

Registration form

Tick Control CEU Training \$150.00
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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

Name _____ **Signature** _____

Address: _____

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Home (____) _____ **Work** (____) _____

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App. ID # _____ **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
PO Box 3060, Chino Valley, AZ 86323-3060
Fax (928) 272-0747 e-mail info@tlch2o.com
(928) 468-0665 Toll Free (866) 557-1746

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

We will stop mailing the certificate of completion we need your e-mail address. We will e-mail the certificate to you.

DISCLAIMER NOTICE

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion 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 or my lack of submitting paperwork. 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.

State Approval Listing Link, check to see if your State accepts or has pre-approved this course. Not all States are listed. Not all courses are listed.

State Approval Listing URL...

<http://www.ABCTLC.com/downloads/PDF/CEU%20State%20Approvals.pdf>

You can obtain a printed version of the course manual from TLC for an additional \$129.95 plus shipping charges.

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.

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.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Thank you...

CUSTOMER SERVICE RESPONSE CARD

Tick Control Training Course

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.

Tick Control Answer Key

Name _____

Phone# _____

You are solely responsible in ensuring 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? _____

What is the course 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.

Multiple Choice. Pick only one answer per question.

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

Complete all the Topical Sections before submitting the answer key

Topic 1 - Introduction to Ticks

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 - Tick Identification Section

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 - Dangers of Ticks

- | | | |
|------------|------------|-------------|
| 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 – Related Blood-feeding Insects

- | | | |
|------------|------------|-------------|
| 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 | |

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. My exam was proctored. There is no credit for partial assignment completion.

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 and disclaimer page 2 and 7.

Signature

Please fax or email this answer key and the registration Page to TLC.
Call 15 minutes later to ensure we have received the paperwork

You are finished with your assignment. Please fax this answer key and your registration page along with the customer survey to TLC.

Fax Number (928) 272-0747

Email info@tlch2o.com

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 HERB OR HERBAL SUPPLEMENT. ALWAYS FOLLOW THE PRODUCT'S LABEL INSTRUCTIONS.

NOTICE

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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.

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 9-14

H-M Assignment #2 Pages 15-20

N-S Assignment #3 Pages 21-26

T-Z Assignment #4 Pages 27-32

Alternative Assignment #5 for repeat students Pages 33-37

These exams are frequently rotated.

Complete all topics before submitting the answers key.

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.

Tick Control CEU Training Awareness Assignment #1 For Students 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. Student Services (928) 468-0665.

Topic 1 Introduction to Ticks

Multiple choice. Please select one answer only per question. No trick questions.

(S) means the answer may be plural or singular in nature. Or means either answer may work.

1. More than 800 species of ticks inhabit the planet. They are second only to mosquitoes as vectors of human disease,_____.

- A. Including parasitic mechanisms
- B. Causing allergic reaction(s)
- C. Both infectious and toxic
- D. None of the above

2. Ixodidae or Hard Ticks >700 species are distinguished from the Argasidae by the presence of a _____or hard shield.

- A. Idiosoma
- B. Capitulum (head)
- C. Scutum
- D. None of the above

Life cycle and reproduction

3. _____ticks undergo three primary stages of development: larval, nymphal, and adult.

- A. Only Argasidae or Argasid
- B. Only Dermacentor
- C. Both ixodid and argasid
- D. None of the above

Ixodidae

4. Ixodid ticks require three hosts, and their life cycle takes at least one year to complete. Up to 3,000 eggs are laid on the ground by an adult female tick.

- A. 100
- B. 3,000
- C. 500
- D. None of the above

5. All ticks have an incomplete metamorphosis: after hatching from the egg a series of similar stages (instars) develop from a_____, to eight legged nymph and then a sexually developed eight legged adult.

- A. Six legged larva
- B. Seven instar
- C. Eight legged larva
- D. None of the above

6. Between each stage there is a molt (ecdysis) which enables the developing tick to expand within a new_____.

- A. Idiosoma
- B. Haller's organ
- C. External skeleton
- D. None of the above

7. The family _____ contains the important genera Amblyomma, Dermacentor, Haemaphysalis, Hyalomma, Ixodes, Margaropus, and Rhipicephalus. Also the important boophilid ticks, formerly of the genus Boophilus, are now classified as a sub-genus within the genus Rhipicephalus.
- A. Ornithodoros C. Dermacentor
B. Ixodidae D. None of the above
8. The cement serves to hold the _____ in place while the tick feeds.
- A. Idiosoma C. Mouthparts
B. Capitulum D. None of the above
9. _____ on larval and nymphal ticks are small with less penetration and produce a smaller host reaction.
- A. Idiosoma C. Mouthparts
B. Hypostome D. None of the above
10. Adult Ixodes and _____ ticks have long mouthparts that can reach the sub dermal layer of skin, produce a larger reaction, and make the tick harder to remove.
- A. Argasidae or Argasid C. Dermacentor
B. Amblyomma D. None of the above

Please complete the entire assignment before submitting the answer key

Topic 2 Tick Identification Section

Deer Tick Life Cycle

1. The deer tick passes through four life stages (egg, larva, nymph, adult), over a _____
- A. Two month period C. Two year period
B. Three month period D. None of the above

Egg to Larvae

2. Eggs are fertilized in the fall and deposited in leaf litter the following _____.
- A. Summer C. Spring
B. Month D. None of the above
3. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following _____.
- A. Summer C. Spring
B. Month D. None of the above

Larvae to Nymph

4. During the spring and early summer of the next year the nymphs end their dormancy and begin to seek a host. _____ are commonly found on the forest floor in leaf litter and on low lying vegetation.
- A. Nymph(s) C. Females
B. Seven instars D. None of the above

Nymph to Adult

5. Over the next few months the nymph molts into the larger adult tick, which emerges in fall, with a peak in October through November. _____ find and feed on a host, then the females lay eggs sometime after feeding.

- A. Both male and female adults
- B. Seven instars
- C. Larvae
- D. None of the above

Adult Ticks

6. In the fall of the second year, nymphs molt into adult ticks. Female adults are _____ and larger than males.

- A. Red or orange
- B. Black and red
- C. Black
- D. None of the above

7. As female ticks feed over the course of several days, their bodies slowly enlarge with blood (engorge). Adult females infected with disease agents as _____ may transmit disease during this feeding.

- A. Both male and female adults
- B. Larvae or nymphs
- C. Several nymphal stages
- D. None of the above

8. _____ ticks attach, but do not feed or become engorged. Because the adult males do not take a blood meal, they do not transmit Lyme disease, human anaplasmosis, or babesiosis.

- A. Nymph(s)
- B. Male
- C. The adult female
- D. None of the above

Lone Star Tick *Amblyomma americanum*

9. Each female produces _____ eggs, which are deposited under leaf and soil litter in middle to late spring.

- A. 300-800
- B. 30,000-80,000
- C. 3,000-8,000
- D. None of the above

Winter Tick *Dermacentor albipictus*

10. _____ is found throughout North America. It is widely distributed throughout California, but populations are concentrated around the central coastal and sierra foothill areas. It primarily feeds on horses and deer from fall through early spring. Heavy infestations of horses may cause emaciation and anemia (Furman and Loomis 1984).

- A. This two host tick
- B. This no host tick
- C. This one host tick
- D. None of the above

Topic 3 Dangers of Ticks

1. Ticks may cause _____ in humans that is reversible when the ticks are removed. Symptoms include paralysis of the arms and legs, followed by a general paralysis, which can be fatal if not reversed.

- A. Allergic Reaction
- B. Paralysis
- C. Local infection
- D. None of the above

2. The victim may recover completely within a _____ of the removal of the tick.

- A. Few weeks
- B. 1 week
- C. Few hours
- D. None of the above

3. The paralysis may be caused by a _____ transmitted to humans when a tick feeds.
- A. Blood C. Germ
B. Salivary toxin D. None of the above
4. _____ is frequently associated with the attachment of the tick at the base of the victim's skull; however, the illness occurs from attachment to other parts of the body as well.
- A. Disease transmission C. Local infection
B. Tick paralysis D. None of the above
5. The highest incidence of tick paralysis in North America occurs near the border of British Columbia, Canada, and the northwestern _____.
- A. United States C. Washington
B. Mexico D. None of the above
6. The two most important tick-borne diseases in the United States are _____ and Rocky Mountain spotted fever.
- A. Lyme disease C. Local infections
B. Babesiosis D. None of the above
7. The onset of Lyme disease is usually characterized by the development of a large, red rash, which may develop a characteristic clear central area ("_____"), one to two weeks after a tick bite, often in the area around the puncture.
- A. Ring o C. Local infection
B. Bulls eye D. None of the above
8. The most characteristic symptom of Rocky Mountain spotted fever is a rash on the ankles, wrists, and forehead _____ after the victim is bitten.
- A. One to two days C. One to two years
B. One to two weeks D. None of the above
9. The best means to prevent the transmission of _____ and the development of tick paralysis is the prompt removal of ticks.
- A. Disease symptoms C. Hepatitis
B. Tick-borne diseases D. None of the above
10. To remove a tick, grasp it crosswise with narrow tweezers (do not rupture the tick) as close to the point of attachment as possible. _____ tick firmly in the direction of attachment; some back-and-forth wiggling may be necessary.
- A. Wiggle C. Retract or pull
B. Rub it with a little KY D. None of the above

Topic 4 Related Blood-feeding Insects

Grain mite

1. Grain mites are reported to have been the cause of mild dermatitis in humans, known under various names as "_____", "vanillism" (from infestations on vanilla beans), and "copra itch."
- A. Grocers' itch C. Rickettsial pox
B. Rat-mite dermatitis D. None of the above

Bed Bugs

2. Cimicidae or bed bugs (sometimes bedbugs), are small parasitic insects. The most common type is Cimex lectularius.
A. True B. False

Life Stages

3. Newly hatched nymphs are translucent, lighter in color and become browner as they molt and reach maturity. Bed bugs may be mistaken for other insects such as _____, or vice-versa.
A. Fleas or ticks C. Booklice and carpet beetles
B. Rodents or Rats D. None of the above

Pyrethroids

4. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are _____, which is a sodium channel modulators, and are much less acutely toxic than organophosphates and carbamates. Compounds in this group are often applied against household pests.
A. Beneficial C. Non-systemic insecticide
B. Non-persistent D. None of the above

Pyrethroids include:

5. _____, Bifenthrin, Beta-Cyfluthrin, Cyfluthrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Fenpropathrin, Tau-Fluvalinate, Lambda-Cyhalothrin, Gamma Cyhalothrin, Imiprothrin, 1RS cis-Permethrin, Permethrin, Prallethrin, Resmethrin, Sumithrin (d-phenothrin), Tefluthrin, Tetramethrin, Tralomethrin, and Zeta-Cypermethrin
A. Beneficial C. Non-systemic insecticide
B. Allethrin stereoisomers D. None of the above

Permethrin

General Information

6. Permethrin is a _____. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.
A. An insect growth regulator (IGR) C. A broad-spectrum pyrethroid insecticide
B. Stereoisomers D. None of the above

Common Flea Treatment Pesticides

Propoxur

7. Propoxur (Baygon®) is a _____ insecticide and was introduced in 1959. Propoxur is a non-systemic insecticide with a fast knockdown and long residual effect used against turf, forestry, and household pests and fleas. It is also used in pest control for other domestic animals,
A. Carbamate C. Isopropanol
B. Sodium channel modulators D. None of the above

Methoprene IGR Treatment

8. Methoprene is _____ with activity against a variety of insect species including horn flies, mosquitoes, beetles, tobacco moths, sciarid flies, fleas (eggs and larvae), fire ants, pharaoh ants, midge flies and Indian meal moths. Controlling some of these insects, methoprene is used in the production of a number of foods including meat, milk, mushrooms, peanuts, rice and cereals. It also has several uses on domestic animals (pets) for controlling fleas.

- A. Not a pyrethrin and permethrin
- B. A stereoisomer
- C. An insect growth regulator (IGR)
- D. None of the above

The three types of lice that live on humans are:

9. Only the _____ is known to spread disease. Lice infestations (pediculosis and pthiriasis) are spread most commonly by close person-to-person contact.

- A. Lice
- B. Flea
- C. Body louse
- D. None of the above

Lindane

10. Lindane has been associated with _____ suffered both by people being treated and by people applying the treatment. It is also a troublesome pollutant of wastewater and requires special treatment to be removed. While lindane is still available by prescription, pyrethrin and permethrin are safer, more effective, and less polluting than lindane.

- A. A variety of adverse reactions
- B. Long residual effects
- C. An insect growth regulators
- D. None of the above

Tick Control CEU Training Awareness Assignment #2 For Students Names H-M

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Topic 1 Introduction to Ticks

Multiple choice. Please select one answer only per question. No trick questions.

(S) means the answer may be plural or singular in nature. Or means either answer may work.

1. All ticks have an incomplete metamorphosis: after hatching from the egg a series of similar stages (instars) develop from a _____, to eight legged nymph and then a sexually developed eight legged adult.

- A. Six legged larva C. Eight legged larva
- B. Seven instar D. None of the above

2. Between each stage there is a molt (ecdysis) which enables the developing tick to expand within a new _____.

- A. Idiosoma C. External skeleton
- B. Haller's organ D. None of the above

Diet and feeding behaviors

3. Ticks satisfy all of their nutritional requirements as ectoparasites, feeding on a diet of blood in a practice known as _____.

- A. Parasitic mechanisms C. Hematophagy
- B. Hypostome D. None of the above

4. Ticks extract the blood by cutting a hole in the host's epidermis, into which they insert their _____, in order to keep the blood from clotting by excreting an anticoagulant or platelet aggregation inhibitor.

- A. Idiosoma C. Hypostome
- B. Coxae D. None of the above

5. While _____, ticks hold onto leaves and grass by their third and fourth pair of legs. They hold the first pair of legs outstretched, waiting to climb on to the host. When a host brushes the spot where a tick is waiting, it quickly climbs onto the host.

- A. Questing C. Squatting
- B. Aggregation D. None of the above

Genus Ixodes

6. Ticks in the genus Ixodes are easily recognized by the position of the anal groove, which lies in front of the _____ and extends from one side of the body to the other.

- A. Capitulum
- B. Cornua
- C. Anus
- D. None of the above

7. There are 34 species of ticks in the genus Ixodes in the United States, more than in any other genus. Male specimens have a _____ on the ventral side of the abdomen. Most species have enlarged club-like palps.

- A. Hypostome
- B. Cornua
- C. Complicated arrangement of plates
- D. None of the above

How a Tick Bites and Feeds

8. _____ on larval and nymphal ticks are small with less penetration and produce a smaller host reaction.

- A. Idiosoma
- B. Hypostome
- C. Mouthparts
- D. None of the above

9. Adult Ixodes and _____ ticks have long mouthparts that can reach the sub dermal layer of skin, produce a larger reaction, and make the tick harder to remove.

- A. Argasidae or Argasid
- B. Amblyomma
- C. Dermacentor
- D. None of the above

10. A variety of _____ that aid the feeding process and possibly increase pathogen transmission are introduced in the tick's saliva (e.g., blood platelet aggregation inhibitors, anticoagulants, anti-inflammatory and immunosuppressive enzymes, and vasodilators to increase blood flow).

- A. Vectors of human disease
- B. Allergic reaction(s)
- C. Pharmacologically active compounds
- D. None of the above

Please complete the entire assignment before submitting the answer key

Topic 2 Tick Identification Section

Tick Life Cycle

Deer Tick Life Cycle

1. The deer tick passes through four life stages (egg, larva, nymph, adult), over a _____

- A. Two month period
- B. Three month period
- C. Two year period
- D. None of the above

Egg to Larvae

2. Their first host is generally a mouse or other medium-sized mammal or bird. Once attached, the larvae embed their mouth parts and feed for several days. If the host is infected with a disease such as Lyme, the tick may be infected during this feeding. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following _____.

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

3 Eggs are fertilized in the fall and deposited in leaf litter the following_____. They emerge as larvae in late summer of that year, seeking their first blood meal.

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

Larvae to Nymph

4. _____ are commonly found on the forest floor in leaf litter and on low lying vegetation. Their host primarily consists of mice and other rodents, deer, birds and unfortunately humans.

- A. Nymph(s)
- B. Larvae
- C. Females
- D. None of the above

Nymph to Adult

5. Over the next few months the nymph molts into the larger adult tick, which emerges in fall, with a peak in October through November. _____ find and feed on a host, then the females lay eggs sometime after feeding.

- A. Both male and female adults
- B. Seven instars
- C. Larvae
- D. None of the above

Adult Ticks

6. Female adults are _____ and larger than males.

- A. Red or orange
- B. Black and red
- C. Black
- D. None of the above

7. Adult females infected with disease agents as _____ may transmit disease during this feeding.

- A. Both male and female adults
- B. Larvae or nymphs
- C. Several nymphal stages
- D. None of the above

8. _____ ticks attach, but do not feed or become engorged.

- A. Nymph(s)
- B. Male
- C. The adult female
- D. None of the above

Lone Star Tick *Amblyomma americanum*

9. Each female produces _____ eggs, which are deposited under leaf and soil litter in middle to late spring.

- A. 300-800
- B. 30,000-80,000
- C. 3,000-8,000
- D. None of the above

Winter Tick *Dermacentor albipictus*

10. _____ is found throughout North America. It is widely distributed throughout California, but populations are concentrated around the central coastal and sierra foothill areas.

- A. This two host tick
- B. This no host tick
- C. This one host tick
- D. None of the above

Topic 3 Dangers of Ticks

1. Ticks may cause _____ in humans that is reversible when the ticks are removed.
A. Allergic Reaction C. Local infection
B. Paralysis D. None of the above

2. The victim may recover completely within a _____ of the removal of the tick.
A. Few weeks C. Few hours
B. 1 week D. None of the above

3. The paralysis may be caused by a _____ transmitted to humans when a tick feeds.
A. Blood C. Germ
B. Salivary toxin D. None of the above

4. _____ is frequently associated with the attachment of the tick at the base of the victim's skull; however, the illness occurs from attachment to other parts of the body as well.
A. Disease transmission C. Local infection
B. Tick paralysis D. None of the above

5. The highest incidence of tick paralysis in North America occurs near the border of British Columbia, Canada, and the northwestern _____.
A. United States C. Washington
B. Mexico D. None of the above

6. The two most important tick-borne diseases in the United States are _____ and Rocky Mountain spotted fever.
A. Lyme disease C. Local infections
B. Babesiosis D. None of the above

7. The onset of Lyme disease is usually characterized by the development of a large, red rash, which may develop a characteristic clear central area ("_____"), one to two weeks after a tick bite, often in the area around the puncture.
A. Ring o C. Local infection
B. Bulls eye D. None of the above

8. The most characteristic symptom of Rocky Mountain spotted fever is a rash on the ankles, wrists, and forehead _____ after the victim is bitten.
A. One to two days C. One to two years
B. One to two weeks D. None of the above

9. The best means to prevent the transmission of _____ and the development of tick paralysis is the prompt removal of ticks.
A. Bulls Eye Rash C. Hepatitis
B. Tick-borne diseases D. None of the above

10. To remove a tick, grasp it crosswise with narrow tweezers (do not rupture the tick) as close to the point of attachment as possible. _____ tick firmly in the direction of attachment; some back-and-forth wiggling may be necessary.
- A. Wiggle C. Retract or pull
B. Rip D. None of the above

Topic 4 Related Blood-feeding Insects

1. Rat control may intensify the attack on humans, but this _____ will bite humans even when there is an abundance of host rats on which they can feed. The mite drops from its host after each feeding and may be found on a variety of surfaces near rat-infested areas. It can survive for several days without a blood meal.
- A. Household pest C. Mites
B. Assassin bugs D. None of the above

House mouse mite (*Liponissoides sanguineus*)

2. The mite in the U.S. is primarily a parasite of mice. Its major importance is that it has been identified as the vector of _____, a mild and nonfatal human disease.
- A. Grocers' itch C. Rat-mite dermatitis
B. Rickettsial pox D. None of the above

Grain mite

3. Grain mites are reported to have been the cause of mild dermatitis in humans, known under various names as "_____", "vanillism" (from infestations on vanilla beans), and "copra itch."
- A. Grocers' itch C. Rickettsial pox
B. Rat-mite dermatitis D. None of the above

Life Stages

4. Bed bugs may be mistaken for other insects such as _____, or vice-versa.
- A. Fleas or ticks C. Booklice and carpet beetles
B. Rodents or Rats D. None of the above

Pyrethroids

5. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are _____, which is a sodium channel modulators, and are much less acutely toxic than organophosphates and carbamates. Compounds in this group are often applied against household pests.
- A. Beneficial C. Non-systemic insecticide
B. Non-persistent D. None of the above

Pyrethroids include:

6. _____, Bifenthrin, Beta-Cyfluthrin, Cyfluthrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Fenpropathrin, Tau-Fluvalinate, Lambda-Cyhalothrin, Gamma Cyhalothrin, Imiprothrin, 1RS cis-Permethrin, Permethrin, Prallethrin, Resmethrin, Sumithrin (d-phenothrin), Tefluthrin, Tetramethrin, Tralomethrin, and Zeta-Cypermethrin
- A. Beneficial C. Non-systemic insecticide
B. Allethrin stereoisomers D. None of the above

Borates

7. Borax and other sodium borates are used in numerous products such as laundry additives, eye drops, fertilizers, and insecticides. Though the mechanisms of toxicity are not fully understood, boron is _____ to insects and decay fungi that commonly damage wood in structures.

- A. An insect growth regulator (IGR)
- B. Very toxic
- C. A broad-spectrum pyrethroid insecticide
- D. None of the above

Common Flea Treatment Pesticides

Propoxur

8. Propoxur (Baygon®) is a _____ insecticide and was introduced in 1959.

- A. Carbamate
- B. Sodium channel modulators
- C. Isopropanol
- D. None of the above

The three types of lice that live on humans are:

9. Only the _____ is known to spread disease. Lice infestations (pediculosis and pthiriasis) are spread most commonly by close person-to-person contact.

- A. Lice
- B. Flea
- C. Body louse
- D. None of the above

10. Dogs, cats, and other pets do not play a role in the transmission of _____.

- A. Fleas
- B. Human lice
- C. Bed bugs
- D. None of the above

Tick Control CEU Training Awareness Assignment #3 For Students 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. Student Services (928) 468-0665.

Topic 1 Introduction to Ticks

Multiple choice. Please select one answer only per question. No trick questions.

(S) means the answer may be plural or singular in nature. Or means either answer may work.

1. After feeding, ticks detach from their host and molt to _____ on the ground, which then feed on larger hosts and molt to adults. Female adults attach to larger hosts, feed, and lay eggs, while males feed very little and occupy larger hosts primarily for mating.

- A. Nymph(s)
- B. Larvae
- C. The adult female
- D. None of the above

2. The _____ or Soft Ticks contain 193 species, although the composition of the genera is less certain, and more study is needed before the genera can become stable.

- A. Argasidae or Argasid
- B. Ixodidae
- C. Ornithodoros, and Otobius
- D. None of the above

3. _____ feed on blood, and they mate off the host. During feeding, any excess fluid is excreted by the coxal glands, a process which is unique to argasid ticks

- A. Nymph(s)
- B. Both male and female adults
- C. The adult female
- D. None of the above

Life cycle and reproduction

4. _____ ticks undergo three primary stages of development: larval, nymphal, and adult.

- A. Only Argasidae or Argasid
- B. Only Dermacentor
- C. Both ixodid and argasid
- D. None of the above

Ticks and Mites

5. Ticks of domestic animals directly cause poor health and loss of production to their hosts by many parasitic mechanisms. Ticks also transmit numerous kinds of _____ between domestic animals. These microbes cause diseases which can be severely debilitating or fatal to domestic animals, and may also affect humans.

- A. Many parasitic mechanisms
- B. Allergic reaction(s)
- C. Viruses, bacteria and protozoa
- D. None of the above

6. Some mites are parasitic but all ticks are parasitic feeders on blood. Some species of mites may be mistaken for larval ticks at infestations but their _____ are distinctive.

- A. Parasitic mechanisms
- B. Feeding mechanisms
- C. Hematophagy
- D. None of the above

7. All ticks have an incomplete metamorphosis: after hatching from the egg a series of similar stages (instars) develop from a _____, to eight legged nymph and then a sexually developed eight legged adult.

- A. Six legged larva
- B. Seven instar
- C. Eight legged larva
- D. None of the above

8. Ticks find their hosts by detecting animals' breath and body odors, or by sensing body heat, moisture and _____.

- A. Questing
- B. Aggregation
- C. Vibrations
- D. None of the above

9. Hard ticks typically take one blood meal in each of the three developmental stages -- larval, nymphal and adult. Both sexes are blood feeders, but only the _____ becomes greatly distended during engorgement. Most species feed on a different host during each stage, but there are some one-host and two-host species.

- A. Nymph(s)
- B. Male
- C. Female
- D. None of the above

10. Male specimens have a _____ on the ventral side of the abdomen. Most species have enlarged club-like palps.

- A. Hypostome
- B. Cornua
- C. Complicated arrangement of plates
- D. None of the above

Topic 2 Tick Identification Section

Tick Life Cycle

Deer Tick Life Cycle

1. The deer tick passes through four life stages (egg, larva, nymph, adult), over a _____

- A. Two month period
- B. Three month period
- C. Two year period
- D. None of the above

Egg to Larvae

2. Eggs are fertilized in the fall and deposited in leaf litter the following _____. They emerge as larvae in late summer of that year, seeking their first blood meal. The tiny larva crawls around the forest floor and onto low-lying vegetation looking for an appropriate host.

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

3. Their first host is generally a mouse or other medium-sized mammal or bird. Once attached, the larvae embed their mouth parts and feed for several days. If the host is infected with a disease such as Lyme, the tick may be infected during this feeding. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following _____.

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

Larvae to Nymph

4. _____ are commonly found on the forest floor in leaf litter and on low lying vegetation. Their host primarily consists of mice and other rodents, deer, birds and unfortunately humans.

- A. Nymph(s)
- B. Larvae
- C. Females
- D. None of the above

Nymph to Adult

5. _____ find and feed on a host, then the females lay eggs sometime after feeding.

- A. Both male and female adults
- B. Seven instars
- C. Larvae
- D. None of the above

Adult Ticks

6. In the fall of the second year, nymphs molt into adult ticks. Female adults are _____ and larger than males.

- A. Red or orange
- B. Black and red
- C. Black
- D. None of the above

7. Adult females infected with disease agents as _____ may transmit disease during this feeding.

- A. Both male and female adults
- B. Larvae or nymphs
- C. Several nymphal stages
- D. None of the above

8. _____ ticks attach, but do not feed or become engorged. Because the adult males do not take a blood meal, they do not transmit Lyme disease, human anaplasmosis, or babesiosis.

- A. Nymph(s)
- B. Male
- C. The adult female
- D. None of the above

Lone Star Tick *Amblyomma americanum*

9. Each female produces _____ eggs, which are deposited under leaf and soil litter in middle to late spring.

- A. 300-800
- B. 30,000-80,000
- C. 3,000-8,000
- D. None of the above

Winter Tick *Dermacentor albipictus*

10. _____ is found throughout North America. It is widely distributed throughout California, but populations are concentrated around the central coastal and sierra foothill areas. It primarily feeds on horses and deer from fall through early spring.

- A. This two host tick
- B. This no host tick
- C. This one host tick
- D. None of the above

Topic 3 Dangers of Ticks

1. Ticks may cause _____ in humans that is reversible when the ticks are removed. Symptoms include paralysis of the arms and legs, followed by a general paralysis, which can be fatal if not reversed.

- A. Allergic Reaction
- B. Paralysis
- C. Local infection
- D. None of the above

2. The victim may recover completely within a _____ of the removal of the tick.
- A. Few weeks C. Few hours
B. 1 week D. None of the above
3. The paralysis may be caused by a _____ transmitted to humans when a tick feeds.
- A. Blood C. Germ
B. Salivary toxin D. None of the above
4. _____ is frequently associated with the attachment of the tick at the base of the victim's skull; however, the illness occurs from attachment to other parts of the body as well.
- A. Disease transmission C. Local infection
B. Tick paralysis D. None of the above
5. The highest incidence of tick paralysis in North America occurs near the border of British Columbia, Canada, and the northwestern _____.
- A. United States C. Washington
B. Mexico D. None of the above
6. The two most important tick-borne diseases in the United States are _____ and Rocky Mountain spotted fever.
- A. Lyme disease C. Local infections
B. Babesiosis D. None of the above
7. The onset of Lyme disease is usually characterized by the development of a large, red rash, which may develop a characteristic clear central area ("_____"), one to two weeks after a tick bite, often in the area around the puncture.
- A. Bulls eye C. Cat Scratch Fever
B. Hive D. None of the above
8. The most characteristic symptom of Rocky Mountain spotted fever is a rash on the ankles, wrists, and forehead _____ after the victim is bitten.
- A. One to two days C. One to two years
B. One to two weeks D. None of the above
9. The best means to prevent the transmission of _____ and the development of tick paralysis is the prompt removal of ticks.
- A. Bulls Eye Rash C. Hepatitis
B. Tick-borne diseases D. None of the above
10. To remove a tick, grasp it crosswise with narrow tweezers (do not rupture the tick) as close to the point of attachment as possible. _____ tick firmly in the direction of attachment; some back-and-forth wiggling may be necessary.
- A. Wiggle C. Retract or pull
B. Push D. None of the above

Topic 4 Related Blood-feeding Insects

1. Rat control may intensify the attack on humans, but this _____ will bite humans even when there is an abundance of host rats on which they can feed. The mite drops from its host after each feeding and may be found on a variety of surfaces near rat-infested areas. It can survive for several days without a blood meal.

- A. Household pest C. Mites
B. Assassin bugs D. None of the above

Grain mite

2. Grain mites are reported to have been the cause of mild dermatitis in humans, known under various names as "_____", "vanillism" (from infestations on vanilla beans), and "copra itch."

- A. Grocers' itch C. Rickettsial pox
B. Rat-mite dermatitis D. None of the above

Bed Bugs

3. Cimicidae or bed bugs (sometimes bedbugs), are small parasitic insects. The most common type is *Cimex lectularius*.

- A. True B. False

Pyrethroids include:

4. _____, Bifenthrin, Beta-Cyfluthrin, Cyfluthrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Fenpropathrin, Tau-Fluvalinate, Lambda-Cyhalothrin, Gamma Cyhalothrin, Imiprothrin, 1RS cis-Permethrin, Permethrin, Prallethrin, Resmethrin, Sumithrin (d-phenothrin), Tefluthrin, Tetramethrin, Tralomethrin, and Zeta-Cypermethrin

- A. Beneficial C. Non-systemic insecticide
B. Allethrin stereoisomers D. None of the above

Permethrin

General Information

5. Permethrin is a _____. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.

- A. An insect growth regulator (IGR) C. A broad-spectrum pyrethroid insecticide
B. Stereoisomers D. None of the above

Common Flea Treatment Pesticides

Propoxur

6. Propoxur (Baygon®) is a _____ insecticide and was introduced in 1959. Propoxur is a non-systemic insecticide with a fast knockdown and long residual effect used against turf, forestry, and household pests and fleas.

- A. Carbamate C. Isopropanol
B. Sodium channel modulators D. None of the above

Methoprene IGR Treatment

7. Methoprene is _____ with activity against a variety of insect species including horn flies, mosquitoes, beetles, tobacco moths, sciarid flies, fleas (eggs and larvae), fire ants, pharaoh ants, midge flies and Indian meal moths.

- A. Not a pyrethrin and permethrin C. An insect growth regulator (IGR)
B. A stereoisomer D. None of the above

8. Dogs, cats, and other pets do not play a role in the transmission of _____.

- A. Fleas
- B. Human lice
- C. Bed bugs
- D. None of the above

9. _____ move by crawling; they cannot hop or fly.

- A. Lice
- B. Fleas
- C. Assassin bugs
- D. None of the above

Malathion

10. Malathion 0.5% in isopropanol is FDA approved for the treatment of head lice. Apply it to dry hair until the hair and scalp are wet. Leave it on for 12 hours. _____ may be useful for resistant infections.

- A. Malathion
- B. Pyrethrin
- C. Non-systemic insecticide
- D. None of the above

Tick Control CEU Training Awareness Assignment #4 For Students 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. Student Services (928) 468-0665.

Topic 1 Introduction to Ticks

Multiple choice. Please select one answer only per question. No trick questions.

(S) means the answer may be plural or singular in nature. Or means either answer may work.

1. More than 800 species of these obligate blood-sucking creatures inhabit the planet. They are second only to mosquitoes as vectors of human disease,_____.

- A. Including parasitic mechanisms
- B. Causing allergic reaction(s)
- C. Both infectious and toxic
- D. None of the above

2. In Ixodidae nymphs and adults, a prominent capitulum (head) projects forwards from the body; in the Argasidae, conversely, the capitulum is concealed beneath the_____.

- A. Idiosoma
- B. Body
- C. Scutum
- D. None of the above

3. After feeding, ticks detach from their host and molt to _____ on the ground, which then feed on larger hosts and molt to adults. Female adults attach to larger hosts, feed, and lay eggs, while males feed very little and occupy larger hosts primarily for mating.

- A. Nymph(s)
- B. Larvae
- C. The adult female
- D. None of the above

4. Soft ticks have no hard shell (Scutum). In the United States, only ticks of the genus _____transmit human disease, namely, relapsing fever.

- A. Argasidae or Argasid
- B. Ornithodoros
- C. Antricola, Argas, Nothaspis, Ornithodoros, and Otobius
- D. None of the above

5. _____ feed on blood, and they mate off the host. During feeding, any excess fluid is excreted by the coxal glands, a process which is unique to argasid ticks

- A. Nymph(s)
- B. Both male and female adults
- C. The adult female
- D. None of the above

Ixodidae

6. Ixodid ticks require three hosts, and their life cycle takes at least one year to complete. Up to 3,000 eggs are laid on the ground by an adult female tick.

- A. 100
- B. 3,000
- C. 500
- D. None of the above

7. All ticks have an incomplete metamorphosis: after hatching from the egg a series of similar stages (instars) develop from a _____, to eight legged nymph and then a sexually developed eight legged adult.

- A. Six legged larva C. Eight legged larva
- B. Seven instar D. None of the above

8. Between each stage there is a molt (ecdysis) which enables the developing tick to expand within a new _____.

- A. Idiosoma C. External skeleton
- B. Haller's organ D. None of the above

Argasidae

9. During feeding, any excess fluid is excreted by the _____, a process which is unique to argasid ticks

- A. Idiosoma C. Coxal glands
- B. Haller's organ D. None of the above

General Characteristics and Habits of Hard Ticks (Family Ixodidae)

10. The _____ lie behind the fourth pair of coxae, or basal segments of the leg.

- A. Idiosoma C. Spiracles
- B. Coxae D. None of the above

Please complete the entire assignment before submission of answer key.

Topic 2 Tick Identification Section

Tick Life Cycle

Deer Tick Life Cycle

1. The deer tick passes through four life stages (egg, larva, nymph, adult), over a _____

- A. Two month period C. Two year period
- B. Three month period D. None of the above

Egg to Larvae

2. Eggs are fertilized in the fall and deposited in leaf litter the following _____.

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

3. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following _____.

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

Larvae to Nymph

4. During the spring and early summer of the next year the nymphs end their dormancy and begin to seek a host. _____ are commonly found on the forest floor in leaf litter and on low lying vegetation. Their host primarily consists of mice and other rodents, deer, birds and unfortunately humans.

- A. Nymph(s) C. Females
- B. Seven instars D. None of the above

Nymph to Adult

5. Over the next few months the nymph molts into the larger adult tick, which emerges in fall, with a peak in October through November. _____ find and feed on a host, then the females lay eggs sometime after feeding.

- A. Both male and female adults
- B. Seven instars
- C. Larvae
- D. None of the above

Adult Ticks

6. Female adults are _____ and larger than males.

- A. Red or orange
- B. Black and red
- C. Black
- D. None of the above

7. Adult females infected with disease agents as _____ may transmit disease during this feeding.

- A. Both male and female adults
- B. Larvae or nymphs
- C. Several nymphal stages
- D. None of the above

8. _____ ticks attach, but do not feed or become engorged.

- A. Nymph(s)
- B. Male
- C. The adult female
- D. None of the above

Lone Star Tick *Amblyomma americanum*

9. Each female produces _____ eggs, which are deposited under leaf and soil litter in middle to late spring.

- A. 300-800
- B. 30,000-80,000
- C. 3,000-8,000
- D. None of the above

Winter Tick *Dermacentor albipictus*

10. _____ is found throughout North America. It is widely distributed throughout California, but populations are concentrated around the central coastal and sierra foothill areas. It primarily feeds on horses and deer from fall through early spring. Heavy infestations of horses may cause emaciation and anemia (Furman and Loomis 1984).

- A. This two host tick
- B. This no host tick
- C. This one host tick
- D. None of the above

Topic 3 Dangers of Ticks

1. Ticks may cause _____ in humans that is reversible when the ticks are removed.

- A. Allergic Reaction
- B. Paralysis
- C. Local infection
- D. None of the above

2. The victim may recover completely within a _____ of the removal of the tick.

- A. Few weeks
- B. 1 week
- C. Few hours
- D. None of the above

3. The paralysis may be caused by a _____ transmitted to humans when a tick feeds.

- A. Blood
- B. Salivary toxin
- C. Germ
- D. None of the above

4. _____ is frequently associated with the attachment of the tick at the base of the victim's skull; however, the illness occurs from attachment to other parts of the body as well.
- A. Disease transmission C. Local infection
B. Tick paralysis D. None of the above
5. The highest incidence of tick paralysis in North America occurs near the border of British Columbia, Canada, and the northwestern_____.
- A. United States C. Washington
B. Mexico D. None of the above
6. The two most important tick-borne diseases in the United States are _____ and Rocky Mountain spotted fever.
- A. Lyme disease C. Local infections
B. Babesiosis D. None of the above
7. The onset of Lyme disease is usually characterized by the development of a large, red rash, which may develop a characteristic clear central area ("_____"), one to two weeks after a tick bite, often in the area around the puncture.
- A. Bulls eye C. Cat Scratch Fever
B. Hive D. None of the above
8. The most characteristic symptom of Rocky Mountain spotted fever is a rash on the ankles, wrists, and forehead _____ after the victim is bitten.
- A. One to two days C. One to two years
B. One to two weeks D. None of the above
9. The best means to prevent the transmission of _____ and the development of tick paralysis is the prompt removal of ticks.
- A. Bulls Eye Rash C. Hepatitis
B. Tick-borne diseases D. None of the above
10. To remove a tick, grasp it crosswise with narrow tweezers (do not rupture the tick) as close to the point of attachment as possible. _____ tick firmly in the direction of attachment; some back-and-forth wiggling may be necessary.
- A. Wiggle C. Retract or pull
B. Rub it D. None of the above

Topic 4 Related Blood-feeding Insects

Mites

1. The straw itch mite and furniture mite come from plant material, and the chigger mite is found in lawns and open woodlands. The tropical rat mite and the mouse mite come from rodents, whereas the itch mite and follicle mite are permanent residents on _____.
- A. Household pests C. Humans
B. Rodents or Rats D. None of the above

Tropical rat mite (*Ornithonyssus bacoti*)

2. This mite is associated with rats throughout the U.S., where it also feeds on humans and many other warm-blooded animals. The bite is painful, causing intense itching and a skin irritation known as _____.

- A. Rickettsial pox
- B. Rat-mite dermatitis
- C. Grocers' itch
- D. None of the above

House mouse mite (*Liponissoides sanguineus*)

3. The mite in the U.S. is primarily a parasite of mice. Its major importance is that it has been identified as the vector of _____, a mild and nonfatal human disease.

- A. Grocers' itch
- B. Rickettsial pox
- C. Rat-mite dermatitis
- D. None of the above

Pyrethroids

4. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are _____, which is a sodium channel modulators, and are much less acutely toxic than organophosphates and carbamates. Compounds in this group are often applied against household pests.

- A. Beneficial
- B. Non-persistent
- C. Non-systemic insecticide
- D. None of the above

Pyrethroids include:

5. _____, Bifenthrin, Beta-Cyfluthrin, Cyfluthrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Fenpropathrin, Tau-Fluvalinate, Lambda-Cyhalothrin, Gamma Cyhalothrin, Imiprothrin, 1RS cis-Permethrin, Permethrin, Prallethrin, Resmethrin, Sumithrin (d-phenothrin), Tefluthrin, Tetramethrin, Tralomethrin, and Zeta-Cypermethrin

- A. Beneficial
- B. Allethrin stereoisomers
- C. Non-systemic insecticide
- D. None of the above

Permethrin

General Information

6. Permethrin is a _____. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.

- A. An insect growth regulator (IGR)
- B. Stereoisomers
- C. A broad-spectrum pyrethroid insecticide
- D. None of the above

Borates

7. Borax and other sodium borates are used in numerous products such as laundry additives, eye drops, fertilizers, and insecticides. Though the mechanisms of toxicity are not fully understood, boron is _____ to insects and decay fungi that commonly damage wood in structures.

- A. An insect growth regulator (IGR)
- B. Very toxic
- C. A broad-spectrum pyrethroid insecticide
- D. None of the above

Common Flea Treatment Pesticides

Propoxur

8. Propoxur (Baygon®) is a _____ insecticide and was introduced in 1959.

- A. Carbamate
- B. Sodium channel modulators
- C. Isopropanol
- D. None of the above

Malathion

9. Malathion 0.5% in isopropanol is FDA approved for the treatment of head lice. Apply it to dry hair until the hair and scalp are wet. Leave it on for 12 hours. _____ may be useful for resistant infections.

- A. Malathion
- B. Pyrethrin
- C. Non-systemic insecticide
- D. None of the above

Lindane

10. Lindane has been associated with _____ suffered both by people being treated and by people applying the treatment. It is also a troublesome pollutant of wastewater and requires special treatment to be removed.

- A. A variety of adverse reactions
- B. Long residual effects
- C. An insect growth regulators
- D. None of the above

Tick Control CEU Training Awareness Assignment #5 Alternative Assignment for 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. Student Services (928) 468-0665.

Topic 1 Introduction to Ticks

Multiple choice. Please select one answer only per question. No trick questions.

(S) means the answer may be plural or singular in nature. Or means either answer may work.

1. Both sexes are blood feeders, but only the _____ becomes greatly distended during engorgement. Most species feed on a different host during each stage, but there are some one-host and two-host species.

- A. Nymph(s)
- B. Male
- C. Female
- D. None of the above

2. The lone star tick, *Amblyomma americanum*, can carry spotted fever, tularemia, and possibly Q fever. Female specimens are easily recognized by the conspicuous silvery-white spot at the tip of the _____, hence the name "speck-back" in the Ozark Mountains and the common name "lone star tick" for the Lone Star State of Texas.

- A. Idiosoma
- B. Capitulum
- C. Scutum
- D. None of the above

3. More than 800 species of these obligate blood-sucking creatures inhabit the planet. They are second only to mosquitoes as vectors of human disease, _____.

- A. Including parasitic mechanisms
- B. Causing allergic reaction(s)
- C. Both infectious and toxic
- D. None of the above

4. Ixodid ticks require three hosts, and their life cycle takes at least one year to complete. Up to 3,000 eggs are laid on the ground by an adult female tick.

- A. 100
- B. 3,000
- C. 500
- D. None of the above

5. Ticks, like mites, have bodies which are divided into two primary sections: the anterior capitulum (or gnathosoma), which contains the head and mouthparts; and the posterior _____ which contains the legs, digestive tract, and reproductive organs.

- A. Ediosoma
- B. Hypostome
- C. Idiosoma
- D. None of the above

6. The Gulf Coast tick, *Amblyomma maculatum*, is found particularly along the Gulf and South Atlantic coastlines. It has spurs on the _____ and more diffuse pale markings on the female than does the lone star tick.
 A. True B. False
7. Ticks satisfy all of their nutritional requirements as ectoparasites, feeding on a diet of blood in a practice known as _____. They are obligate hematophages, needing blood to survive and move from one stage of life to another.
 A. Parasitic mechanisms C. Hematophagy
 B. Hypostome D. None of the above
8. While _____, ticks hold onto leaves and grass by their third and fourth pair of legs. They hold the first pair of legs outstretched, waiting to climb on to the host. When a host brushes the spot where a tick is waiting, it quickly climbs onto the host.
 A. Questing C. Squatting
 B. Aggregation D. None of the above
9. _____ ticks undergo three primary stages of development: larval, nymphal, and adult.
 A. Only Argasidae or Argasid C. Both ixodid and argasid
 B. Only Dermacentor D. None of the above
10. In the female, the _____ covers only a part of the dorsal surface and is almost obscured when she becomes engorged.
 A. Capitulum C. Scutum
 B. Coxae D. None of the above

Topic 2 Tick Identification Section

1. The deer tick passes through four life stages (egg, larva, nymph, adult), over a _____.
 A. Two month period C. Two year period
 B. Three month period D. None of the above
2. Eggs are fertilized in the fall and deposited in leaf litter the following _____.
 A. Summer C. Spring
 B. Month D. None of the above
3. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following _____.
 A. Summer C. Spring
 B. Month D. None of the above
4. During the spring and early summer of the next year the nymphs end their dormancy and begin to seek a host. _____ are commonly found on the forest floor in leaf litter and on low lying vegetation.
 A. Nymph(s) C. Females
 B. Seven instars D. None of the above

5. _____ find and feed on a host, then the females lay eggs sometime after feeding.
- A. Both male and female adults C. Larvae
B. Seven instars D. None of the above
6. In the fall of the second year, nymphs molt into adult ticks. Female adults are _____ and larger than males.
- A. Red or orange C. Black
B. Black and red D. None of the above
7. As female ticks feed over the course of several days, their bodies slowly enlarge with blood (engorge). Adult females infected with disease agents as _____ may transmit disease during this feeding.
- A. Both male and female adults C. Several nymphal stages
B. Larvae or nymphs D. None of the above
8. _____ ticks attach, but do not feed or become engorged. Because the adult males do not take a blood meal, they do not transmit Lyme disease, human anaplasmosis, or babesiosis.
- A. Nymph(s) C. The adult female
B. Male D. None of the above
9. Each female produces _____ eggs, which are deposited under leaf and soil litter in middle to late spring.
- A. 300-800 C. 3,000-8,000
B. 30,000-80,000 D. None of the above
10. _____ is found throughout North America. It is widely distributed throughout California, but populations are concentrated around the central coastal and sierra foothill areas. It primarily feeds on horses and deer from fall through early spring.
- A. This two host tick C. This one host tick
B. This no host tick D. None of the above

Topic 3 Dangers of Ticks

1. Ticks may cause _____ in humans that is reversible when the ticks are removed. Symptoms include paralysis of the arms and legs, followed by a general paralysis, which can be fatal if not reversed.
- A. Allergic Reaction C. Local infection
B. Paralysis D. None of the above
2. The victim may recover completely within a _____ of the removal of the tick.
- A. Few weeks C. Few hours
B. 1 week D. None of the above
3. The paralysis may be caused by a _____ transmitted to humans when a tick feeds.
- A. Blood C. Germ
B. Salivary toxin D. None of the above

4. _____ is frequently associated with the attachment of the tick at the base of the victim's skull; however, the illness occurs from attachment to other parts of the body as well.
- A. Disease transmission C. Local infection
B. Tick paralysis D. None of the above
5. The highest incidence of tick paralysis in North America occurs near the border of British Columbia, Canada, and the northwestern_____.
- A. United States C. Washington
B. Mexico D. None of the above
6. The two most important tick-borne diseases in the United States are _____ and Rocky Mountain spotted fever.
- A. Lyme disease C. Local infections
B. Babesiosis D. None of the above
7. The onset of Lyme disease is usually characterized by the development of a large, red rash, which may develop a characteristic clear central area ("_____"), one to two weeks after a tick bite, often in the area around the puncture.
- A. Ring o C. Local infection
B. Bulls eye D. None of the above
8. The most characteristic symptom of Rocky Mountain spotted fever is a rash on the ankles, wrists, and forehead _____ after the victim is bitten.
- A. One to two days C. One to two years
B. One to two weeks D. None of the above
9. The best means to prevent the transmission of _____ and the development of tick paralysis is the prompt removal of ticks.
- A. Bulls Eye Rash C. Hepatitis
B. Tick-borne diseases D. None of the above
10. To remove a tick, grasp it crosswise with narrow tweezers (do not rupture the tick) as close to the point of attachment as possible. _____ tick firmly in the direction of attachment; some back-and-forth wiggling may be necessary.
- A. Wiggle C. Retract or pull
B. Break Off D. None of the above

Topic 4 Related Blood-feeding Insects

1. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are_____, which is a sodium channel modulators, and are much less acutely toxic than organophosphates and carbamates. Compounds in this group are often applied against household pests.
- A. Beneficial C. Non-systemic insecticide
B. Non-persistent D. None of the above
2. The tropical rat mite and the mouse mite come from rodents, whereas the itch mite and follicle mite are permanent residents on _____.
- A. Household pests C. Humans
B. Rodents or Rats D. None of the above

3. _____ move by crawling; they cannot hop or fly.
 A. Lice C. Fleas
 B. Flying ticks D. None of the above
4. _____ do not have hind legs to hop or jump. Head lice do not have wings and cannot fly.
 A. Head lice C. Fleas
 B. Flying ticks D. None of the above
5. This mite is associated with rats throughout the U.S., where it also feeds on humans and many other warm-blooded animals. The bite is painful, causing intense itching and a skin irritation known as _____.
 A. Rickettsial pox C. Grocers' itch
 B. Rat-mite dermatitis D. None of the above
6. The mite in the U.S. is primarily a parasite of mice. Its major importance is that it has been identified as the vector of _____, a mild and nonfatal human disease.
 A. Grocers' itch C. Rat-mite dermatitis
 B. Rickettsial pox D. None of the above
7. Cimicidae or bed bugs are small parasitic insects. The most common type is Cimex lectularius.
 A. True B. False
8. Bed bugs may be mistaken for other insects such as _____, or vice-versa.
 A. Fleas or ticks C. Booklice and carpet beetles
 B. Assassin bugs D. None of the above
9. Permethrin is a _____. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.
 A. An insect growth regulator (IGR) C. A broad-spectrum pyrethroid insecticide
 B. Stereoisomers D. None of the above

Common Flea Treatment Pesticides

Propoxur

10. Propoxur (Baygon®) is a _____ insecticide and was introduced in 1959. Propoxur is a non-systemic insecticide with a fast knockdown and long residual effect used against turf, forestry, and household pests and fleas. It is also used in pest control for other domestic animals.
 A. Carbamate C. Isopropanol
 B. Sodium channel modulators D. None of the above