

Registration form

African Honey Bee CEU Training Course
48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00
Rush service does not include overnight delivery or Fedex fees.

Start and finish dates: _____
You will have 90 days from this date in order to complete this course

Print Name _____
I have read and understood the disclaimer notice found on pages 2,3 and 8. Signature is required.

Signature _____

Address: _____

City _____ **State** _____ **Zip** _____

Phone:
Home (_____) _____ **Work** (_____) _____

Fax (_____) _____ **Email** _____

License # _____ **Exp. Date** _____

Class/Grade _____

Please circle/check which certification you are applying the course CEU's.

Commercial Applicator _____ Residential Applicator _____ Industrial Applicator _____

Pesticide Handler _____ Agricultural Applicator _____ Adviser _____ Other _____

Technical Learning College TLC PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 email info@tlch2o.com

If you've paid on the Internet, please write your Customer # _____

We'll e-mail you the certificate of completion. Please provide an e-mail address.

Important Information about this Course (Disclaimer Notice)

This CEU course has been prepared to educate pesticide applicators and operators in general safety awareness of dealing with the often-complex and various pesticide treatment sprays, devices, methods, and applications. This course (manual) will cover general laws, regulations, required procedures and accepted policies relating to the use of pesticides and herbicides. It should be noted, however, that the regulation of pesticides and hazardous materials is an ongoing process and subject to change over time. For this reason, a list of resources is provided to assist in obtaining the most up-to-date information on various subjects. This manual is not a guidance document for applicators or operators who are involved with pesticides. It is not designed to meet the requirements of the United States Environmental Protection Agency or your local State environmental protection agency or health department. This course manual will provide general pesticide safety awareness and should not be used as a basis for pesticide treatment method/device guidance. This document is not a detailed pesticide informational manual or a source or remedy for poison control.

Technical Learning College or Technical Learning Consultants, Inc. makes no warranty, guarantee or representation as to the absolute correctness or appropriateness of the information in this manual and assumes no responsibility in connection with the implementation of this information. It cannot be assumed that this manual contains all measures and concepts required for specific conditions or circumstances. This document should be used for educational purposes only and is not considered a legal document. Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property or plants being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked. Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. You should never burn pesticide containers.

Individuals who are responsible for pesticide storage, mixing and application should obtain and comply with the most recent federal, state, and local regulations relevant to these sites and are urged to consult with the EPA and other appropriate federal, state and local agencies.

USE PESTICIDES WISELY: ALWAYS READ THE ENTIRE PESTICIDE LABEL CAREFULLY, FOLLOW ALL MIXING AND APPLICATION INSTRUCTIONS AND WEAR ALL RECOMMENDED PERSONAL PROTECTIVE GEAR AND CLOTHING. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR ANY ADDITIONAL PESTICIDE USE REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS.

NOTICE: MENTION OF PESTICIDE PRODUCTS IN THIS COURSE DOES NOT CONSTITUTE ENDORSEMENT OF ANY MATERIAL OR SUPPLEMENT. ALWAYS FOLLOW THE PRODUCT'S LABEL INSTRUCTIONS.

NOTICE

I fully understand that this type of study program deals with dangerous conditions and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

***We will stop mailing the certificate of completion we need your e-mail address.
We will e-mail the certificate to you, if no e-mail address; we will mail it to you.***

CERTIFICATION OF COURSE PROCTOR

Technical Learning College requires that our students who takes a correspondence or home study program course must pass a proctored course reading, quiz and final examination. The proctor must complete and provide to the school a certification form approved by the commission for each examination administered by the proctor.

Instructions. When a student completes the course work, fill out the blanks in this section and provide the form to the proctor with the examination.

Name of Course: _____

Name of Licensee: _____

Instructions to Proctor. After an examination is administered, complete and return this certification and examination to the school in a sealed exam packet or in pdf format.

I certify that:

1. I am a disinterested third party in the administration of this examination. I am not related by blood, marriage or any other relationship to the licensee which would influence me from properly administering the examination.
2. The licensee showed me positive photo identification prior to completing the examination.
3. The enclosed examination was administered under my supervision on _____. The licensee received no assistance and had no access to books, notes or reference material.
4. I have not permitted the examination to be compromised, copied, or recorded in any way or by any method.
5. Provide an estimate of the amount of time the student took to complete the assignment.

Time to complete the entire course and final exam. _____

Notation of any problem or concerns:

Name and Telephone of Proctor (please print):

Signature of Proctor

African Honey Bee CEU Training Course Answer Key

Name _____ Phone# _____

You are solely responsible in ensuring that this course is accepted by your State for credit. No refunds. Did you check with your State agency to ensure this course is accepted for credit?

Method of Course acceptance confirmation. Please fill this section

Website ___ Telephone Call ___ Email ___ Spoke to _____

Did you receive the approval number, if applicable? _____

You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.

**Multiple Choice. Pick only one answer per question.
A felt tipped pen works best.**

Circle or Mark off or Bold the answer. Please circle the number of the assignment version 1 or 2 or 3 or 4 or 5

Topic 1 Bee Introduction

Ten Questions

- | | | |
|------------|------------|-------------|
| 1. A B C D | 5. A B C D | 9. A B C D |
| 2. A B C D | 6. A B C D | 10. A B C D |
| 3. A B C D | 7. A B C D | |
| 4. A B C D | 8. A B C D | |

Topic 2 Bees and Related Bee-Like Insects

Ten Questions

- | | | |
|------------|------------|-------------|
| 1. A B C D | 5. A B C D | 9. A B C D |
| 2. A B C D | 6. A B C D | 10. A B C D |
| 3. A B C D | 7. A B C D | |
| 4. A B C D | 8. A B C D | |

Topic 3 - Apiculture Section

Ten Questions

- | | | |
|------------|------------|-------------|
| 1. A B C D | 5. A B C D | 9. A B C D |
| 2. A B C D | 6. A B C D | 10. A B C D |
| 3. A B C D | 7. A B C D | |
| 4. A B C D | 8. A B C D | |

Topic 4 - Bee Control Section

Ten Questions

- | | | |
|------------|------------|-------------|
| 1. A B C D | 5. A B C D | 9. A B C D |
| 2. A B C D | 6. A B C D | 10. A B C D |
| 3. A B C D | 7. A B C D | |
| 4. A B C D | 8. A B C D | |

Topic 5 - Wasp Section

Ten Questions

- | | | |
|------------|------------|-------------|
| 1. A B C D | 5. A B C D | 9. A B C D |
| 2. A B C D | 6. A B C D | 10. A B C D |
| 3. A B C D | 7. A B C D | |
| 4. A B C D | 8. A B C D | |

Amount of Time for Course Completion – How many hours you spent on course?

Must match State Hour Requirement _____ (Hours)

I understand that I am 100 percent responsible to ensure that TLC receives the Assignment and Registration Key. I understand that TLC has a zero tolerance towards not following their rules, cheating or hostility towards staff or instructors. I need to complete the entire assignment for credit. There is no credit for partial assignment completion. My exam was proctored. I will contact TLC if I do not hear back from them within 2 days of assignment submission. I will forfeit my purchase costs and will not receive credit or a refund if I do not abide with TLC's rules.

Please Sign that you understand and will abide with TLC's Rules.

Signature

Please e-mail or fax this survey along with your final exam

**AFRICAN HONEY BEE CEU COURSE
PROFESSIONAL DEVELOPMENT COURSE**

CUSTOMER SERVICE RESPONSE CARD

NAME: _____

E-MAIL _____ PHONE _____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.

Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.

Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.

Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course? _____

5. What would you do to improve the Course?

How about the price of the course?

Poor _____ Fair _____ Average _____ Good _____ Great _____

How was your customer service?

Poor _____ Fair _____ Average _____ Good _____ Great _____

Any other concerns or comments.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course.

I also affirm that I completed the exam without assistance from any outside source.

I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

INSTRUCTIONS

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following four assignments to complete. This selection process is based upon your last name.

Assignment for Last Names

If your last name...

A-G Assignment #1 Pages 9-15

H-M Assignment #2 Pages 17-23

N-S Assignment #3 Pages 25-31

T-Z Assignment #4 Pages 33-39

Repeat Students - Alternative Assignment #5 Pages 41-47

**These exams are frequently rotated.
Complete all topics before submitting the answers key.**

When finished with your assignment.

Please scan the Registration Page, Answer Key and Driver's License and email it to info@TLCH2O.com.

If you are unable to scan, take a photo of these documents with your iPhone and send these to TLC, info@TLCH2O.com.

If you are unable to scan and email, please fax these to TLC,

(928) 468-0675

If you fax, call to confirm that we received your paperwork.

African Honey Bee CEU Training Course Assignment #1

Last Names A-G

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 Bee Introduction Final Examination

Fill-In-the-blank

The Waggle Dance

1. Bees receive information via their sense of smell about what is to be found at the food source as well as its specific characteristics. _____ functions so well that the bees can find a food source with the help of the waggle dance even if there are hindrances they must detour around like an intervening mountain.
- A. The bee's orientation C. The bee's foraging
B. The bee's absconding D. None of the above

Absconding

2. Absconding bees may travel _____ miles before finding a suitable nest site.
- A. 20-60 C. 5-10
B. 30-50 D. None of the above
3. Worker bees forage for _____. Bees bring these raw materials back to the colony for use or storage.
- A. Cellulose, pollen, propolis, and water C. Propolis, nectar, pollen and water
B. Nectar, pollen, propolis, and sugar D. None of the above
4. _____ is converted from sucrose, a complex sugar, into fructose and glucose, simple sugars, by enzyme activity in the bee's "honey stomach."
- A. Propolis C. Nectar
B. Pollen D. None of the above
5. Worker bees also forage for propolis, often called "_____."
- A. Bee glue C. Honeycomb
B. Pollen D. None of the above
6. Water is collected by foragers and has three important functions in the colony: to dilute thick _____, to maintain the desired humidity in the hive, and to maintain the proper temperature.
- A. Honey C. Pollen
B. Propolis D. None of the above
7. Bees are also less defensive in cooler, cloudy weather.
- A. True B. False

8. The Africanized honey bee is simply a hybrid honey bee, a result of breeding the _____, with the _____.
- A. Temperate - Tropical honey bees C. European honey bee – African honey bee
B. European strains – American D. None of the above

Honey Bee Breeding

9. For more than 300 years honey bees have been bred in the Americas. Honey bee breeding programs have used genetic material from all over the world, including Africa, but have concentrated mostly on _____. Desired characteristics include winter hardiness, tendency not to swarm, gentleness, low drone production, and other valuable traits.

- A. Temperate honey bees C. European strains
B. Worker bees D. None of the above

10. African bee strains tend to be more defensive, swarm more often, and don't conform as well to our _____ management practices.

- A. Temperate honey bees C. European honey bee, *Apis mellifera mellifera*, or EHB
B. American bee D. None of the above

Topic 2 - Bees and Related Bee-Like Insects

Identifying characteristics for the family Halictidae include:

1. In many species, the tongue is long and pointed, adapted for probing into flowers. All bees are covered with hair, to which pollen sticks when flowers are visited; most female bees have apparatus for gathering this pollen; it is combed into a special basket or brush located on the hind legs.

- A. True B. False

Mason Bee

2. Smaller than a honeybee, mason bees resemble _____ more than Honeybees.

- A. Bumble bees C. Flies
B. Mosquitoes D. None of the above

3. Mason bees are native to _____.

- A. North America C. Europe
B. South America D. None of the above

Orchid Bee Not to be confused with Orchard Bee

4. Male orchid bees have uniquely modified legs which are used to collect and store different volatile compounds throughout their lives, primarily from orchids in the sub-tribes Stanhopeinae and Catasetinae, where all species are exclusively pollinated by _____.

- A. Ergonime males C. Females
B. Euglossine males D. None of the above

5. The male *Eufriesea purpurata* is highly unusual in actively collecting the _____ in huge amounts from houses in Brazil, without suffering any harm from it.

- A. Insecticide DDT C. Toxic dust
B. Pollen D. None of the above

Cuckoo Bee

6. Look for cuckoo bees flying low over the ground and foliage, hunting for foraging and nesting potential victims.

- A. True B. False

7. Many cuckoo bees are closely related to their hosts, and may bear similarities in appearance reflecting this relationship. This common pattern gave rise to the ecological principle known as " ".

- A. Price's law C. Johnson standard
B. Emery's Rule D. None of the above

Queen Bumble Bee

8. The queen bumble bee comes out of hibernation every _____ to find a new spot to build her nest and start a new colony.

- A. Spring C. Summer
B. Full moon D. None of the above

9. The queen bee is fertilized the previous season and has managed to live through the winter months. The same nesting spots from previous seasons are rarely used.

- A. True B. False

10. A suitable place for nesting is usually on the ground, beneath a flat object. An old mouse hole or similar hole in the ground is preferred if it is underneath an old tarp, flat stone or man-made objects such as a deck. The hole chosen by the queen bee is first padded by pieces of vegetation such as dry grass or moss.

- A. True B. False

Topic 3- Apiculture Section

How Bees Make Honey

1. Incredibly, the wonderfully designed honeybee must visit between _____ flowers in order to fill their honey stomachs.

- A. 20 - 40 C. 100 and 1500
B. 100 - 1000 D. None of the above

2. The honeybees return to the hive and pass the _____ onto other worker bees..

- A. Propolis C. Nectar
B. Pollen D. None of the above

3. During this time, enzymes are breaking the _____ in the nectar into _____ so that it is both more digestible for the bees and less likely to be attacked by bacteria while it is stored within the hive. The bees then spread the nectar throughout the honeycombs where water evaporates from it, making it a thicker syrup.

- A. Propolis - Honey C. Pollen - Honey
B. Complex sugars - Simple sugars D. None of the above

4. In one year, a colony of bees eats between _____ pounds of honey.

- A. 20 - 50 C. 120 and 200
B. 50 - 100 D. None of the above

5. Without nectar _____ the colony has no energy with which to perform its normal tasks and without pollen young bees cannot be reared.

- A. Honey C. Nectar
- B. Pollen D. None of the above

Prevention of Absconding

6. Where bees abscond frequently it is an indication that food, probably nectar is limited within the environment. Feeding bees is common in temperate bees; perhaps where the bees have collected insufficient honey or perhaps where too much honey has been harvested from a colony.

- A. True B. False

7. _____ is NOT suitable for feeding bees as they lack the enzymes to deal with the complex sugars that remain in the unrefined sugar and will die of dysentery.

- A. Propolis C. Raw, unrefined brown sugar or molasses
- B. Pollen D. None of the above

Feeding Pollen

8. Feeding _____ is also practiced in areas where _____ is limited.

- A. Propolis - Pollen C. Nectar - Pollen
- B. Pollen - Pollen D. None of the above

9. Feeding _____ is normally practiced at the start of the colony build up period.

- A. Propolis C. Nectar
- B. Pollen D. None of the above

New Colonies

10. Hives should have a volume, according to vegetational nectar flow, between _____ liters.

- A. 80 and 150 C. 80 and 100
- B. 50-100 D. None of the above

Topic 4- Bee Control Section

Fill-In-the-blank

1. A swarm of honeybees is a temporary inconvenience that may last a few hours or days. Honeybees in a swarm are usually _____ because they have stomachs full of _____.

- A. Gentle - Honey C. Indifferent - Both nectar and pollen
- B. Angry - Pollen D. None of the above

2. Simply killing the bees will only make for more complex problems in the future. For instance, an unattended nest of beeswax, honey, brood, and pollen will attract other insects and animals. Wax moths will enter to consume the wax, cockroaches and ants will find the brood and honey.

- A. True B. False

3. If removing the bees and their nest is not practical, then other methods of dealing with them can be considered.

- A. True B. False

4. In areas where the _____ has become established, people should learn the basics about bees and their habits. When activities increase the possibility of interaction with bees, care should be taken to reduce incidents.
- A. African honey bee - AHB C. "American" bee
 B. European honey bee – EHB D. None of the above
5. The nests of honey bees, bumble bees, yellowjackets and hornets should always be approached with caution, preferably at _____ when most of the workers are present but reluctant to fly.
- A. Night C. Day
 B. Morning D. None of the above
6. _____ is a natural bee insecticide. This effective bee killer is a dust that sticks to the legs and bodies of bees. Once on their legs and bodies, bees unwittingly carry it into their hives or nests and poison the rest of the colony.
- A. Boric acid C. Fenvalerate
 B. Piperonyl butoxide D. None of the above
7. Sprinkle _____ on the ground around ground nesting sites, at the entrances of hives and nests, or, when dealing with honeybees in the walls, directly into hives via holes drilled through the wall and into the side of the hive.
- A. Boric acid C. Fenvalerate
 B. Piperonyl butoxide D. None of the above
8. _____ are not generally used to destroy entire bee colonies. Instead, as they only kill the bees that get sprayed directly, pyrethrins are usually just used to keep populations from getting too out of hand. Microcare Aerosol is a good brand.
- A. DE C Fenvalerate
 B. Pyrethrin(s) D. None of the above

Specific Bee Treatments

9. Certain pesticides are harmful to bees. That's why we require instructions for protecting bees on the labels of pesticides that are known to be particularly harmful to bees. This is one of many reasons why everyone must read and follow pesticide label instructions. When most or all of the bees in a hive are killed by overexposure to a pesticide, we call that a bee kill incident resulting from acute pesticide poisoning.
- A. True B. False
10. Before dying, poisoned bees can become irritable, paralyzed or stupefied, appear to be 'chilled' or exhibit other abnormal behavior. _____ are likely to be superseded when a colony is being poisoned.
- A. Females or Workers C. Drones or Males
 B. Queen(s) D. None of the above

Topic 5 - Wasp Section

Mud Dauber (*Sceliphron caementarium*)

1. Many solitary wasps fall into the group of ' _____ ' and what distinguishes them is that they build nesting sites out of mud. There is the black and yellow dauber, blue, potter's wasp, organ pipe and many more. Usually their name depicts the shape of the nest they build but sometimes it simply refers to their colors or marking.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

Umbrella Wasps (*Polistes spp.* and *Mischocyttarus flavitarsis*)

2. Umbrella wasps are also commonly referred to as _____. These wasps have been named umbrella wasps because their nests are the shape of an inverted umbrella. They usually have small nests and are usually inhabited by about 250 wasps.

- A. Hornet(s)
- B. Paper wasp(s)
- C. Umbrella wasp(s)
- D. None of the above

3. _____ usually hang their nests in eaves, attics, and sheds. Knocking down the nest is a waste of time because the wasps will rebuild it. Therefore, the wasps themselves must be destroyed.

- A. Hornet(s)
- B. Bald Faced hornet(s)
- C. Umbrella wasps
- D. None of the above

4. When spring arrives, the young queens emerge and the cycle begins again. _____ visit flowers, especially in late summer, and can be minor pollinators.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

5. _____ is available in both liquid and wettable powder concentrates.

- A. DE
- B. Cypermethrin
- C. Drione Dust
- D. None of the above

Apply Pesticide when Bees are not Flying

6. Besides wasps many products can be used for general-purpose pest control in and around the home. Liquid concentrates are more cost effective for this particular job. If you are positive that you are dealing with only one nest, a _____-ounce bottle of Cypermethrin concentrate may be all that you will need, especially if you have no other pest control needs.

- A. 4
- B. 16
- C. 32
- D. None of the above

7. If there is a great deal of landscape area to deal with will you need larger volumes of liquid insecticides. In this case, _____ is your best bet. For smaller jobs, buy one or two 4 ounce bottles of Cypermethrin. Always follow the label instructions.

- A. Delta Dust
- B. Fenvalerate
- C. Demon Max (Demon EC)
- D. None of the above

Choosing Pest Products

8. There are two different dusts that will work: _____ and _____. The advantage of Drione Dust is that it has a very fast knock-down or kill of targeted pests.

- A. Cypermethrin - Fenvalerate
- B. Drione Dust - Delta Dust
- C. Drione Dust - Demon Max (Demon EC)
- D. None of the above

9. _____ has the advantage of being water-proof, an asset that is very attractive when treating soil that might contain any type of moisture. _____ is the more popular of the two insecticides.

- A. Demon Max
- B. Delta Dust
- C. Drione Dust
- D. None of the above

Application of Pest Products

10. If large amounts of _____ are merely "dumped" into the nest entrance, the majority of the dust will merely pile up in one place. Properly applied dust will "float" through the chambers and most of the particles will tend to stick to top, bottom and sides of the tunnel as well as the nest itself.

- A. Deltamethrin (Delta Dust or Drione Dust)
- B. Fenvalerate
- C. Demon Max
- D. None of the above

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.

African Honey Bee CEU Training Course Assignment #2

Last Names H-M

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Genus Apis

1. Colonies are established not by solitary queens, as in most bees, but by groups known as "swarms", which consist of a mated queen and a large contingent of worker bees. This group moves en masse to a nest site that has been scouted by worker bees beforehand. Once they arrive, they immediately construct a new wax comb and begin to raise new _____ brood.

- A. Worker
- B. Queen(s)
- C. Soldiers
- D. None of the above

Biology and Habits of the Honey Bee

2. The honey bee undergoes complete metamorphosis, passing through four stages: egg, larva, pupa, and adult. Bees develop into three different castes: _____, queens, and drones.

- A. Solitary queen(s)
- B. Workers
- C. Drones or Males
- D. None of the above

3. At first their body is soft, but the cuticle hardens in about _____ hours. During the next few days, glands and reproductive organs in the queens and drones develop and mature.

- A. 12-24
- B. 10-15
- C. 10 - 20
- D. None of the above

4. Drones produce semen in about 12 days and _____ begin to lay eggs about three days after mating.

- A. Solitary queen(s)
- B. Queen(s)
- C. Bee colonies
- D. None of the above

Virgin Queens

5. When mature, virgin queens take a mating flight and mate with _____ Drones or Males. In about three days, the queen begins to lay eggs.

- A. 100
- B. 10-15
- C. 10 - 20
- D. None of the above

6. Fertilized eggs develop into females (workers) and unfertilized eggs develop into Drones or Males. About _____ percent of the eggs laid by a queen are fertilized and develop into workers.

- A. 10
- B. 50
- C. 99
- D. None of the above

The Waggle Dance

7. Bees receive information via their sense of smell about what is to be found at the food source as well as its specific characteristics. _____ functions so well that the bees can find a food source with the help of the waggle dance even if there are hindrances they must detour around like an intervening mountain.

- A. The bee's foraging
- B. The bee's absconding
- C. The bee's orientation
- D. None of the above

Absconding

8. Absconding bees may travel _____ miles before finding a suitable nest site.

- A. 20-60
- B. 5-10
- C. 30-50
- D. None of the above

Food Gathering

9. Worker bees forage for _____. Bees bring these raw materials back to the colony for use or storage.

- A. Cellulose, pollen, propolis, and water
- B. Nectar, pollen, propolis, and sugar
- C. Propolis, nectar, pollen and water
- D. None of the above

10. _____ is converted from sucrose, a complex sugar, into fructose and glucose, simple sugars, by enzyme activity in the bee's "honey stomach."

- A. Propolis
- B. Pollen
- C. Nectar
- D. None of the above

Topic 2 - Bees and Related Bee-Like Insects

1. In the USA, the Halictidae common species are black, brown, red, or metallic green, and sometimes with yellow markings, and usually 1/4 to 1/2 inch (4-10 mm) in size.

- A. True
- B. False

Identifying characteristics for the family Halictidae include:

2. In many species, the tongue is long and pointed, adapted for probing into flowers. All bees are covered with hair, to which pollen sticks when flowers are visited; most female bees have apparatus for gathering this pollen; it is combed into a special basket or brush located on the hind legs.

- A. True
- B. False

Mason Bee

3. Smaller than a honeybee, mason bees resemble _____ more than Honeybees.

- A. Bumble bees
- B. Mosquitoes
- C. Flies
- D. None of the above

Orchid Bee Not to be confused with Orchard Bee

4. Male orchid bees have uniquely modified legs which are used to collect and store different volatile compounds throughout their lives, primarily from orchids in the sub-tribes Stanhopeinae and Catantopinae, where all species are exclusively pollinated by _____.

- A. Ergonime males
- B. Euglossine males
- C. Females
- D. None of the above

5. The male *Eufriesea purpurata* is highly unusual in actively collecting the _____ in huge amounts from houses in Brazil, without suffering any harm from it.
- A. Insecticide DDT C. Toxic dust
B. Pollen D. None of the above

Cuckoo Bee

6. Look for cuckoo bees flying low over the ground and foliage, hunting for foraging and nesting potential victims.
- A. True B. False
7. Many cuckoo bees are closely related to their hosts, and may bear similarities in appearance reflecting this relationship. This common pattern gave rise to the ecological principle known as "_____".
- A. Price's law C. Johnson standard
B. Emery's Rule D. None of the above

Queen Bumble Bee

8. The queen bumble bee comes out of hibernation every _____ to find a new spot to build her nest and start a new colony.
- A. Spring C. Summer
B. Full moon D. None of the above
9. A suitable place for nesting is usually on the ground, beneath a flat object. An old mouse hole or similar hole in the ground is preferred if it is underneath an old tarp, flat stone or man-made objects such as a deck.
- A. True B. False
10. The hole chosen by the queen bee is first padded by pieces of vegetation such as dry grass or moss.
- A. True B. False

Topic 3 - Apiculture Section

1. Incredibly, the wonderfully designed honeybee must visit between _____ flowers in order to fill their honey stomachs.
- A. 100 and 1500 C. 20 - 40
B. 100 – 1000 D. None of the above
2. The honeybees return to the hive and pass the _____ onto other worker bees.
- A. Honey C. Water
B. Nectar D. None of the above
3. During this time, enzymes are breaking the _____ in the nectar into _____ so that it is both more digestible for the bees and less likely to be attacked by bacteria while it is stored within the hive.
- A. Propolis - Honey C. Pollen - Honey
B. Complex sugars - Simple sugars D. None of the above
4. In one year, a colony of bees eats between _____ pounds of honey.
- A. 20 - 50 C. 120 and 200
B. 50 - 100 D. None of the above

5. Without nectar _____ the colony has no energy with which to perform its normal tasks and without pollen young bees cannot be reared.

- A. Honey C. Nectar
- B. Pollen D. None of the above

Prevention of Absconding

6. Where bees abscond frequently it is an indication that food, probably nectar is limited within the environment. Feeding bees is common in temperate bees; perhaps where the bees have collected insufficient honey or perhaps where too much honey has been harvested from a colony.

- A. True B. False

7. _____ is NOT suitable for feeding bees as they lack the enzymes to deal with the complex sugars that remain in the unrefined sugar and will die of dysentery.

- A. Propolis C. Raw, unrefined brown sugar or molasses
- B. Pollen D. None of the above

Feeding Pollen

8. Feeding _____ is also practiced in areas where _____ is limited.

- A. Propolis - Pollen C. Nectar - Pollen
- B. Pollen - Pollen D. None of the above

9. Feeding _____ is normally practiced at the start of the colony build up period. This is the time when protein demands will be highest as the bees are rearing large numbers of young brood.

- A. Propolis C. Nectar
- B. Pollen D. None of the above

New Colonies

10. Hives should have a volume, according to vegetational nectar flow, between _____ liters.

- A. 50-100 C. 80 and 100
- B. 80 and 150 D. None of the above

Topic 4 - Bee Control Section

Bee Swarms

1. A swarm of honeybees is a temporary inconvenience that may last a few hours or days. Honeybees in a swarm are usually _____ because they have stomachs full of _____.

- A. Gentle - Honey C. Indifferent - Both nectar and pollen
- B. Angry - Pollen D. None of the above

2. Simply killing the bees will only make for more complex problems in the future. For instance, an unattended nest of beeswax, honey, brood, and pollen will attract other insects and animals. Wax moths will enter to consume the wax, cockroaches and ants will find the brood and honey.

- A. True B. False

3. Decaying brood and fermenting honey will cause undesirable odors. _____ can soak into walls, making them impossible to paint or wallpaper. Walls will also remain moist to the touch for a considerable period of time. If removing the bees and their nest is not practical, then other methods of dealing with them can be considered.
- A. Honey C. Melting wax and honey
B. Pollen D. None of the above
4. In areas where the _____ has become established, people should learn the basics about bees and their habits. When activities increase the possibility of interaction with bees, care should be taken to reduce incidents.
- A. African honey bee - AHB C. "American" bee
B. European honey bee – EHB D. None of the above
5. In some cases, attempting to destroy a nest becomes a greater health risk than simply tolerating and avoiding it.
- A. True B. False
6. _____ is a natural bee insecticide. This effective bee killer is a dust that sticks to the legs and bodies of bees. Once on their legs and bodies, bees unwittingly carry it into their hives or nests and poison the rest of the colony.
- A. Boric acid C. Fenvalerate
B. Piperonyl butoxide D. None of the above
7. Sprinkle _____ on the ground around ground nesting sites, at the entrances of hives and nests, or, when dealing with honeybees in the walls, directly into hives via holes drilled through the wall and into the side of the hive.
- A. Boric acid C. Fenvalerate
B. Piperonyl butoxide D. None of the above
8. _____ are not generally used to destroy entire bee colonies. Instead, as they only kill the bees that get sprayed directly, pyrethrins are usually just used to keep populations from getting too out of hand. Microcare Aerosol is a good brand.
- A. DE C Fenvalerate
B. Pyrethrin(s) D. None of the above

Specific Bee Treatments

9. Colony Collapse Disorder and is almost always avoidable.
- A. True B. False
10. Before dying, poisoned bees can become irritable, paralyzed or stupefied, appear to be 'chilled' or exhibit other abnormal behavior. _____ are likely to be superseded when a colony is being poisoned.
- A. Females or Workers C. Drones or Males
B. Queen(s) D. None of the above

Topic 5 - Wasp Section

1. The social wasps can be fractured into 2 groups, the Yellowjackets / Hornets and Paper wasps. Most of these wasps feed on insect pests eliminating large numbers of them. _____ feed abundantly on armyworms, corn earworms and other ag pests.

- A. Hornet(s) C. Both yellowjacket and paper wasps
B. Paper wasp(s) D. None of the above

2. Hornets will take house flies, blow flies and caterpillars. Other Yellowjacket species are exclusively scavengers. Unless they nest or are active near human activities, it's best to leave them alone.

- A. True B. False

3. Workers forage mainly for protein at this time—usually in the form of other insects—and for some sugars. By late summer, however, the colonies grow more slowly or cease growth and require large amounts of sugar to maintain _____, so foraging wasps are particularly interested in sweet things at this time.

- A. Solitary queen(s) C. The queen and workers
B. Drones or Males D. None of the Above

Eastern Yellowjacket (*Vespula maculifrons*)

4. Most yellowjackets have very slightly barbed stingers but the sting will not set in the victim's tissue like the barbed stinger of the honey bee. The stinger of _____, however, often sticks and when the insect is slapped off, the stinger may remain.

- A. *D. arenaria* and *D. maculata* C. *V. maculifrons*
B. Paper wasp(s) D. None of the above

5. Aerial-nesting yellowjackets, _____, build paper nests that they attach to the eaves of a building or that hang from the limb of a tree. The entrance normally is a hole at the bottom of the nest. These aerial nesters don't become scavengers at the end of the season, but they are extremely defensive when their nests are disturbed. Defending *D. arenaria* sometimes bite and/or sting, simultaneously.

- A. *D. arenaria* and *D. maculata* C. *V. maculifrons*
B. Paper wasp(s) D. None of the above

6. Wasp stingers have barbs and can be used repeatedly, especially when the wasp gets inside clothing.

- A. True B. False

Aerial Nesters

7. The _____ is larger than the other yellowjackets and is black and white -- not black and yellow. It lives along the west coast, across Canada, and in all of the states in the eastern half of the country.

- A. Bald Faced hornet(s) C. Mud dauber(s)
B. Paper wasp(s) D. None of the above

8. This wasp is a "poor relative" of the Mud Dauber. The females use vacant mud wasp nests. They hunt on the ground, preying mainly on _____. Adults are metallic blue, blue green or bluish black.

- A. Grasshoppers C. Black Widow spider(s)
B. Honeybees D. None of the above

Hibernate Underground

9. When spring arrives, the young queens emerge and the cycle begins again. _____ visit flowers, especially in late summer, and can be minor pollinators.
- A. Bald Faced hornet(s)
 - B. Paper wasp(s)
 - C. Mud dauber(s)
 - D. None of the above

Treating Nests beneath Grass, Mulch

10. Treating nests in covered or over-grown areas is best done by first broadcasting an insecticide over the area. This is especially important when the entrance hole is not visible due to loose materials. The area should be fairly well drenched both on and around the suspected entrance to the nest. Products containing _____ work well for this job.
- A. Cypermethrin
 - B. Fenvalerate
 - C. Drione Dust
 - D. None of the above

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.

African Honey Bee CEU Training Course Assignment #3

Last Names N-S

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Genus Apis

1. Colonies are established not by solitary queens, as in most bees, but by groups known as "swarms", which consist of a mated queen and a large contingent of worker bees. This group moves en masse to a nest site that has been scouted by worker bees beforehand. Once they arrive, they immediately construct a new wax comb and begin to raise new _____ brood.

- A. Worker
- B. Queen(s)
- C. Soldiers
- D. None of the above

Biology and Habits of the Honey Bee

2. At first, their body is soft, but the cuticle hardens in about _____ hours. During the next few days, glands and reproductive organs in the queens and drones develop and mature.

- A. 12-24
- B. 10-15
- C. 10 - 20
- D. None of the above

Virgin Queens

3. When mature, virgin queens take a mating flight and mate with _____ Drones or Males. In about three days, the queen begins to lay eggs.

- A. 100
- B. 10-15
- C. 10 - 20
- D. None of the above

The Waggle Dance

4. Bees receive information via their sense of smell about what is to be found at the food source as well as its specific characteristics. _____ functions so well that the bees can find a food source with the help of the waggle dance even if there are hindrances they must detour around like an intervening mountain.

- A. The bee's orientation
- B. The bee's absconding
- C. The bee's foraging
- D. None of the above

Food Gathering

5. Worker bees forage for _____. Bees bring these raw materials back to the colony for use or storage.

- A. Cellulose, pollen, propolis, and water
- B. Nectar, pollen, propolis, and sugar
- C. Propolis, nectar, pollen and water
- D. None of the above

6. _____ is converted from sucrose, a complex sugar, into fructose and glucose, simple sugars, by enzyme activity in the bee's "honey stomach."

- A. Propolis
- B. Pollen
- C. Nectar
- D. None of the above

7. Worker bees also forage for propolis, often called "_____."
- A. Bee glue C. Honeycomb
B. Pollen D. None of the above

8. Water is collected by foragers and has three important functions in the colony: to dilute thick _____, to maintain the desired humidity in the hive, and to maintain the proper temperature.
- A. Honey C. Pollen
B. Propolis D. None of the above

Defensive Behavior

9. Bees are also more defensive in cooler, cloudy weather.

A. True B. False

10. African bee strains tend to be more defensive, swarm more often, and don't conform as well to our _____ management practices.

A. Temperate honey bees C. European honey bee, *Apis mellifera mellifera*, or EHB
B. American bee D. None of the above

Topic 2 - Bees and Related Bee-Like Insects

1. In the USA, the Halictidae common species are black, brown, red, or metallic green, and sometimes with yellow markings, and usually 1/4 to 1/2 inch (4-10 mm) in size.

A. True B. False

2. Halictidae males do not collect pollen.

A. True B. False

Mason Bee

3. Mason bees are native to _____.

A. North America C. Europe
B. South America D. None of the above

Orchid Bee Not to be confused with Orchard Bee

4. Male orchid bees have uniquely modified legs which are used to collect and store different volatile compounds throughout their lives, primarily from orchids in the sub-tribes Stanhopeinae and Catasetinae, where all species are exclusively pollinated by _____.

A. Ergonime males C. Females
B. Euglossine males D. None of the above

5. The male *Eufriesea purpurata* is highly unusual in actively collecting the _____ in huge amounts from houses in Brazil, without suffering any harm from it.

A. Insecticide DDT C. Toxic dust
B. Pollen D. None of the above

Cuckoo Bee

6. Many cuckoo bees are closely related to their hosts, and may bear similarities in appearance reflecting this relationship. This common pattern gave rise to the ecological principle known as "_____".

A. Price's law C. Johnson standard
B. Emery's Rule D. None of the above

7. Look for cuckoo bees flying low over the ground and foliage, hunting for foraging and nesting potential victims.

- A. True B. False

Queen Bumble Bee

8. The queen bumble bee comes out of hibernation every _____ to find a new spot to build her nest and start a new colony.

- A. Spring C. Summer
B. Full moon D. None of the above

9. A suitable place for nesting is usually on the ground, beneath a flat object. An old mouse hole or similar hole in the ground is preferred if it is underneath an old tarp, flat stone or man-made objects such as a deck. The hole chosen by the queen bee is first padded by pieces of vegetation such as dry grass or moss.

- A. True B. False

Bumble Bee Control

10. Bumble bees are _____

- A. A pest that needs treatment C. Very important, beneficial insects
B. Not pollinators D. None of the above

Topic 3 - Apiculture Section

How Bees Make Honey

1. Incredibly, the wonderfully designed honeybee must visit between _____ flowers in order to fill their honey stomachs.

- A. 20 - 40 C. 100 and 1500
B. 100 - 1000 D. None of the above

2. Worker bees suck nectar from the honeybee's stomach through their mouths. These "house bees" "chew" the nectar for about _____.

- A. ½ hour C. 1 day
B. 4 hours D. None of the above

3. During this time, enzymes are breaking the _____ in the nectar into _____ so that it is both more digestible for the bees and less likely to be attacked by bacteria while it is stored within the hive. The bees then spread the nectar throughout the honeycombs where water evaporates from it, making it a thicker syrup.

- A. Propolis - Honey C. Pollen - Honey
B. Complex sugars - Simple sugars D. None of the above

4. In one year, a colony of bees eats between _____ pounds of honey.

- A. 20 - 50 C. 120 and 200
B. 50 - 100 D. None of the above

5. Without nectar _____ the colony has no energy with which to perform its normal tasks and without pollen young bees cannot be reared.

- A. Honey C. Nectar
B. Pollen D. None of the above

Prevention of Absconding

6. Where bees abscond frequently it is an indication that food, probably nectar is limited within the environment. Feeding bees is common in temperate bees; perhaps where the bees have collected insufficient honey or perhaps where too much honey has been harvested from a colony.

- A. True B. False

7. _____ is NOT suitable for feeding bees as they lack the enzymes to deal with the complex sugars that remain in the unrefined sugar and will die of dysentery.

- A. Propolis C. Raw, unrefined brown sugar or molasses
B. Pollen D. None of the above

Feeding Pollen

8. Feeding _____ is also practiced in areas where _____ is limited.

- A. Propolis - Pollen C. Nectar - Pollen
B. Pollen - Pollen D. None of the above

9. Feeding _____ is normally practiced at the start of the colony build up period. This is the time when protein demands will be highest as the bees are rearing large numbers of young brood. If the colony build up seems unusual and there are no signs of pollen in the colony then it is possible that supplementary pollen feeding may be helpful.

- A. Honey C. Vegetational nectar
B. Pollen D. None of the above

10. Hives should have a volume, according to vegetational nectar flow, between _____ liters.

- A. 80 and 150 C. 80 and 100
B. 50-100 D. None of the above

Topic 4 - Bee Control Section

1. A swarm of honeybees is a temporary inconvenience that may last a few hours or days. Honeybees in a swarm are usually _____ because they have stomachs full of _____.

- A. Gentle - Honey C. Indifferent - Both nectar and pollen
B. Angry - Pollen D. None of the above

Bees in Buildings

2. Simply killing the bees will only make for more complex problems in the future. For instance, an unattended nest of beeswax, honey, brood, and pollen will attract other insects and animals. Wax moths will enter to consume the wax, cockroaches and ants will find the brood and honey.

- A. True B. False

3. Decaying brood and fermenting honey will cause undesirable odors. _____ can soak into walls, making them impossible to paint or wallpaper.

- A. Honey C. Melting wax and honey
B. Propolis D. None of the above

Avoiding Bee Problems

4. In areas where the _____ has become established, people should learn the basics about bees and their habits. When activities increase the possibility of interaction with bees, care should be taken to reduce incidents.
- A. African honey bee - AHB C. "American" bee
B. European honey bee – EHB D. None of the above

General Bee Control and Treatments

5. In some cases, attempting to destroy a nest becomes a greater health risk than simply tolerating and avoiding it. But nests, especially those of social species, should be destroyed if they are close enough to humans to pose a stinging threat.
- A. True B. False
6. _____ is a natural bee insecticide. This effective bee killer is a dust that sticks to the legs and bodies of bees. Once on their legs and bodies, bees unwittingly carry it into their hives or nests and poison the rest of the colony.
- A. Boric acid C. Fenvalerate
B. Piperonyl butoxide D. None of the above
7. Sprinkle _____ on the ground around ground nesting sites, at the entrances of hives and nests, or, when dealing with honeybees in the walls, directly into hives via holes drilled through the wall and into the side of the hive.
- A. Boric acid C. Fenvalerate
B. Piperonyl butoxide D. None of the above
8. _____ are not generally used to destroy entire bee colonies. Instead, as they only kill the bees that get sprayed directly, pyrethrins are usually just used to keep populations from getting too out of hand. Microcare Aerosol is a good brand.
- A. DE C Fenvalerate
B. Pyrethrin(s) D. None of the above

Specific Bee Treatments

9. When most or all of the bees in a hive are killed by overexposure to a pesticide, we call that a bee kill incident resulting from acute pesticide poisoning.
- A. True B. False
10. Before dying, poisoned bees can become irritable, paralyzed or stupefied, appear to be 'chilled' or exhibit other abnormal behavior. _____ are likely to be superseded when a colony is being poisoned.
- A. Females or Workers C. Drones or Males
B. Queen(s) D. None of the above

Topic 5 - Wasp Section

1. The social wasps can be fractured into 2 groups, the Yellowjackets / Hornets and Paper wasps. Most of these wasps feed on insect pests eliminating large numbers of them. _____ feed abundantly on armyworms, corn earworms and other ag pests.
- A. Hornet(s) C. Yellowjacket
B. Paper wasp(s) D. None of the above

2. Workers forage mainly for protein at this time—usually in the form of other insects—and for some sugars. By late summer, however, the colonies grow more slowly or cease growth and require large amounts of sugar to maintain _____, so foraging wasps are particularly interested in sweet things at this time.

- A. Worker
- B. Drones or Males
- C. The queen and workers
- D. None of the Above

3. Most yellowjackets have very slightly barbed stingers but the sting will not set in the victim's tissue like the barbed stinger of the honey bee. The stinger of _____, however, often sticks and when the insect is slapped off, the stinger may remain.

- A. *D. arenaria* and *D. maculata*
- B. Paper wasp(s)
- C. *V. maculifrons*
- D. None of the above

4. The _____ is larger than the other yellowjackets and is black and white -- not black and yellow. It lives along the west coast, across Canada, and in all of the states in the eastern half of the country.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

5. Many solitary wasps fall into the group of ' _____ ' and what distinguishes them is that they build nesting sites out of mud. There is the black and yellow dauber, blue, potter's wasp, organ pipe and many more. Usually their name depicts the shape of the nest they build but sometimes it simply refers to their colors or marking.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

Umbrella Wasps (*Polistes spp.* and *Mischocyttarus flavitarsis*)

6. _____ usually hang their nests in eaves, attics, and sheds. Knocking down the nest is a waste of time because the wasps will rebuild it. Therefore, the wasps themselves must be destroyed.

- A. Hornet(s)
- B. Bald Faced hornet(s)
- C. Umbrella wasps
- D. None of the above

Treating Nests beneath Grass, Mulch

7. Treating nests in covered or over-grown areas is best done by first broadcasting an insecticide over the area. This is especially important when the entrance hole is not visible due to loose materials. The area should be fairly well drenched both on and around the suspected entrance to the nest. Products containing _____ work well for this job.

- A. DE
- B. Cypermethrin
- C. Fenvalerate
- D. None of the above

Apply Pesticide when Bees are not Flying

8. Besides wasps many products can be used for general-purpose pest control in and around the home. Liquid concentrates are more cost effective for this particular job. If you are positive that you are dealing with only one nest, a _____-ounce bottle of Cypermethrin concentrate may be all that you will need, especially if you have no other pest control needs.

- A. 4
- B. 8
- C. 32
- D. None of the above

Choosing Pest Products

9. There are two different dusts that will work: _____ and _____. The advantage of Drione Dust is that it has a very fast knock-down or kill of targeted pests.

- A. Cypermethrin - Fenvalerate
- B. Drione Dust - Delta Dust
- C. Drione Dust - Demon Max (Demon EC)
- D. None of the above

Application of Pest Products

10. If large amounts of _____ are merely "dumped" into the nest entrance, the majority of the dust will merely pile up in one place. Properly applied dust will "float" through the chambers and most of the particles will tend to stick to top, bottom and sides of the tunnel as well as the nest itself.

- A. Deltamethrin (Delta Dust or Drione Dust)
- B. Fenvalerate
- C. Demon Max
- D. None of the above

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.

African Honey Bee CEU Training Course Assignment #4

Last Names T-Z

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 - Bee Introduction Final Examination

1. When mature, virgin queens take a mating flight and mate with _____ Drones or Males. In about three days, the queen begins to lay eggs.

- A. 100
- B. 10-15
- C. 10 - 20
- D. None of the above

2. Fertilized eggs develop into females (workers) and unfertilized eggs develop into Drones or Males. About _____ percent of the eggs laid by a queen are fertilized and develop into workers.

- A. 10
- B. 50
- C. 99
- D. None of the above

The Waggle Dance

3. Bees receive information via their sense of smell about what is to be found at the food source as well as its specific characteristics. _____ functions so well that the bees can find a food source with the help of the waggle dance even if there are hindrances they must detour around like an intervening mountain.

- A. The bee's orientation
- B. The bee's absconding
- C. The bee's foraging
- D. None of the above

Absconding

4. Absconding bees may travel _____ miles before finding a suitable nest site.

- A. 20-60
- B. 30-50
- C. 5-10
- D. None of the above

Food Gathering

5. Worker bees forage for _____. Bees bring these raw materials back to the colony for use or storage.

- A. Cellulose, pollen, propolis, and water
- B. Nectar, pollen, propolis, and sugar
- C. Propolis, nectar, pollen and water
- D. None of the above

6. Water is collected by foragers and has three important functions in the colony: to dilute thick _____, to maintain the desired humidity in the hive, and to maintain the proper temperature.

- A. Honey
- B. Propolis
- C. Pollen
- D. None of the above

Defensive Behavior

7. Bees are also less defensive in cooler, cloudy weather.

- A. True
- B. False

The Africanization of the Honey Bee

8. The Africanized honey bee is simply a hybrid honey bee, a result of breeding the _____, with the _____.
- A. Temperate - Tropical honey bees C. European honey bee – African honey bee
B. European strains – American D. None of the above

Honey Bee Breeding

9. For more than 300 years honey bees have been bred in the Americas. Honey bee breeding programs have used genetic material from all over the world, including Africa, but have concentrated mostly on _____.
- A. Temperate honey bees C. African honey bee, *Apis mellifera scutellata*, or AHB
B. European strains D. None of the above
10. African bee strains tend to be more defensive, swarm more often, and don't conform as well to our _____ management practices.
- A. Temperate honey bees C. European honey bee, *Apis mellifera mellifera*, or EHB
B. American bee D. None of the above

Topic 2 - Bees and Related Bee-Like Insects

1. In the USA, the Halictidae common species are black, brown, red, or metallic green, and sometimes with yellow markings, and usually 1/4 to 1/2 inch (4-10 mm) in size.
- A. True B. False

Identifying characteristics for the family Halictidae include:

2. Halictidae males collect pollen.
- A. True B. False

Mason Bee

3. Smaller than a honeybee, mason bees resemble _____ more than Honeybees.
- A. Bumble bees C. Flies
B. Mosquitoes D. None of the above

Orchid Bee Not to be confused with Orchard Bee

4. Male orchid bees have uniquely modified legs which are used to collect and store different volatile compounds throughout their lives, primarily from orchids in the sub-tribes Stanhopeinae and Catasetinae, where all species are exclusively pollinated by _____.
- A. Ergonime males C. Females
B. Euglossine males D. None of the above
5. The male *Eufriesea purpurata* is highly unusual in actively collecting the _____ in huge amounts from houses in Brazil, without suffering any harm from it.
- A. Insecticide DDT C. Toxic dust
B. Pollen D. None of the above

Cuckoo Bee

6. Look for cuckoo bees flying low over the ground and foliage, hunting for foraging and nesting potential victims.
- A. True B. False

7. Many cuckoo bees are closely related to their hosts, and may bear similarities in appearance reflecting this relationship. This common pattern gave rise to the ecological principle known as "_____".
- A. Price's law C. Johnson standard
B. Emery's Rule D. None of the above

Queen Bumble Bee

8. The queen bumble bee comes out of hibernation every _____ to find a new spot to build her nest and start a new colony.
- A. Spring C. Summer
B. Full moon D. None of the above
9. The queen bee is fertilized the previous season and has managed to live through the winter months. The same nesting spots from previous seasons are rarely used.
- A. True B. False

Bumble Bee Control

10. Bumble bees are _____
- A. A pest that needs treatment C. Very important, beneficial insects
B. Not pollinators D. None of the above

Topic 3 - Apiculture Section

How Bees Make Honey

1. Incredibly, the wonderfully designed honeybee must visit between _____ flowers in order to fill their honey stomachs.
- A. 20 - 40 C. 100 and 1500
B. 100 - 1000 D. None of the above
2. Worker bees suck nectar from the honeybee's stomach through their mouths. These "house bees" "chew" the nectar for about _____.
- A. ½ hour C. 1 day
B. 4 hours D. None of the above
3. During this time, enzymes are breaking the _____ in the nectar into _____ so that it is both more digestible for the bees and less likely to be attacked by bacteria while it is stored within the hive. The bees then spread the nectar throughout the honeycombs where water evaporates from it, making it a thicker syrup.
- A. Propolis - Honey C. Pollen - Honey
B. Complex sugars - Simple sugars D. None of the above
4. In one year, a colony of bees eats between _____ pounds of honey.
- A. 120 and 200 C. 20 - 50
B. 50 - 100 D. None of the above
5. Without nectar _____ the colony has no energy with which to perform its normal tasks and without pollen young bees cannot be reared.
- A. Honey C. Nectar
B. Pollen D. None of the above

Prevention of Absconding

6. Where bees abscond frequently it is an indication that food, probably nectar is limited within the environment. Feeding bees is common in temperate bees; perhaps where the bees have collected insufficient honey or perhaps where too much honey has been harvested from a colony.

- A. True B. False

7. _____ is NOT suitable for feeding bees as they lack the enzymes to deal with the complex sugars that remain in the unrefined sugar and will die of dysentery.

- A. Propolis C. Raw, unrefined brown sugar or molasses
B. Pollen D. None of the above

Feeding Pollen

8. Feeding _____ is also practiced in areas where _____ is limited.

- A. Propolis - Pollen C. Nectar - Pollen
B. Pollen - Pollen D. None of the above

9. Feeding _____ is normally practiced at the start of the colony build up period. This is the time when protein demands will be highest as the bees are rearing large numbers of young brood. If the colony build up seems unusual and there are no signs of pollen in the colony then it is possible that supplementary pollen feeding may be helpful. If beekeepers believe either pollen or nectar shortage is affecting the bees, the first line of investigation should be the availability of enough suitable tree species and the implementation of a planting program if possible.

- A. Vegetational nectar C. Propolis
B. Pollen D. None of the above

New Colonies

10. Hives should have a volume, according to vegetational nectar flow, between _____ liters.

- A. 80 and 150 C. 80 and 100
B. 50-100 D. None of the above

Topic 4 - Bee Control Section

Bee Swarms

1. A swarm of honeybees is a temporary inconvenience that may last a few hours or days. Honeybees in a swarm are usually _____ because they have stomachs full of _____.

- A. Gentle - Honey C. Indifferent - Both nectar and pollen
B. Angry - Pollen D. None of the above

Bees in Buildings

2. Simply killing the bees will only make for more complex problems in the future. For instance, an unattended nest of beeswax, honey, brood, and pollen will attract other insects and animals. Wax moths will enter to consume the wax, cockroaches and ants will find the brood and honey.

- A. True B. False

3. Decaying brood and fermenting honey will cause undesirable odors. _____ can soak into walls, making them impossible to paint or wallpaper. Walls will also remain moist to the touch for a considerable period of time. If removing the bees and their nest is not practical, then other methods of dealing with them can be considered.

- A. Honey
- B. Melting wax and honey
- C. Beeswax, honey, brood, and pollen
- D. None of the above

Avoiding Bee Problems

4. In areas where the _____ has become established, people should learn the basics about bees and their habits. When activities increase the possibility of interaction with bees, care should be taken to reduce incidents.

- A. African honey bee - AHB
- B. European honey bee – EHB
- C. "American" bee
- D. None of the above

General Bee Control and Treatments

5. The nests of honey bees, bumble bees, yellowjackets and hornets should always be approached with caution, preferably at night when most of the workers are present but _____.

- A. Reluctant to fly
- B. Will swarm
- C. Abscond
- D. None of the above

6. Sprinkle _____ on the ground around ground nesting sites, at the entrances of hives and nests, or, when dealing with honeybees in the walls, directly into hives via holes drilled through the wall and into the side of the hive.

- A. Boric acid
- B. Piperonyl butoxide
- C. Fenvalerate
- D. None of the above

7. _____ is a natural bee insecticide. This effective bee killer is a dust that sticks to the legs and bodies of bees. Once on their legs and bodies, bees unwittingly carry it into their hives or nests and poison the rest of the colony.

- A. Boric acid
- B. Piperonyl butoxide
- C. Fenvalerate
- D. None of the above

8. _____ are not generally used to destroy entire bee colonies. Instead, as they only kill the bees that get sprayed directly, pyrethrins are usually just used to keep populations from getting too out of hand. Microcare Aerosol is a good brand.

- A. DE
- B. Pyrethrin(s)
- C. Fenvalerate
- D. None of the above

Specific Bee Treatments

9. Colony Collapse Disorder and is almost always avoidable.

- A. True
- B. False

10. Before dying, poisoned bees can become irritable, paralyzed or stupefied, appear to be 'chilled' or exhibit other abnormal behavior. _____ are likely to be superseded when a colony is being poisoned.

- A. Females or Workers
- B. Queen(s)
- C. Drones or Males
- D. None of the above

Topic 5 - Wasp Section

1. Most yellowjackets have very slightly barbed stingers but the sting will not set in the victim's tissue like the barbed stinger of the honey bee. The stinger of _____, however, often sticks and when the insect is slapped off, the stinger may remain.

- A. Hornet(s)
- B. Paper wasp(s)
- C. *V. maculifrons*
- D. None of the above

2. Aerial-nesting yellowjackets, _____, build paper nests that they attach to the eaves of a building or that hang from the limb of a tree. The entrance normally is a hole at the bottom of the nest. These aerial nesters don't become scavengers at the end of the season, but they are extremely defensive when their nests are disturbed. Defending *D. arenaria* sometimes bite and/or sting, simultaneously.

- A. *D. arenaria* and *D. maculata*
- B. Paper wasp(s)
- C. *V. maculifrons*
- D. None of the above

3. Wasp stingers have no barbs and can be used repeatedly, especially when the wasp gets inside clothing.

- A. True
- B. False

Aerial Nesters

4. The _____ is larger than the other yellowjackets and is black and white -- not black and yellow. It lives along the west coast, across Canada, and in all of the states in the eastern half of the country.

- A. Hornet(s)
- B. Bald Faced hornet(s)
- C. Mud dauber(s)
- D. None of the above

Other Wasps

Blue Mud Wasp (*Chalybion californicum*)

5. This wasp is a "poor relative" of the Mud Dauber. The females use vacant mud wasp nests. They hunt on the ground, preying mainly on _____. Adults are metallic blue, blue green or bluish black.

- A. Grasshoppers
- B. Honeybees
- C. Black Widow spider(s)
- D. None of the above

Apply Pesticide when Bees are not Flying

6. Besides wasps many products can be used for general-purpose pest control in and around the home. Liquid concentrates are more cost effective for this particular job. If you are positive that you are dealing with only one nest, a _____-ounce bottle of Cypermethrin concentrate may be all that you will need, especially if you have no other pest control needs.

- A. 4
- B. 64
- C. 32
- D. None of the above

7. If there is a great deal of landscape area to deal with will you need larger volumes of liquid insecticides. In this case, _____ is your best bet. For smaller jobs, buy one or two 4 ounce bottles of Cypermethrin. Always follow the label instructions.

- A. Delta Dust
- B. Fenvalerate
- C. Demon Max (Demon EC)
- D. None of the above

Choosing Pest Products

8. There are two different dusts that will work: Drione Dust and _____. The advantage of Drione Dust is that it has a very fast knock-down or kill of targeted pests.

There are two different dusts that will work: _____ and _____. The advantage of Drione Dust is that it has a very fast knock-down or kill of targeted pests.

- A. Cypermethrin - Fenvalerate C. Drione Dust - Demon Max (Demon EC)
B. Drione Dust - Delta Dust D. None of the above

9. _____ has the advantage of being water-proof, an asset that is very attractive when treating soil that might contain any type of moisture. _____ is the more popular of the two insecticides.

- A. Demon Max C. Drione Dust
B. Delta Dust D. None of the above

Application of Pest Products

10. If large amounts of _____ are merely "dumped" into the nest entrance, the majority of the dust will merely pile up in one place. Properly applied dust will "float" through the chambers and most of the particles will tend to stick to top, bottom and sides of the tunnel as well as the nest itself.

- A. Deltamethrin (Delta Dust or Drione Dust) C. Demon Max
B. Fenvalerate D. None of the above

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.

African Honey Bee CEU Training Course Assignment #5

Repeat Students

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 Bee Introduction Final Examination

1. African bee strains tend to be more defensive, swarm more often, and don't conform as well to our _____ management practices.

- A. Temperate honey bees
- B. American bee
- C. European honey bee, Apis mellifera mellifera, or EHB
- D. None of the above

2. At first their body is soft, but the cuticle hardens in about _____ hours. During the next few days, glands and reproductive organs in the queens and drones develop and mature.

- A. 12-24
- B. 10-15
- C. 10 - 20
- D. None of the above

3. Absconding bees may travel _____ miles before finding a suitable nest site.

- A. 20-60
- B. 30-50
- C. 5-10
- D. None of the above

4. Worker bees forage for _____. Bees bring these raw materials back to the colony for use or storage.

- A. Cellulous, pollen, propolis, and water
- B. Nectar, pollen, propolis, and sugar
- C. Propolis, nectar, pollen and water
- D. None of the above

5. The honey bee undergoes complete metamorphosis, passing through four stages: egg, larva, pupa, and adult. Bees develop into three different castes: _____, queens, and drones.

- A. Workers
- B. Kings
- C. Drones or Males
- D. None of the above

6. For more than 300 years honey bees have been bred in the Americas. Honey bee breeding programs have used genetic material from all over the world, including Africa, but have concentrated mostly on _____. Desired characteristics include winter hardiness, tendency not to swarm, gentleness, low drone production, and other valuable traits.

- A. Tropical honey bees
- B. Worker bees
- C. European strains
- D. None of the above

7. _____ is converted from sucrose, a complex sugar, into fructose and glucose, simple sugars, by enzyme activity in the bee's "honey stomach."

- A. Propolis
- B. Pollen
- C. Nectar
- D. None of the above

8. Water is collected by foragers and has three important functions in the colony: to dilute thick _____, to maintain the desired humidity in the hive, and to maintain the proper temperature.

- A. Honey
- B. Propolis
- C. Pollen
- D. None of the above

9. _____ that have a tendency to increase the defensive behavior of bees include sudden and rapid movements, jarring or bumping hives or frames, vibrations and noise such as operating lawn mowers or tractors, odors (both good and bad), and dark colors. Bees are also more defensive in cooler, cloudy weather.

- A. Waggle dance
- B. Stimuli
- C. Absconding
- D. None of the above

10. The Africanized honey bee is simply a hybrid honey bee, a result of breeding the _____, with the _____.

- A. Temperate - Tropical honey bees
- B. European strains – American
- C. European honey bee – African honey bee
- D. None of the above

Topic 2 - Bees and Related Bee-Like Insects

1. In the USA, the Halictidae common species are black, brown, red, or metallic green, and sometimes with yellow markings, and usually 1/4 to 1/2 inch (4-10 mm) in size.

- A. True
- B. False

Identifying characteristics for the family Halictidae include:

2. In many species, the tongue is long and pointed, adapted for probing into flowers. All bees are covered with hair, to which pollen sticks when flowers are visited; most female bees have apparatus for gathering this pollen; it is combed into a special basket or brush located on the hind legs.

- A. True
- B. False

Mason Bee

3. Smaller than a honeybee, mason bees resemble _____ more than Honeybees.

- A. Bumble bees
- B. Mosquitoes
- C. Flies
- D. None of the above

Orchid Bee Not to be confused with Orchard Bee

4. The male *Eufriesea purpurata* is highly unusual in actively collecting the _____ in huge amounts from houses in Brazil, without suffering any harm from it.

- A. Insecticide DDT
- B. Pollen
- C. Toxic dust
- D. None of the above

5. Male orchid bees have uniquely modified legs which are used to collect and store different volatile compounds throughout their lives, primarily from orchids in the sub-tribes Stanhopeinae and Catasetinae, where all species are exclusively pollinated by _____.

- A. Ergonime males
- B. Euglossine males
- C. Females
- D. None of the above

Cuckoo Bee

6. Look for cuckoo bees flying low over the ground and foliage, hunting for foraging and nesting potential victims.

- A. True B. False

7. Many cuckoo bees are closely related to their hosts, and may bear similarities in appearance reflecting this relationship. This common pattern gave rise to the ecological principle known as " ".

- A. Price's law C. Johnson standard
B. Emery's Rule D. None of the above

Queen Bumble Bee

8. The queen bumble bee comes out of hibernation every to find a new spot to build her nest and start a new colony.

- A. Spring C. Summer
B. Full moon D. None of the above

9. A suitable place for nesting is usually on the ground, beneath a flat object. An old mouse hole or similar hole in the ground is preferred if it is underneath an old tarp, flat stone or man-made objects such as a deck. The hole chosen by the queen bee is first padded by pieces of vegetation such as dry grass or moss.

- A. True B. False

Bumble Bee Control

10. Bumble bees are

- A. A pest that needs treatment C. Very important, beneficial insects
B. Not pollinators D. None of the above

Topic 3 - Apiculture Section

1. Where bees abscond frequently it is an indication that food, probably nectar is limited within the environment. Feeding bees is common in temperate bees; perhaps where the bees have collected insufficient honey or perhaps where too much honey has been harvested from a colony.

- A. True B. False

2. Feeding is also practiced in areas where is limited.

- A. Propolis - Pollen C. Nectar - Pollen
B. Pollen - Pollen D. None of the above

3. Feeding is normally practiced at the start of the colony build up period. This is the time when protein demands will be highest as the bees are rearing large numbers of young brood. If the colony build up seems unusual and there are no signs of pollen in the colony then it is possible that supplementary pollen feeding may be helpful. If beekeepers believe either pollen or nectar shortage is affecting the bees, the first line of investigation should be the availability of enough suitable tree species and the implementation of a planting program if possible.

- A. Honey C. Vegetational nectar
B. Pollen D. None of the above

4. _____ is NOT suitable for feeding bees as they lack the enzymes to deal with the complex sugars that remain in the unrefined sugar and will die of dysentery.
- A. Propolis C. Raw, unrefined brown sugar or molasses
B. Pollen D. None of the above
5. Incredibly, the wonderfully designed honeybee must visit between _____ flowers in order to fill their honey stomachs.
- A. 20 - 40 C. 100 and 1500
B. 100 - 1000 D. None of the above
6. Worker bees suck nectar from the honeybee's stomach through their mouths. These "house bees" "chew" the nectar for about _____.
- A. ½ hour C. 1 day
B. 4 hours D. None of the above
7. During this time, enzymes are breaking the _____ in the nectar into _____ so that it is both more digestible for the bees and less likely to be attacked by bacteria while it is stored within the hive. The bees then spread the nectar throughout the honeycombs where water evaporates from it, making it a thicker syrup.
- A. Propolis - Honey C. Pollen - Honey
B. Complex sugars - Simple sugars D. None of the above
8. In one year, a colony of bees eats between _____ pounds of honey.
- A. 20 - 50 C. 120 and 200
B. 50 - 100 D. None of the above
9. Without nectar _____ the colony has no energy with which to perform its normal tasks and without pollen young bees cannot be reared.
- A. Honey C. Nectar
B. Pollen D. None of the above
10. Hives should have a volume, according to vegetational nectar flow, between _____ liters.
- A. 80 and 150 C. 80 and 100
B. 50-100 D. None of the above

Topic 4 - Bee Control Section

1. In some cases, attempting to destroy a nest becomes a greater health risk than simply tolerating and avoiding it. But nests, especially those of social species, should be destroyed if they are close enough to humans to pose a stinging threat. The nests of honey bees, bumble bees, yellowjackets and hornets should always be approached with caution.
- A. True B. False
2. _____ is a natural bee insecticide. This effective bee killer is a dust that sticks to the legs and bodies of bees. Once on their legs and bodies, bees unwittingly carry it into their hives or nests and poison the rest of the colony.
- A. Boric acid C. Fenvalerate
B. Piperonyl butoxide D. None of the above

3. Pesticides can affect honeybees in different ways. Some kill bees on contact in the field; others may cause brood damage or contaminate pollen, thus killing house bees. Before dying, poisoned bees can become irritable (likely to sting), paralyzed or stupefied, appear to be 'chilled' or exhibit other abnormal behavior. _____ are likely to be superseded when a colony is being poisoned.
- A. Females or Workers C. Drones or Males
B. Queen(s) D. None of the above
4. Sprinkle _____ on the ground around ground nesting sites, at the entrances of hives and nests, or, when dealing with honeybees in the walls, directly into hives via holes drilled through the wall and into the side of the hive.
- A. DE C. Termidor
B. Boric acid D. None of the above
5. A swarm of honeybees is a temporary inconvenience that may last a few hours or days. Honeybees in a swarm are usually _____ because they have stomachs full of _____.
- A. Gentle - Honey C. Indifferent - Both nectar and pollen
B. Angry - Pollen D. None of the above
6. Simply killing the bees will only make for more complex problems in the future. For instance, an unattended nest of beeswax, honey, brood, and pollen will attract other insects and animals. Wax moths will enter to consume the wax, cockroaches and ants will find the brood and honey.
- A. True B. False
7. Decaying brood and fermenting honey will cause undesirable odors. _____ can soak into walls, making them impossible to paint or wallpaper. Walls will also remain moist to the touch for a considerable period of time. If removing the bees and their nest is not practical, then other methods of dealing with them can be considered.
- A. Melting wax and honey C. Beeswax, honey, brood, and pollen
B. Pollen D. None of the above
8. In areas where the _____ has become established, people should learn the basics about bees and their habits. When activities increase the possibility of interaction with bees, care should be taken to reduce incidents.
- A. African honey bee - AHB C. "American" bee
B. European honey bee – EHB D. None of the above
9. _____ are not generally used to destroy entire bee colonies. Instead, as they only kill the bees that get sprayed directly, pyrethrins are usually just used to keep populations from getting too out of hand. Microcare Aerosol is a good brand.
- A. DE C. Fenvalerate
B. Pyrethrin(s) D. None of the above
10. Certain pesticides are harmful to bees. That's why we require instructions for protecting bees on the labels of pesticides that are known to be particularly harmful to bees. This is one of many reasons why everyone must read and follow pesticide label instructions. When most or all of the bees in a hive are killed by overexposure to a pesticide, we call that a bee kill incident resulting from acute pesticide poisoning.
- A. True B. False

Topic 5- Wasp Section

1. Most yellowjackets have very slightly barbed stingers but the sting will not set in the victim's tissue like the barbed stinger of the honey bee. The stinger of _____, however, often sticks and when the insect is slapped off, the stinger may remain.

- A. *D. arenaria* and *D. maculata*
- B. Paper wasp(s)
- C. *V. maculifrons*
- D. None of the above

2. Many solitary wasps fall into the group of '_____' and what distinguishes them is that they build nesting sites out of mud. There is the black and yellow dauber, blue, potter's wasp, organ pipe and many more. Usually their name depicts the shape of the nest they build but sometimes it simply refers to their colors or marking.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

3. The social wasps can be fractured into 2 groups, the Yellowjackets / Hornets and Paper wasps. Most of these wasps feed on insect pests eliminating large numbers of them. _____ feed abundantly on armyworms, corn earworms and other ag pests.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. The social wasp(s)
- D. None of the above

4. Hornets will take house flies, blow flies and caterpillars. Other Yellowjacket species are exclusively scavengers. Unless they nest or are active near human activities, it's best to leave them alone. But unlike _____, these wasps can become very defensive when their nests are disturbed. Loud noises such as a lawnmower, vibration from even footsteps or just coming too close to a nest can elicit a defensive response.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. The social wasp(s)
- D. None of the above

5. Besides wasps many products can be used for general-purpose pest control in and around the home. Liquid concentrates are more cost effective for this particular job. If you are positive that you are dealing with only one nest, a _____-ounce bottle of Cypermethrin concentrate may be all that you will need, especially if you have no other pest control needs.

- A. 4
- B. 64
- C. 32
- D. None of the above

6. Aerial-nesting yellowjackets, _____, build paper nests that they attach to the eaves of a building or that hang from the limb of a tree. The entrance normally is a hole at the bottom of the nest. These aerial nesters don't become scavengers at the end of the season, but they are extremely defensive when their nests are disturbed. Defending *D. arenaria* sometimes bite and/or sting, simultaneously.

- A. *D. arenaria* and *D. maculata*
- B. Paper wasp(s)
- C. *V. maculifrons*
- D. None of the above

7. Wasp stingers have no barbs and can be used repeatedly, especially when the wasp gets inside clothing.

- A. True
- B. False

8. The _____ is larger than the other yellowjackets and is black and white -- not black and yellow. It lives along the west coast, across Canada, and in all of the states in the eastern half of the country.

- A. Bald Faced hornet(s)
- B. Paper wasp(s)
- C. Mud dauber(s)
- D. None of the above

9. This wasp is a “poor relative” of the Mud Dauber. The females use vacant mud wasp nests. They hunt on the ground, preying mainly on _____. Adults are metallic blue, blue green or bluish black.

- A. Grasshoppers
- B. Honeybees
- C. Black Widow spider(s)
- D. None of the above

10. If there is a great deal of landscape area to deal with will you need larger volumes of liquid insecticides. In this case, _____ is your best bet. For smaller jobs, buy one or two 4 ounce bottles of Cypermethrin. Always follow the label instructions.

- A. Delta Dust
- B. Fenvalerate
- C. Demon Max (Demon EC)
- D. None of the above

Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line.

Please email this answer key and the registration Page to TLC.

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized \$50 per day.