**(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 give three possible actions the beekeeper can take to stabilise this colony? 5 Marks**

1. why? bees have raised queen cells on older larvae
2. swarm has left after 5/6 days
3. how to rectify? remove extra Q cells leaving only 1
4. or remove all cells and introduce a mated laying queen
5. or remove all queen cells and unite to another queenright colony

*1 mark per line max 5 marks*

**(d) In late August a hive is found to have 2 sealed queen cells and a marked queen. What does this indicate and what courses of action could the beekeeper take? 7 Marks**

1. indicates supersedure
2. beekeeper could do nothing
3. remove one or both cells to nucs
4. remove the queen to a nuc
5. or put one cell and the old queen in two separate nucs
6. once a new queen laying remove old queen
7. unite nuc to original hive with new queen or unite bees back

*1 Mark each line max 7 marks*



Q17	(a)	Describe in detail the principals involved in supering in the management of honeybee colonies throughout the active season.	10
	(b)	Discuss the reasons why a beekeeper may change the frame spacing in the super during the active season.	4
	(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

**(a) Describe in detail the principals involved in supering in the management of honeybee colonies throughout the active season. 10 Marks**

- Supers are space for bees
  - as well as for nectar and honey storage.
  - Supers could be deep or shallow
  - Add supers in advance of need if colony still expanding.
  - If colony contracting towards end of season may prefer to limit space available for storage of honey to minimise need to extract partially-full combs.
  - In a good nectar flow in a strong colony plenty of space is required for temporary storage of honey while reducing water content prior to storing.
  - First super added in spring when brood chamber approaching  $\frac{3}{4}$  occupied. (Good conditions and last season's queens will build up rapidly.)
  - Supers could include good drawn comb if available.
  - Often contain foundation (fresher the better). Must have narrow spacing if adding foundation.
  - Don't add, esp foundation, too soon – may be ignored/erratically drawn out/torn down.
  - Bees often more inclined to swarm when short of space as this could hamper normal behaviour and space for queen to lay.
  - Usually simpler to add next super on top of the hive but one could add immediately on top of brood box/queen excluder to draw bees up into the new super quickly to relieve congestion.
- 1 mark per line max 9*

**(b) Discuss the reasons why a beekeeper may change the frame spacing in the super during the active season. 4 Marks**

- Frames of foundation frames need to be closer
- Prevents brace comb
- Increase space between frames
- To encourage bees to draw deeper comb
- Increase weight of honey per frame

**(c) Describe 2 different methods of clearing bees from supers giving the advantages and disadvantages of each method. 14 Marks**

**Shaking and brushing (physical)**

- 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.

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

8. Easier with 2 people

#### **Escape or Clearer boards (Behavioural)**

1. Two types of board, one using Porter Bee Escape other type using modification of Canadian Escape with passage way entrance on top well away from exit on underside (modern systems in plastic use rhombus, cones or 6/8 way escape).

2. Supers to be cleared are removed.

3. Board placed with escape correctly placed in right direction.

4. Supers replaced with solid crown board on top.

5. Supers checked for holes and cracks which are sealed.

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

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

8. Disadvantages – Second visit required to take the supers off, drones in super may block Porter Escape,

9. in non-flying weather bees will be reluctant to clear from unsealed honey, not suitable for OSR or crucifer honey.

#### **Chemical repellents**

1. 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.*

2. This avoids spontaneous combustion if crushed

3. Empty super placed under super to be cleared and

4. bees smoked to get them moving.

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

6. Cleared super removed and covered.

7. Advantages – Supers removed in one journey.

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

#### **Mechanical Blowers**

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

2. Supers to be cleared taken off colony.

3. Bees blown out onto ground in front of entrance.

4. Advantages – Supers removed in one journey.

5. Disadvantages – High cost of equipment,

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

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

*Maximum 7 Marks for each method described. Note: clearing methods are asked for and not types of escape boards, for example.*

#### **(d) Name two other methods for clearing bees 2 marks**

*The two of the above not already described.*