CODE _____ TIME _____

EAS MASTER BEEKEEPER WRITTEN EXAM 2016 NEW JERSEY

THE EAS Written Exam has 47 questions totaling 100 points. the passing grade is 85 percent or better, Read questions carefully. Answer the question asked and do NOT assume anything intended or implied. **If unclear, ASK for clarification**.

TRUE FALSE (2 points each). Indicate by checking first box if entire statement is TRUE or second box if any portion is FALSE. You may write a short statement, if you feel it important to qualify your answer.

1. ☐ **TRUE** ☐ **FALSE** Apistan and amitraz are two different chemicals that have pesticide activity useful to kill varroa mites. Both use the same delivery system (impregnated plastic strips). Of the two, amitraz exhibits widespread mite resistance. F. ONLY Apistan w/ widespread resistance

2. ☐ **TRUE** ☐ **FALSE** Top supering means adding new supers of foundation frames directly on top of a queen excluder, beneath any supers previously added. F This is bottom supering

3. ☐ **TRUE** ☐ **FALSE** Annually about 100 persons die in the U.S. from bee/wasp/ant stings, about same number of fatalities from dog bites. F 40 bee/wasp/ant sting deaths annually

4. ☐ **TRUE** ☐ **FALSE** Hairless black syndrome is an adult bee virus infection; infected bees have reduced body hairs, are greasy looking and often found trembling in front of the hive. **T**

5. ☐ **TRUE** ☐ **FALSE** Drone burr comb larvae is likely to be infested with varroa mites so it should be removed, to help reduce mite population growth. T

6. ☐ **TRUE** ☐ **FALSE** Fully ripened honey has glucose and fructose but totally lacks sucrose, the major sugar of cane/beet sugar. F honey hassmall amount sucrose sugar

7. ☐ **TRUE** ☐ **FALSE** The single federal bee law of 1922 requires bees be kept in hives with removal frames. F single Federal law only prohibits bringing in bee germplasm

8. ☐ **TRUE** ☐ **FALSE** The chemicals of the Nasanov gland secretion are an important component of royal jelly?. F Nasanov=sting gland - secretion not mixed with royal jelly

9. ☐ **TRUE** ☐ **FALSE** The FLOW hive innovation is a newly designed honey super with plastic frames that are mechanically opened to discharge ripened honey onto a collecting tray that leads to a tube extending outside the super to drain into honey jars. The colony must still be managed conventionally to obtain capped honey for harvest. T

10. ☐ **TRUE** ☐ **FALSE** Workers, but not drones or queen, have specialized body hairs, located on the front pair of legs of the adult, termed an antennal cleaner. F all 3 have cleaner

11. ☐ **TRUE** ☐ **FALSE** Standard recommendation for producing extracted honey is to oversuper with drawn comb to challenge bees at start/early in the nectar flow, except when producing section/cut-comb honey or in apiaries with heavy small hive beetle pressure. T

12. ☐ **TRUE** ☐ **FALSE** The Dyce method to produce creamed honey consists of mixing a 10% starter of creamed honey and then storing the mixture in a refrigerator at 35- 48 F. for a week to solidify. F after mixing store at 57 degrees for week

13. ☐ **TRUE** ☐ **FALSE** Both swarming and supersedure queen cells are started by the queen laying an egg in a queen cup; this is not the case when bees raise an emergency queen cell. T

2 questions from very first MB exam 1981 (35 years ago)

14. ☐ **TRUE** ☐ **FALSE** If you lack a refractometer you can roughly compare the moisture content of 2 bottles of honey by turning them upside down at room temperature. T

15. ☐ **TRUE** ☐ **FALSE** Yellow jackets are (sometimes) pests of honey bees; yellow jackets can be distinguished from bees as they have few body hairs and no apparatus for carrying pollen. T

FILL INS (2 points each). Supply the one or several words that completes each blank to create a true and accurate statement.

16. After introducing a new queen, what indicator do you look for (other than seeing her in the hive) to confirm that she has been successfully accepted? _____normal egg pattern_____. When capturing a swarm, how do you confirm you have transferred the queen to your collection container ____worker bees stay in container_____.

17. Langstroth's moveable-frame hive was based on his understanding of the distance bees maintain between parallel combs to freely move within the nest. It is a space of __3/8th inch approx_____ (measurement) called __bee_____ __space_____. (2 words)

18. Malpighian tubules are structures located in the bee ___abdomen_____ (name a body part) that converts __nitrogen wastes_____ into __uric___ acid.

19. A colony is __the social unit_____of bees while a bee hive is where the beekeeper colony ___lives_____ .

20. The caterpillar of a wax moth can be distinguished from the larva of a small hive beetle by looking for ___**false abdominal legs**_____ on the wax moth immature stage and for the __**silken, debris filled tunnels**_____ left by the caterpillar in comb.

21. Eusocial insects (such as the honey bees), have two or more _**female** __ caste members that cooperatively _**raise young**_____ within their social structure .

22. For northern beekeepers, an upper entrance is useful for venting of _**moisture**_____ and it can also provide an exit in case the lower entrance becomes __**blocked**_____.

23. Bees that better defend against mites via nestmate grooming (sometimes termed "ankle biters") remove phoretic mites from _**adult workers**_____. VSH "hygienic" bees defend against varroa mites via behavior of __**removing infested pupae**_____.

24. Two ways to distinguish robbing bee flight behavior from normal entry/exit forager flight from a colony are 1. _**trying to enter cracks**__ 2. __**bouncing/weaving flight**___

25. If you want to divide a colony AND accomplish mite population reduction, moving frames of **open** or capped (CIRCLE ONE) brood to a divide(split) and requeening with a _**hygienic**_____ queen stock would accomplish both goals.

26. Simply putting frames of honey in a secured trash bag is not sufficient to protect against wax moth because __**eggs may be present**___. An effective non-chemical method for protecting drawn comb (with or without honey) from wax moth is ___**put in freezer**___.

27. IPM, as used in a varroa mite control program, means _**use more than 1 option**_____. When should chemical controls be utilized in an IPM approach? _**last option**_____.

28. Below 57 degrees, bees in a hive will begin to _**cluster**_____. This is too cold a temperature for the beekeeper to __**examine a colony**_____ .

2 questions from very first MB exam 1981 (35 years ago)

29. What is the best time of year to install a package of bees in your area? ___**spring**_____What is best time of day? __**late afternoon**_____ What 2 plants are in flower at that time? 1. __**dandelion**___ and 2. _**other appropriate**__

30. A colony has a poor queen; how do you know this is so, _**poor egg laying pattern +**____

MULTIPLE CHOICE (2 points each) Circle the one best alternative choice – you may write a short comment in margin if you feel you must qualify your answer.

31. Neonicotinoid insecticides have been found to
    A. reduce surplus honey harvest,
    B. prematurely age workers
    C. contaminate quality of honey
    D. disappear by the time of flowering when used early in growing season
    E. effectively eliminate varroa mites B correct

32. EFB is diagnosed by 1. dead/dying larvae twisted in their cells, 2. distinctive sour odor, 3. larvae off-color, and/or 4. a "shotgun" brood pattern
    A. 1st of these listed characteristics,
    B. 1st and 2nd of these listed characteristic,
    C. 1st, 2nd and 3rd of these listed characteristics,
    D. all 4 of these listed characteristics,
    E. none of these listed characteristics D correct

33. Honey bees are useful for commercial pollination of plants due largely to their behavior of
    A. use of nectar in their vegetarian diet,
    B. flower fidelity,
    C. buzz pollination,
    D. sociality,
    E. flower concentration B correct

34. Beeswax is an "expensive" metabolic product to produce because bees need consume _____ pounds of honey to produce a pound of beeswax,
    A. 1,
    B. 3-4,
    C. 5-9,
    D. 10-15,
    E. more than 15 C correct

35. Clipping a queen's wing and using a queen excluder at colony openings are ineffective swarm control techniques because
    A. they can damage the queen,
    B. original queen can still join the swarm cluster,
    C. they inhibit prompt, timely departure of enough workers to acompany queen,
    D. colonies can still swarm with daughter virgins,
    E. workers can still leave and cluster and rear new queen in new home site. D

36. The number of drifting bees can be reduced by
    A. distance between hives,
    B. distinguished color markings on hives,
    C. reducing entrances on hives,
    D. 2 of A,B, C choices.
    E. all 3 choices A, B & C E correct
37. Honey is the result of inversion of sugars and _____ of nectar:
    A. acid hydrolysis,
    B. evaporation of water,
    C. concentration of vitamins and flavors,
    D. concentration of carbohydrates
    E. reduction of sugars B correct
38. Direct release of a queen when installing a package of bees means
    A. Shaking bees into hive vs opening package top and putting package into hive,
    B. removing attendant bees from queen cage before putting cage between frames,
    C. putting queen cage between frames and shaking bees around her,
    D. immediately releasing queen from cage at time workers are put into the hive,
    E. less risk of the queen being injured or killed D correct
39. Non-chemical varroa control technique that most likely will have the greatest impact on mite reproduction and keeping mite populations lower in a colony is:
    A. powder sugar dusting,
    B. small cell size,
    C. drone brood removal,
    D. culling of darker brood frames
    E. painting colonies different colors C correct
40. Of these chemicals used for treatment of varroa mites, which is most likely to contaminate beeswax comb
    A. Apivar,
    B Apiguard
    C. Apicur,
    D. Apistan,
    E. ApiLfeVar D correct
41. Supplemental feeding of bee colonies may be necessary
    A. during spring buildup
    B. during fall,
    C. during spring and fall
    D. during honey flow
    E. NEVER! C correct

42. Bees can detect some sounds with
    A. abdomen
    B. Arnhart gland
    C. antennae
    D. specialized body hairs throughout their body
    E. BEES CAN NOT detect sound C is Correct
43. Of the following, which varroa mite control product kills both phoretic and mites within capped cells
    A. Apivar,
    B. ApiGuard,
    C. ApiLife Var,
    D. Oxalic acid,
    E. MAQS. E Correct

2 questions from very first MB exam 1981 (35 years ago)

44. Under normal circumstances in Northeastern U.S., the least amount of brood in a bee colony is found during the month of
    A. March
    B. May
    C. September
    D. November D is correct
45. AFB (American Foulbrood) is caused by this type of pathogen
    A. Virus
    B. Bacteria
    C. Fungus
    D. spore B is correct

SHORT ESSAY (2 need be answered) . Select ONE of these two Beekeeping questions (5 points)

46. New colonies (hived package bees, nucs, swarm captures, splits) are a management challenge. Give three things the beekeeper should do within the first month to expand the new hive and then two additional things that should be done over the summer before the bees rear the bees that will rear the fall bees that will overwinter. For 1st month: 1. feed the new bees sugar syrup, 2. assist the new hive to draw foundation into comb 3. monitor the population growth but don't over inspect so queen can lay eggs; add 2nd box for brood + other possible stimulations OK For summer 1. push bees to expand into 2nd brood box (deep) or 2nd 3rd boxes (if mediums) 2. check for mite load. Feed colonies if no or reduced fall flow, prevent robbing + Other possible responses OK
    or

1. You are a beekeeper with 10 hives. A pumpkin grower close by asks if you could rent him 2 or 3 colonies for his pumpkin patch. Give 5 reasons why you should decline He uses spray (at least on other crops), you have no convenient way to move (no pick-up/ helpers to lift and heft, price he is willing to pay won't cover your costs (it never does), you don't want to work at night to put bees in/take out of patch, you desire a contract but are reluctant to work one up that you think grower will sign, if patch is too close(< 3 miles) bees would drift back home , workers in pumpkin patch likely to be afraid of bees in hives and may damage them, exposed hives may be stolen and OTHER reasonables?)…

Select ONE of these 2 Bee Biology questions (5 points)

1. The bee hive is dark, hot, smelly place. Why? For each of 3 hive features give minimum of one, and total 5, biological reasons why bee hives are hot, smelly and dark.
   A. Dark

   B. Hot

   C. Smelly

   ANS: dark – needed for wax gland function (any other reason?) but not for other hive functions, hot - for brood development + evaporation of water in honey ripening process + for nrmal adult survival (any others?), smelly so bees detect pheromones of queen ,brood &/or workers uniting and coordinating hive activities + distinctive hive odor + other possibles?

This question from very first MB exam 1981 (35 years ago)

2. Bees fly to flowers then walk on them to gather nectar/pollen. Explain what muscles enable insect wings to function and how, with 6 legs, they can walk on flowers? How much (relative to their body weight) can they collect before flying back and what are major wing structure features that allows this weight load? Could you carry the same amount relative to your body weight in supers from hive to extracting location?
   ANS: unfold wings with muscles attached directly to wing base at entrance, fly to/from flowers with indirect flight muscles of thorax; walking is a triangle of 3 legs; they can carry 1/2 or more of body weight as wings are not rigid - they move in figure 8 (front edge strong veins to reinforce membrane - hind (trailing) wing portion of flexible membrane, hook wings for greater surface. NO (unless trained weight lifter) we cannot carry as much without use of aids.