

**EAS Master Beekeeper Written Exam 2014 KY**

The EAS written exam has 47 questions totaling 100 points. The passing grade is 85 percent or better. Read questions carefully and not assume anything. Answer the question asked. IF unclear **Ask for Clarification**.

**TRUE FALSE (2 points each). Indicate by checking first box if entire statement is TRUE, 2<sup>nd</sup> box if any portion is FALSE. You may write a short statement if you feel it necessary to qualify your answer.**

1. Nurse bees, generally those between two and three weeks of age, secrete protein-rich material from head glands to feed the 3 brood stages.  True  False **F**
2. Honey bee workers quickly distinguish between different sugar concentrations of sugar water and floral nectar while drones can only tell the difference in sugar water concentration but not of nectar sugars, since they do not forage.  True  False **F**
3. Granulation of extracted honey means honey spoilage so consumers often throw it out but it can still be used to feed a bee colony.  True  False **F**
4. Worker larvae 3 days of age may be grafted into vertical cups and developed into queens if moved to a queenless hive before drying out but may be of poorer quality.  True  False **TRUE**
5. Dysentery is an infectious disease of adult honey bees most commonly seen during spring. Colonies with heavy spring dysentery can be requeened later in the season.  True  False **F**
6. Bee bread is pollen stored in beeswax cells of the brood nest. It provides the 10 required amino acids, necessary cholesterol, fats, vitamins and minerals plus most of the carbohydrate needed by larvae and newly emerged adults/brood for normal development.  True  False **F**
7. Most individuals ('newbees') obtain bees to start their beekeeping by buying package bees or nucs; once they successfully overwinter colonies, most 2<sup>nd</sup>-3<sup>rd</sup> year beekeepers start a new colony by capturing swarms or make splits (divides) from winter survivals.  True  False **TRUE**
8. Since at least 2000, beekeepers have found poor colony overwintering (average 30% loss) due to diseases of Bee PMS and CCD.  True  False **F**
9. Extracting surplus honey requires ownership or access to an extractor, plus settling/bottling tank. To sell honey, the beekeeper needs to heat and ultra-filter the liquid for improved shelf life of extracted honey bottles.  True  False **F**
10. Propolis is plant resin collected by field worker bees carried to the hive on pollen baskets.  True  False **T**
11. Cut-comb honey is honey produced in plastic boxes using thin foundation.  True  False **F**
12. Spottiness of the capped brood in the fall may be due to hygienic bee stock in colonies with high mite numbers.  True  False **T**
13. Distinctive biological features of Africanized bees in the Americas are smaller comb cell diameter and high degree of defensiveness and running on the comb.  True  False **T**
14. A bee escape is an inexpensive method to clear honey supers of adult bees even when brood is present in the super(s).  True  False **F**

15. Top supering refers to adding new supers of foundation on top of the existing ones and is considered the best method for rapid adoption and use by a colony.  True  False **F**

**MULTIPLE CHOICE (2 Pts each) Check the letter of the one best alternative of the selections. You may write a short statement if you feel it necessary to qualify your answer in margin.**

16. The mandibular gland of the queen produces a pheromone that has several functions including
- A. hive orientation pheromone **No such pheromone**
  - B. queen identifying pheromone **Correct**
  - C. alarm pheromone **Not Correct**
  - D. swarming pheromone **NO such pheromone queen has swarm clustering pheromone**
17. Bee glue (or propolis) is most useful to bees as a:
- A. protein dietary source **NO not a food**
  - B. gum/resin of certain plants **This is its origin**
  - C. coating to strengthen beeswax comb **NO no evidence it strengthens comb**
  - D. coating of nest structures to inhibit growth of harmful microorganisms **Correct**
18. When queen cups are built on the bottom of the brood combs of the top brood box it means:
- A. we should assume colony is preparing to swarm **NO cups normal – if queen cells yes**
  - B. crowded brood area with probable congestion **NO**
  - C. expanding brood nest and normal spring condition **Correct ANS**
  - D. time to order a new queen to requeen the colony at the first opportunity **NO cups normal**
19. The brood disease European Foulbrood (EFB) is:
- A. most likely detected by examining capped brood **NO this AFB**
  - B. caused by a bacteria **Correct**
  - C. a common symptom of CCD **NO**
  - D. readily distinguished from other diseases/chilled brood by odor **NO merely sour odor**
20. In bee dance language, the bees use \_\_\_\_\_ for hive-to-food flight orientation:
- A. body orientation angle relative to gravity **NO this is within hive**
  - B. energy expenditure during flight to indicate correct flight direction **No it is distance measure**
  - C. energy expenditure in the waggle dance **NO**
  - D. sun's azimuth position **Correct**
21. The spring buildup of a bee colony:
- A. can double the colony population in 2 brood cycles **Correct**
  - B. is independent of the amount of stored bee bread reserves **No – need early pollen resources**
  - C. is dependent upon queen's ability to lay 1500 eggs per day **NO few queens can do this**
  - D. none of these responses, spring buildup is temperature related. **No A is valid**
22. What pesticide, commonly found in beeswax, originates from beekeeper miticide usage?
- A. Fluvalinate (pyrethroid) **Correct ANS**
  - B. Imidacloprid (neonicotinoid) **NO seldom detected but frequently suspected**
  - C. Chlorpyrifos (organophosphate) **NO common insecticide used by growers and homeowners**
  - D. Pristine (fungicide) **NO Fungicides are grower applied**

23. The marketing of varietal honey is a marketing strategy to:

- A. yield a better economic return for product **Correct ANS**
- B. produce a natural, pure honey **NO seldom true to floral source**
- C. ensure that pollen is included with the liquid for allergy sufferers **NO**
- D. trick the gullible consumer to pay premium price for adulterated honey **No**

24. If we see numerous examples of multiple eggs in cells of the brood area it likely means:

- A. laying workers **Correct**
- B. a new young queen **No**
- C. workers moving eggs **NO workers remove and cannibalize eggs not reposition them**
- D. an aging queen **NO older Queens more likely to "skip" cells than lay multiples**

25. Queen substance is a name given the major pheromone from the queen's mandibular glands that controls a number of social functions EXCEPT for this one:

- A. rearing of replacement queens **YES**
- B. retinue of workers attending the queen **Yes**
- C. orientation of workers to new homesite **Correct INCORRECT ANSWER**
- D. swarm stabilization **Yes**

26. While inspecting your European bee stock hive the queen falls outside the colony. How long will it be until the colony is queenright?

- A. 10-12 days **No**
- B. 16-20 days **NO**
- C. at least 3 weeks **Correct**
- D. within hour since she is likely to return to her hive **NO**

27. Cross-pollination of flowers, performed by honey bees, specifically is:

- A. movement of male germ cell (pollen) within a flower **Not X-Pollination**
- B. flowering of plants and release of pollen **NO**
- C. the transfer of pollen grain from anther of one flower to stigma of another flower **Correct**
- D. union of pollen grain nucleus with ovule of flower ovary **NO (fertilization)**

28. To capture a swarm it is important to:

- A. use a box that has drawn comb or bee smell **Yes**
- B. entice the queen into the collection box so workers tell sisters where she is **YES**
- C. collect the majority of the workers and drones into the collection box **Correct**
- D. all are keys to capture of a swarm **BEST RESPONSE**

29. An observation bee hive is

- A. 1 or 2 standard frames **YES but could be more frames too**
- B. best used to teach youngsters to avoid bees because they sting **NO**
- C. a smaller 1 to several frame version of a standard hive **Correct**
- D. difficult to set up or manage **NO**

30. When supering it is best to add

- A. individual frames to outside of super **No**
- B. supers of foundation (no drawn comb) over a queen excluder **NO**
- C. supers with fully drawn frames between the brood boxes **No**
- D. none of options above are the best way to super **Correct**

**FILL INS (2 Pts each). Supply the one or several words in every blank that makes for a complete and accurate statement.**

31. The worker scent gland is located on the \_\_\_\_\_ body region; it is also termed the \_\_\_\_\_ gland. When releasing the scent their characteristic body position is \_\_\_\_\_. **ANS abdominal; Nasanov gland; head down, abdomen elevated wings in motion**

32. Spring management initially might involve reversing of brood boxes or feeding bees a \_\_\_\_\_ sugar syrup to \_\_\_\_\_ the colony to grow. An alternative to reversing boxes is to checkerboard with drawn frames - what two things does both reversal and checkerboarding help accomplish?  
1) \_\_\_\_\_ 2) \_\_\_\_\_. **Ans: dilute (light); stimulate; expand brood and swarm prevention;**

33. L. L. Langstroth is credited as discoverer of the first practical \_\_\_\_\_. He understood the concept that bees have \_\_\_\_\_. Was his discovery a financial success for Rev Langstroth? YES or NO (CIRCLE ONE). **ANS: movable comb(frame) hive; bee space; Italian queen**

34. Complete shut down of the body from a bee sting is an extreme or \_\_\_\_\_ reaction. In such a reaction does swelling normally only occur at sting site? YES or NO (CIRCLE ONE). A bad reaction from too many stings is termed a \_\_\_\_\_ reaction. **ANS: allergic/anaphylactic or systemic; NO toxic**

35. What single essential oil has proven most effective in controlling varroa mites in a bee colony? \_\_\_\_\_ Its trade name is \_\_\_\_\_. One of the conditions critical for effective use of this miticide is \_\_\_\_\_. **ANS: Thymol: Apiguard or Api-Life Var (Thymovar) OK but it has additional essential oils beside Thymol:warm temperature**

36. Name a mammal that some beekeepers need to control? \_\_\_\_\_. The most effective non-pesticide way to control them is use of \_\_\_\_\_. Another mammal pest that could be controlled in a similar way is the \_\_\_\_\_. **ANS: bear or skunk or mouse; exclusion (electric fence for bear, wire barrier for skunk, entrance reduction for mouse)**

37. Whiting or nectar in burr comb/scattered among brood cells is a signal from bees that it is the proper time for the beekeeper to \_\_\_\_\_ a colony. What might be a negative if beekeepers miss the proper timing? \_\_\_\_\_. **ANS: super; will miss the opportunity for larger harvest – crowding of brood area**

38. The respiratory system of bees features external exoskeleton openings termed \_\_\_\_\_ which open into tubes termed \_\_\_\_\_. They carry \_\_\_\_\_ to cells and waste \_\_\_\_\_ back to the outside of the bee body. **ANS:spiracles trachea oxygen and carbon dioxide**

39. Drones are male bees. They develop from \_\_\_\_\_ eggs laid by the queen in cells that are \_\_\_\_\_ relative to worker cells. Drones often survive \_\_\_\_\_ days in the summer colony if they do not mate. **ANS: unfertilized; larger ; 20-30 days or 6 weeks (42 days) OK too**

40. The best time to draw foundation frames for additional brood frames is \_\_\_\_\_. When drawing drone brood foundation frames it is best to place them in \_\_\_\_\_ and the best time of year to do this is \_\_\_\_\_. **ANS: during nectar flow; middle brood nest or immediate edge of brood sphere & spring is best time (during colony expansion)**

41. How do bees determine size of a cavity they are investigating as a potential home site? \_\_\_\_\_. What are two other qualities of a cavity that bees check out before moving into a new hollow cavity? \_\_\_\_\_ and \_\_\_\_\_. **ANS by walking interior; also check out entrance size, entrance orientation, height dimensions, no leaks,freedom from other critters, elevation**

42. Africanized honey bees raise queens in \_\_\_\_\_ days and egg to adult stage is \_\_\_\_\_ days in worker bees. The adult body size is about \_\_\_\_\_% SMALLER or LARGER than European bees. **ANS: 15 to 15 ½ days/ 19 to 20 days 10% SMALLER**

43. Almond orchards are currently stocked at \_\_\_\_\_ hives/acre in California's Central valley. The average price for beekeepers who rent their colony is \$\_\_\_\_\_ or more if they are to proper size which is \_\_\_\_\_ frames of bees. **ANS 2 hives/acre; \$150; 8 frames of brood (older figure 6 OK)**

44. If you feed your bees pollen, the best source of pollen is \_\_\_\_\_. Why would you feed bees pollen when several foods (such as soyafLOUR, brewers yeast) are considered adequate sources of the protein bees need for a balanced diet? \_\_\_\_\_ **ANS: collect your own w/ pollen trap (not buy); so bees recognize it as food**

45 For 2 of these 3 items give a description of what it looks like and what its best use might be:

- A. Queen excluder \_\_\_\_\_
- B. Winter rim spacer \_\_\_\_\_
- C. Screen bottom board \_\_\_\_\_

**ESSAY 46 & 47 (5 pts each) Select 2 of the 4 essay questions below completely using sentences or phrases – be sure to answer all subsets of each question. [Provide answer on back of page]**

A. Some bee stocks with some resistance/tolerance to varroa mites have been developed/imported namely VSH, Russian queens and hygienic bees. Describe two resistance mechanisms, which of the stocks listed above have this mechanism and why would such a mechanism be of value to increase resistance/tolerance of bee stock?

B. You just started a bee colony last year and now you want to make your bees “pay” back your investment. Develop a plan so you recoup your initial (assume \$500 investment) in 3 additional years starting the 2<sup>nd</sup> spring with a single overwinter surviving bee colony.

C. Worker bees perform a sequence of duties, many related to age and glandular development. Give 5 work activities of bees (you can construct a table) and for each describe the name given to the work activity, give their approximate age when doing this task and what glands (if any) are needed to do this work.

D. While manipulating your hive you accidentally kill the queen. Describe what happens (minimum 5 things in correct sequence) in your hive the next 3 weeks leading to restoration of the colony to possessing a newly mated, laying queen.

*SELECT 2 of 4 ONLY ID with letter your choice*

A. **ANS: autogrooming means fewer females to infest pupae; test for hygienic by killing some brood and noting bee removal (% and speed) and hygienic cell cleaning means workers pulling out infested pupae before daughter mites have chance to develop fully; breeding bees for faster pupal development results in daughter mites having insufficient time to mature and continue mite life cycle.**

B. **ANS: artisan/variety honey sales (50 lbs honey 2<sup>nd</sup> & 3<sup>rd</sup> year @\$2 per unit profit), sale of nucs (2 nucs 2<sup>nd</sup> & 3<sup>rd</sup> year @ \$50 profit, renting colony local fruit grower @ \$50), sale of value-added bee products with honey, wax etc (crèmes. Lip gloss, shampoos soap candles etc).**

C. **ANS: 5 activities such as cleaning hive, nursing brood, food storage, constructing comb, guarding and foraging +others (undertaking, heating brood, queen care)**

D. **ANS: recognition by workers of queenless condition; start emergency queen cells, raising virgin queen, virgin queen in colony, mating of virgin queen, newly mated queen laying eggs**