

Name \_\_\_\_\_ **KEY** \_\_\_\_\_ TIME \_\_\_\_\_

## EAS MASTER BEEKEEPER LAB EXAM 2017 Univ of DE

THE EAS Lab Exam contains 24 STATIONS each with one or more items. There are 2 to 4 questions related to the items at each station each worth 1 or 2 points. Total exam value = 100 pts. Passing Grade=85.

**Read the questions carefully.** Do NOT assume anything and answer the question as it is asked. You may touch, pick up and closely examine each of the items – do not MOVE any labels or move any item to a different station. **If unclear ASK for clarification.**

**STATION 1.** Before you are 5 pages from the Penn State *FIELD GUIDE to Honey Bees and their Maladies* by Frazier, Caron and vanEngelsdorp. Answer the questions for each page.

1. **Sheet 1 Cover photo** - What does this photo depict? \_\_\_ **healthy brood** \_\_\_\_\_
2. 2 pts **Sheet 1 Photo Pg 25** – What do these 3 photos illustrate? \_\_\_ **BEE PMS** \_\_\_\_\_  
What is name of malady of brood shown in top photo? \_\_\_ **snot or cruddy brood;IBDS** \_\_\_
3. **Sheet 2 Photo Pg 29** –What malady is shown? \_\_\_ **Tracheal mites** \_\_\_\_\_  
What is significance of difference in top 2 photos? \_\_\_ **top healthy, lower infested** \_\_\_\_\_
4. **Sheet 2 Pg 31.** What is malady shown? \_\_\_ **AFB** \_\_\_\_\_ As specifically as possible what is pathogenic cause of this malady? \_\_\_ **bacteria Paenibacillus larvae** \_\_\_
5. 2 pts **Sheet 2 Pg 39.** What maladies are shown in 2 photos? \_\_\_ **EFB top;Chalkbrood lower** \_\_\_  
For bottom photo what dead brood stage is shown? \_\_\_ **larva** \_\_\_\_\_

**STATION 2.** There is an assortment of Tools (all related) here. **Queen rearing items**

6. (2pts) What is name of **Item 2 A** \_\_\_ **A. Chinese grafting tool** \_\_\_ and what specifically does it do? \_\_\_ **transfer larvae to cup** \_\_\_\_\_
7. Describe how you would use **Item 2 B** \_\_\_ **B capture queen push against string to mark her** \_\_\_
8. What is name of **Item 2 C** \_\_\_ **C. plastic cup** \_\_\_\_\_? If you wished to save money and not purchase what could you use as substitute for 2 C? \_\_\_ **make your own** \_\_\_\_\_
9. What specifically is needed from a bee colony to use these **Tools A,C&D**? \_\_\_ **day-old worker larvae** \_\_\_\_\_  
\_\_\_\_\_ **2D queen catcher; 6E wax cups and wooden holders; 6F Cell protector**

**STATION 3. Before you are two tools frequently used to inspect a bee colony A smoker B Hive tool**

10. What is missing in **Tool 3 A** that is needed for proper use of this tool? bottom grate
11. What specific bee material does **Tool 3 B** help a beekeeper open a colony? free propolis seal
12. (2pts) For **Tool 3 A or 3 B (Circle one)** give two specific uses tool helps facilitate frame inspection ? 1. HT: lifting frame & freeing of propolis  
2. SM: reducing colony guarding/dispersing bees from top bar/moving bees to see more clearly

**STATION 4. There is a Tool some beekeepers are using before you Varroa fumigator**

13. This tool uses a/an acid (oxalic) to kill mites. The killing material naturally is found in vegetables such as spinach/leafy veg/brassicas and rhubarb & legumes
14. (2 pts) Describe specifically what time of year to use this tool (if used 1 single time ONLY?) winter and what hive condition would indicate it is most advantageous to be used at this time? broodless
15. (2 pts) What specific personal protective equipment is REQUIRED for use? goggles, respirator, gloves, protective clothing

**STATION 5. There is a specific Tool before you? Light box for judging honey.**

16. What specifically (name) is **Tool 5** poliaroscope
17. (2 pts). Name two things **Tool 5** is used to detect. 1. floaters-lint or beeswax and 2. crystals forming.
18. Name another companion Tool to **question 16.** refractometer

**STATION 6. There are different tools (syrup feeders) before you. B Boardman, A= Division C=Top;D can:Plastic entrance feeder**

19. Identify as specifically as possible **Feeder 6 A** Division Board Feeder but Mann lake sells them as pro feeders
20. (2pts) **Feeder 6 B** would be the least desirable choice for fall feeding of 2:1 syrup - give 2 reasons why. 1 holes too small 2 attract predators
21. Which of these feeders would you want to have a working smoker available to replenish when emptied A=Division board

**STATION 7. Before you is a diagram of honey bee dance language**

**Page 3**

22. (2pts) What portion of dance is code for direction? body orientation re: gravity.  
What portion is code for distance to foraging site? time wagging.
23. (2pts) What information is **bee 7 B** likely to be receiving in addition to direction and distance? smell/taste/richness. What is **bee 7 A** likely to do at the conclusion of her dance? refuel & return to field
24. What comb cell condition is preferred for dancing? empty brood cells of lowest box

**STATION 8. Before you is a special tool important to some beekeepers.**

25. When specifically would this tool be used? when YOU are experiencing allergic reaction
26. What is next thing you need do following its use? go to medical professional

**STATION 9. Relative nests and Castes**

27. What bee relative uses **Nest 9A**? bald-faced hornet
28. What bee relative uses **Nest 9 B**? Osmia Mason bee
29. (2pts) Identify the letter that indicates a queen cup 9Kor F, a capped queen cell 9E, a queen cell from which queen emerged 9H and queen cell destroyed before virgin queen emergence 9D
30. What is official color marking for 2017 queens? yellow

**STATION 10. View the swarm photo and (old) USDA drawing depicting swarm capture. (Swarm photo)**

31. At time of photo what group of bees might be entering/exiting the swarm? scouts
32. What one factor insures successful capture of a swarm? queen in container
33. (2pts) Complete this 17<sup>th</sup> Century apicultural proverb:  
A swarm in May is worth a load of hay  
A swarm in June is worth a silver spoon,  
A swarm in July is not worth a fly.

**Station 11. Photo shows bees ready for commercial pollination within 100 miles of here.**

34. What is the most likely target crop to be pollinated? fruit trees (apples)
35. What is the range of fee that beekeeper might have received? \$35-\$60

**STATION 12. Before you is a specialized type of hive. Mating nuc plastic hive**

36. What is this hive type used for? mating of queen
37. If you do not have this hive type, describe how you might modify a standard hive box to accomplish the same management objective as this hive serves? partition into 2 4 frame or 3 3 frame partitions (Queen castle)
38. (2 pts) Specifically what is stocked in this hive 1. in bees nurse age bees + capped brood and 2 in food min one frame

**STATION 13. Before you is a life cycle diagram courtesy of EAS MB Jon Zawislak**

39. In Life Cycle what number(s) might include phoretic mites? 13A, 13B 13I
40. (2pts) In Life Cycle, name a chemical treatment that specifically targets mites in **13 B**? Oxalic/Hoguard II and **13 H** MAQS
41. (2 pts). What mite life stages/sexes can be seen in the cell Insert **13 F**? adult female

**STATION 14. There are several foundations/frames of foundation before you.**

42. Can you identify a drone foundation/drone frame? 14A
43. Are the drawn cells in comb drawn from **14 B** likely to be BIGGER, the SAME or **SMALLER** size (CIRCLE 1) compared to cells started from a sheet of commercial foundation?
44. (2 pts) If you elect to use **14 C** in place of **14 D** what might be two negative consequences?
- higher number drone cells in natural comb and
  - comb not strong or not aligned within frame outline

**STATION 15. A selection of Bee antibiotics and mite chemicals are shown at this station.**

45. Remembering the label is the law – which of these materials is illegal? drug store PDB
46. Which one(s) is/are a legal application for an active brood disease infestation? none
47. Which one(s) are permitted for organic honey production? ApiLife Var

48. (2pts) What material of these selections would you advise not using when supers are in place? **\_all except Hopguard\_\_\_\_\_** Why? **\_\_ApiVarLife \_honey taste or Apivar (synthetic in honey) \_\_\_ 15a Apiguard; 15b Apilife Var; 15c Apivar; 15d Apistan; 15e Fumidil B; 15f illegal PDB; 15g Hopguard**

**STATION 16. There is a frame before you. Using the indicated markers answer 3 questions.**

49. What specifically is indicated at **Marker 16 A?** **\_ fermenting honey or SHB \_\_\_\_\_**

50. What specifically is at **Marker 16 B?** **\_ moldy pollen \_\_\_\_\_**

51. (2 pts). Give a reason you should NOT give this frame to a spring nuc?  
**\_\_\_\_\_ (slow spring development) \_\_\_\_\_**

**STATION 17. This station has photos of several hive types**

52. What is (full) name for hive **item 17 A?** **\_\_ Kenya top bar hive \_\_\_\_\_**

53. Of hive types shown which is/are/can not be supered for honey production (ID with number & name)? **\_\_ 17a TB, 17b tree \_\_\_\_\_ 17c. flow hive; 17d nuc; 17e long hive; 17f warre hive 17g ceramic hive**

**STATION 18. Hive products**

54. Why would individuals use **product 18 A?** **\_\_ propolis \_\_\_\_\_**

55. How could you determine the specific source of product **18 B?** **\_ almond pollen \_\_\_\_\_**

56. (2pts) What products shown here are obtained from a glandular section of worker honey bees? **\_\_ beeswax; royal jelly \_\_\_\_\_** and how can you increase harvest of this product?  
**\_\_ Beeswax – natural comb RJ- raise more queens \_\_\_\_\_**

**STATION 19. There are pinned Insects here (do not touch insects themselves please)**

57. (2 pts) Is there a pest of honey bees here? YES or NO ? If Yes which one(s) is/are pest(s)?  
**\_\_ 19 a Preying mantid, 19 c European hornet 19i dragonfly \_\_\_\_\_**

58. If **Insect 19 B** was around your bee hives what would you use to reduce its impact on the colony, if anything? **\_\_ honey bee – if robbing yes \_\_\_\_\_**

59. Name **insect 19 C?** **\_\_ European hornet \_\_\_\_\_**

**19 d scold wasp, 19 e paper wasp (& nest) 19 f green bee; 19g cicada killer wasp; 19 h carpenter (NOT Bumble) bee**

**Station 20. Bee Items of use by some beekeepers**

60. What is **item 20 A**? \_\_\_ **mite monitoring (debris) boards** \_\_\_\_\_

61. What can be used as inexpensive alternative to **item 20 B**? \_\_\_ **plastic circular entrance reducer – make out of scrap wood/metal or wire screen** \_\_\_\_\_

62. (2 pts) ID both plastic items A. \_\_\_ **Nicot (Jenter) queen confining cage** \_\_\_\_\_

B. \_\_\_ **JZBZ Battery box/plastic queen carrying cage** \_\_\_\_\_

**STATION 21. See diagram from HONEY Bee BIOLOGY & BEEKEEPING and bee under the microscope.**

63. What is name of body part (**21 A**) between thorax & abdomen? \_\_\_ **wasp waist** \_\_\_\_\_

64. (2pts) How does the internal part in red (**21 B**) differ (2 differences) when bees are compared to humans? 1. \_\_\_ **aorta - no oxygen transport just food** \_\_\_\_\_

2. \_\_\_ **open system no branching arteries or veins** \_\_\_\_\_

65. (2 pts) The abdomen of this bee holds the major organ systems: ID 2 systems you can see in bee under microscope and give major function of organ system

1. \_\_\_ **various** \_\_\_\_\_

2. \_\_\_\_\_

**STATION 22. Before you are 2 different (unusual) items**

66. What is the material of **22 A** collected in front of a hive? \_\_\_ **pollen thrown out of hive** \_\_\_\_\_

67. This flag is recommended for use to mark apiary sites in several state MP3 plans? What does MP3 stand for? \_\_\_ **Managed pollinator protection plan** \_\_\_\_\_

**Station 23. Items used for mite sampling**

68. What is liquid material of **item 23 A**? \_\_\_ **alcohol or low sudsing soap** \_\_\_\_\_

69. What is significance of black mark on jar **23 B**? \_\_\_ **means 300 bees** \_\_\_\_\_

70. (2 pts). We say mite sample should be below 2-3% -- 2-3% of what? \_\_\_ **bee adults** \_\_\_\_\_

71. What is most likely in sampling with **23 B** **undercounting** or overcounting (Circle one)?

Why? \_\_\_ **mites stuck in PS, nectar in PS rushing the PS** \_\_\_\_\_

**2 questions from second MB exam 1982 (35 years ago)**

**STATION 24. What is it? queen cage**

72. What is the full name of the **item 24 A** before you? \_\_\_ **Benton Queen cage** \_\_\_\_\_

73. How is it properly positioned in a bee hive? \_\_\_ **between frames screen side exposed** \_\_\_

**STATION 25. Frame with brood**

74. (2pts) What 2 things can you say about this frame? 1. \_\_\_ **EFB disease** \_ 2. \_\_\_ **spotty brood pattern + other reasonable answers** \_\_\_\_\_

**2017 10 PASS and 12 FAIL -- Score Range 92-57.5%**