

1. Insects that pass through the egg, larva, pupa, and adult stages in their life cycle have _____.
A incomplete metamorphosis
B no metamorphosis
***C complete metamorphosis**
D gradual metamorphosis
2. A parsley worm is in the order _____ and the adult turns into a _____.
A Lepidoptera, cabbage looper
B Coleoptera, weevil
***C Lepidoptera, swallowtail**
D Diptera, mosquito
3. Axillary sclerites form points of attachment for muscles that control the:
***A wings**
B legs
C mouthparts
D antennae
4. A _____ is the stage of development of an insect between the immature form and the adult in holometabolous insects (those insects that go through complete metamorphosis).
***A pupa**
B third instar
C subimago
D larva
E imago
5. Which structures would be found in an eruciform larva, but not in a scarabaeiform larva?
***A prolegs**
B mandibles
C spiracles
D ocelli
6. Which structure is NOT part of the head capsule of insects?
A antennae
B tentorium
C vertex
***D pronotum**
7. A legless, eyeless, vermiform larva that is approximately 5 mm in length would probably belong to what insect order?
A Ephemeroptera
B Orthoptera
C Odonata
***D Siphonaptera**
E Blattodea

8. In cicadas and other sucking insects, movement of liquid to the mouth results from the action of a _____.
A corneal pump
B corneagen cell
***C cibarial pump**
D cuticle
9. In centipedes, the "fangs" are what type of structure?
A mandibles
***B modified legs**
C maxilla
D modified mouthparts
10. A _____ is the immature, aquatic stage of a dobsonfly.
A hellbender
B ant lion
***C hellgrammite**
D grub
11. If an insect's subesophageal ganglion were paralyzed, it would be unable to _____.
***A eat**
B fly
C walk
D see
12. Which of these following components are not part of integrated pest management (IPM)?
A biological control
***B application of pesticides based only on calendar dates**
C information on the pest's life cycle and habitat
D economic thresholds
13. Blister beetles have what substance in their bodies that can be toxic to livestock?
A serotonin
B chitin
***C cantharadin**
D resilin
14. The fireflies belong to which insect order?
***A Coleoptera**
B Diptera
C Neuroptera
D Megaloptera
15. Which part of the exoskeleton lies between the exocuticle and the wax layer?
A procuticle
B cement layer
***C cuticulin layer**
D endocuticle

16. The dorsal sclerite of each abdominal segment is called a _____.
- A sternite
 - *B tergite**
 - C coxite
 - D pleurite
17. The eastern population of monarch butterflies overwinter in _____.
- A Florida
 - *B Central Mexico**
 - C Baja California
 - D Texas
18. _____ is the appropriate concentration of ethanol to preserve most insects.
- A 60%
 - *B 70%**
 - C 100%
 - D 50%
19. The majority of native bees nest in what type of habitat?
- A flowering plants
 - B bamboo stems
 - C trees
 - *D soil**
20. The order Phthiraptera contains _____.
- A roaches and mantids
 - *B chewing and sucking lice**
 - C bristletails and silverfish.
 - D dragonflies and damselflies
21. Which structures of insects are part of the ovipositor?
- A paraprocts
 - B cerci
 - C aedeagus
 - *D valvulae**
22. Which part of an insect's antenna articulates with its head capsule?
- A arista
 - B pedicel
 - C flagellum
 - *D scape**
23. The eyes of caterpillars are called _____.
- A tegmina
 - B ocelli
 - C hamuli
 - *D stemmata**

24. The plague, or "black death," is a disease of rodents and is transmitted by the _____.
- A human body louse
 - *B Oriental rat flea**
 - C western tarnished plant bug
 - D Asian lady beetle
25. What order of insects is generally considered most important from a medical and veterinary standpoint?
- A Pthiraptera
 - B Zoraptera
 - C Hymenoptera
 - *D Diptera**
26. Monarch butterflies depend on which plant for their survival?
- A red clover
 - B daisies
 - C trumpet vine
 - *D milkweed**
27. _____ are thought to be one of the first arthropods.
- *A Trilobites**
 - B Trichoptera
 - C Flies
 - D Thysanura
28. Which abdominal structures of insects are primarily sensory in function?
- A sternites
 - B valvulae
 - C paraprocts
 - *D cerci**
29. Which of the following orders of insects is most closely related to Diptera?
- *A Siphonaptera**
 - B Hymenoptera
 - C Thysanura
 - D Mantodea
30. Honey bees are valuable agricultural pollinators worth an estimated _____ annually in the United States.
- A \$7.5 Billion
 - B \$25 Million
 - *C \$15 Billion**
 - D \$98.8 Million
31. A/an _____ is used by female insects to lay eggs.
- A spermatheca
 - B ovum
 - C cerci
 - *D ovipositor**

32. In what order of insects are the front and hind wings held together by hamuli?
A Lepidoptera
B Hemiptera
C Diptera
***D Hymenoptera**
33. Insects have evolved over a period of approximately _____ years.
***A 400 million**
B 100 million
C 2 million
D 50 million
34. _____ belong to the order Hymenoptera.
A grasshoppers and crickets
B beetles and weevils
***C wasps and ants**
D flies and mosquitoes
35. Ground beetles and cockroaches have _____ legs used for running.
A Fossorial
B Saltatorial
***C Cursorial**
D Raptorial
36. Which of the following arthropods is not an insect
***A scorpion**
B fly
C cockroach
D dragonfly
37. _____ can be used as biological control agents to help control pests.
A lacewings
B parasitic wasps
***C all of these**
D ladybird beetles
38. The absolute minimum information that must be associated with insect specimens after collection include _____.
A location and trap type
***B location and date**
C trap type and collector
D date and collector
39. A _____ is a trap used to separate insects from soil or leaf litter.
***A berlese funnel**
B sweep net
C ultraviolet light trap
D pitfall trap.

40. A caterpillar of the cabbage butterfly is a common pest of _____.
- A flowers
 - B turfgrass
 - *C vegetables**
 - D shrubs
41. What material do solitary female bees provision for their offspring in cell chambers?
- *A pollen**
 - B honey
 - C fruit
 - D rotting meat
42. Dichotomous keys are primarily based on differences and similarities in insect _____.
- A pest status
 - *B morphology**
 - C behavior
 - D physiology
43. The butterfly pupa is known as a _____.
- A caterpillar
 - *B chrysalis**
 - C cocoon
 - D naiad
44. _____ is the largest professional society dedicated to the study of insects.
- A Chinese Academy of Sciences
 - B European Entomological Society
 - C American Society for the Study of Insects
 - *D Entomological Society of America**
45. Most digestion in insects occurs in the:
- A hindgut
 - B foregut
 - C crop
 - *D midgut**
46. Cochineal is a natural product produced from:
- A grasshoppers
 - *B scales**
 - C beetles
 - D mites
47. If an insect is described as having haustellate mouthparts, it means that the insect consumes _____.
- A solid food
 - B blood only
 - C grasses only
 - *D liquid food**

48. What is a hematophagous insect?
A One that feeds on saliva
B One that feeds on bone
***C One that feeds on blood**
D One that feeds on hair
49. Katydid belongs to which insect order?
***A Orthoptera**
B Hemiptera
C Embioptera
D Zoraptera
50. A caterpillar does not have _____.
A mandibles
***B compound eyes**
C prolegs
D claws
51. Which of the following common name and order combination is correct?
A Mecoptera—lacewing
B Psocoptera—leafhopper
***C Blattodea—cockroaches**
D Hemiptera—wasps
52. An insect's head is specialized for _____.
A reproduction and digestion
B orientation and locomotion
***C ingestion and perception**
D adaptation and respiration
53. The father of modern taxonomy who created the binomial system of nomenclature was _____.
***A Carl Linnaeus**
B Charles Darwin
C Thomas Say
D May Berenbaum
54. A beating tray or beat sheet is best used to collect which type of insects?
A none of the above
***B insects that frequent plants and are reluctant to fly or run**
C insects that are nocturnal and attracted to light
D insects that scurry across the ground rather than fly
55. Immature scale insects are called _____.
A sliders
B walkers
***C crawlers**
D gliders

56. Numerous families in the order _____ can transmit plant diseases with their piercing-sucking mouthparts.
- A Strepsiptera
 - B Plecoptera
 - *C Hemiptera**
 - D Psocodea
57. Which structure never occurs on an abdominal segment?
- A spine
 - B apodeme
 - C spiracle
 - *D pleural suture**
58. Which of the following arthropods are not insects?
- *A all of these are not insects**
 - B daddy long leg
 - C isopod
 - D tardigrade
59. What is the visible characteristic that can be used to separate male and female mosquito adults?
- A females have smaller compound eyes
 - B elongated mouthparts in males, shorter in females
 - C hairy legs in male, females without hairy legs
 - *D males generally with plumose antennae, females with only a few short hairs**
60. How many abdominal segments are found in a typical insect?
- A more than 15
 - B less than 5
 - C 12 or 13
 - *D 6 to 11**
61. Which of this information is not common on insect specimen labels?
- *A soil type**
 - B state
 - C collector's name
 - D county
62. An insect heart is best described as a _____.
- A four-chambered
 - B closed circulation
 - *C dorsal vessel**
 - D lymphatic system
63. Which insect structure develops from embryonic ectoderm?
- *A brain**
 - B muscle
 - C heart
 - D midgut

64. The butterfly that mimics the monarch in coloration because of the distastefulness of monarchs to predators is the _____.
- A Tiger
 - *B Viceroy**
 - C Swallowtail
 - D Cabbage Looper
65. Some insect eggs hatch inside the mother's body before exiting. An insect with this type of reproduction is called _____.
- A oviparous
 - B ametabolous
 - *C viviparous**
 - D none of the above
66. The prime cause of insect extinctions, at least of local populations if not species, is ____.
- A climate change
 - *B habitat loss**
 - C predation from other insects
 - D humans capturing insects for research
67. Which structure lies between the crop and the gastric caecae in the insect digestive system?
- A pyloric valve
 - B colon
 - *C proventriculus**
 - D esophagus
68. In what two states would one be most likely to contract rabbit fever, a disease that can be carried by ticks?
- *A Arkansas and Missouri**
 - B Ohio and Illinois
 - C California and Nevada
 - D Texas and Oklahoma
69. Junctions between abdominal segments are best described as _____.
- *A telescoping**
 - B hinged
 - C dovetailed
 - D ball and socket
70. A measure of insect dispersion gives an indication of _____.
- A the ability of insects to detoxify pesticides
 - *B the random, clumped, or uniform distribution of individuals across a given area**
 - C the short or long distances of insect migration
 - D the length of the segmented bodies of insects
71. Which insect orders are exclusively herbivorous?
- A Lepidoptera and Hemiptera
 - B Psocoptera and Trichoptera
 - C Thysanoptera and Neuroptera
 - *D Orthoptera and Phasmatodea**

72. **Imaginal discs are best described as:**
A control centers for embryonic development.
B underdeveloped legs and wings.
***C groups of undifferentiated cells.**
D vestigial reproductive organs.
73. _____ **determines whether bee larvae become a queen or worker.**
***A food**
B type of wings
C morphology
D gender
74. **What structure protects the midgut from abrasion by food particles and acts as a sieve?**
A pyloric valve
***B peritrophic membrane**
C intima
D proventriculus
75. **Which of the following describes the jumping legs of grasshoppers.**
***A saltatorial**
B cursorial
C raptorial
D natatorial
76. **The hypopharynx separates the mouth opening or food canal from the _____.**
A mandibles
B cibarium
***C salivarium**
D labrum
77. **Which structure is not part of an insect's tracheal system?**
A spiracle
B tracheole
C taenidia
***D sinus**
78. **Approximately _____ species of insects are used as food in many parts of the world.**
A 200
B 100
***C 500**
D 400
79. **Widely used pesticides that have been in the spotlight recently for being toxic to honey bees include _____.**
***A neonicotinoids**
B diamides
C neem oil
D spinosyns

80. In which of the following insects do only the females suck blood?
A louse
B bedbug
***C mosquito**
D flea
81. Approximately how many species of insects have been described to date?
***A 1 million**
B 5 million
C 500 thousand
D 12 million
82. About ____ percent of people that get stung by stinging insects suffer serious reactions.
***A 3%**
B 1%
C 10%
D 4%
83. Which of these events occurs first during insect egg development?
A differentiation of germ layers
B segregation of the germ cells
***C migration of the cleavage nuclei**
D enlargement of the germ band
84. The majority of honey bees in a colony are females and called _____.
A alates
***B workers**
C queens
D drones
85. As juvenile hormone levels fall in the hemolymph, what reaction is triggered in insects?
A the corpora allata start to release more 23-hydroxy ecdysone
B immatures remain immature
***C immature forms start to change towards adulthood.**
D none of the above
86. The “scales” of butterflies are _____.
A frons
***B flattened setae**
C campaniform sensilla
D halteres
87. Predaceous diving beetles belong to what insect order?
A Dermaptera
B Diptera
C Siphonaptera
***D Coleoptera**

88. The word “coleoptera” is derived from two Greek words, coleo coming from the word koleos, meaning _____, and ptera coming from the word pteron, meaning _____.
- A shield; appendage
 - B hard; wing
 - C shell; appendage
 - *D sheath; wing**
89. _____ secrete a bubbly liquid-covering on plants to conceal themselves or their eggs.
- *A spittle bugs**
 - B scale insects
 - C wax moths
 - D aphids
90. What is the function of an aeropyle of an insect's egg?
- A absorb moisture
 - *B gas exchange**
 - C excrete nitrogenous wastes
 - D prevent water loss
91. The internal organ system of insects that is analogous to the liver in mammals (In insects, it serves to actively transport water and ions from the hemolymph) is the _____.
- *A malpighian tubules**
 - B prothoracic gland
 - C tritocerebrum
 - D peritrophic membrane
92. Approximately how many native bee species are known in North America?
- *A 4,000**
 - B 500
 - C 800
 - D 1,000
93. _____ is the order of walkingsticks and leaf insects.
- A Mantodea
 - B Mantophasmatodea
 - *C Phasmatodea**
 - D Orthoptera
94. Malaria was eradicated in the U.S. in the mid 20th century in part because of the widespread use of _____.
- A Sevin
 - *B DDT**
 - C Deet
 - D Malathion
95. What does it mean when an insect is described as hemimetabolous?
- A The insect has a larval stage.
 - B The insect has a pupal stage.
 - C The insect has a nymphal and pupal stage.
 - *D The insect has a nymphal stage.**

96. Honeybees use the _____ dance to communicate the location of food sources from hive.
*A wobble
B square
C round
D figure eight
97. Some insects are considered _____ because loss of their contributions to critical ecological functions could collapse a broader ecosystem.
*A keystone Species
B base Species
C fundamental Species
D cornerstone Species
98. Dermestid beetles that feed on dry and pinned specimens are commonly repelled with _____.
A ethyl acetate
B plaster of Paris
C acetone
*D naphthalene
99. The following is the genus of the “yellow fever mosquito” and “Asian tiger mosquito” that vectors dengue, chikungunya and zika viruses.
A Heterosternuta
B Culex
*C Aedes
D Anopheles
100. The frons and the clypeus, located on the head, are separated by the _____.
A gena
B labrum
C subgenal suture
*D epistomal suture
101. An insect’s cuticle is primarily made of _____, which has also been studied for its medicinal properties.
*A chitin
B melatonin
C hemolymph
D melanin
102. Which part of the leg lies between the femur and the tarsus?
A trochanter
*B tibia
C coxa
D arolium
103. The “powder” left over from being in contact with moths or butterflies is actually tiny _____.
A wax crystals
*B scales
C filaments
D trichomes

104. What was a major arthropod borne disease that resulted in great losses for Napoleon on his campaign to Russia?
- *A epidemic typhus fever
 - B plague
 - C yellow fever
 - D malaria
105. The feces of triatomid bugs harbor the causative agent for what disease in humans?
- *A Chagas disease
 - B Malaria
 - C Pierce's disease
 - D Dengue
106. The snakeflies belong to the order _____.
- A Coleoptera
 - B Neuroptera
 - *C Raphidioptera
 - D Megaloptera
 - E Odonata
107. Rigid, inflexible structures of the exoskeleton are called _____.
- A segments
 - B apodemes
 - *C sclerites
 - D sutures
108. The state insect of Texas is the _____.
- A Texas checkered spot butterfly
 - B lady bird beetle
 - *C monarch butterfly
 - D honey bee
109. A dun is a fly fishing term used to describe what type of insect?
- A a caddisfly sub-adult
 - *B a mayfly sub-adult
 - C a mayfly adult
 - D a stonefly nymph
110. In many insects, three light-sensitive "simple" eyes, or _____, are situated of the anterior vertex between the compound eyes.
- *A ocelli
 - B oligopod
 - C ostium
 - D obtect
111. An apodeme could NOT be described as _____.
- A a brace to strengthen the exoskeleton.
 - B an internal ridge of the exoskeleton.
 - C a point of attachment for muscles.
 - *D a flexible joint in the exoskeleton.

112. These insects typically hold their wings together above and over their abdomen when resting.
- A dragonflies
 - B moths
 - *C butterflies**
 - D stoneflies
113. Which structure is not part of an insect's antenna?
- A scape
 - B pedicel
 - C flagellum
 - *D coxa**
114. Mole crickets have _____ legs used for digging.
- *A Fossorial**
 - B Raptorial
 - C Cursorial
 - D Saltatorial
115. Where do the larva of horse flies occur?
- A in turf
 - B in brush piles
 - C in flower beds
 - *D in aquatic or marshy environments**
116. What is the branch of science concerned with describing, naming, and classifying organisms?
- A Speciation
 - *B Taxonomy**
 - C Phylogeny
 - D Zoology
117. _____ are not considered a biological control agent for killing insect pests.
- A microbes
 - B predators or parasites
 - *C pheromones**
 - D parasitoids
118. The furca is best described as:
- *A An internal brace for the legs.**
 - B A fulcrum for the wings.
 - C A springing organ.
 - D A hinge for the neck.
119. Water boatmen have _____ legs used for swimming.
- *A Natatorial**
 - B Raptorial
 - C Fossorial
 - D Cursorial

120. _____ is where digestive enzymes are secreted and most food absorption occurs in the insect gut.
- A proctodeum
 - B proventriculum
 - C stomodeum
 - *D mesenteron**
121. This best choice for a chemical to use in an insect kill jar is _____.
- A naphthalene
 - *B ethyl acetate**
 - C paradichlorobenzene
 - D potassium cyanide
122. Which of these is not a longitudinal wing vein?
- A costa
 - B radius
 - C cubitus
 - *D furca**
123. Collophore and furcula are morphological terms associated with which order of insects?
- A Odonata
 - *B Collembola**
 - C Lepidoptera
 - D Ephemeroptera
124. The insect with one of the longest known migrations and that was petitioned in 2016 to be listed for threatened or endangered status per the U.S. Endangered Species Act is the _____.
- A western tarnished plant bug
 - B green darner
 - C flame skimmer
 - *D monarch butterfly**
125. A suture of the exoskeleton is best described as a _____.
- A membranous bridge.
 - B point of attachment between segments.
 - *C line or junction between two sclerites.**
 - D thick ridge of cuticle.
126. The Latin word "Insectum" means:
- A segments
 - *B cut into pieces**
 - C small pieces
 - D insect
127. The insect mouthparts include all of these structures except:
- *A clypeus**
 - B hypopharynx
 - C labium
 - D maxillae

128. What order of insect vectors Chagas disease?
A Lepidoptera
B Diptera
***C Hemiptera**
D Orthoptera
129. Functions of the insect hemolymph includes:
A wasted removal to excretory organs
B hormone transport
C distribution of nutrients from the gut
***D all of the above**
130. _____ is an ability of insects to survive toxicity after chronic exposure to pesticides.
A resurgence
***B resistance**
C tolerance
D repellency
131. Ant lions belong to the order _____.
A Diptera
B Coleoptera
***C Neuroptera**
D Isoptera
132. Caddisflies belong to the order _____.
A Isoptera
B Lepidoptera
C Neuroptera
***D Trichoptera**
133. The _____ civilization regarded dung beetles as sacred.
***A Egyptian**
B Syrian
C Aztec
D Roman
134. When and where were the first fire ants discovered in North America?
***A Mobile, Alabama in the 1930s**
B El Paso, TX in the 1920s
C Russellville, Arkansas in 1970s
D Pensacola, Florida in the 1960s
135. _____ are the two orders of primitively wingless insects.
A Diplura and Collembola
B Protura and Microcoryphia
C Apterygota and Thysanura
***D Archaeognatha and Thysanura**

136. Which structures are not a component of the endocrine system in insects?
A ventral ganglia
B corpora cardiac
C prothoracic glands
***D salivary glands**
137. What is the reservoir of louse-born typhus?
***A humans**
B horses
C cats
D dogs
138. What is the name for the "shell" of an insect egg?
A blástula
B serosa
***C chorion**
D morula
139. Which insect order contains the crickets and grasshoppers?
A Lepidoptera
***B Orthoptera**
C Hymenoptera
D Blattodea
140. A hearing organ of an insect is the _____.
A labrum
***B tympanum**
C vertex
D frons
141. Which structure would not be found on an insect's leg?
A arolium
***B propodeum**
C tarsomere
D coxa
142. Very few insects are found in this habitat.
A trees
B lakes
***C ocean**
D soil
143. A mass of neural tissue that contains mostly nerve cell bodies and interneurons in an insect is called a _____.
***A ganglion**
B motor neuron
C synapse
D nerve

144. The boll weevil *Anthonomus grandis* was a severe cotton pest belonging to which family of beetles?
A Carabidae
***B Curculionidae**
C Meloidae
D Coccinellidae
145. Some factors contributing to the success of insects are:
A size, a protective cuticle, an efficient nervous system, four pair of legs
***B high reproductive rate, the evolution of flight, size**
C high reproductive rate, the evolution of flight, ability to live without a brain
D size, the evolution of flight, lack of wings
146. Which structure would not be found on an insect's prothorax?
A pronotum
B spiracle
C leg
***D wing**
147. An insect has a protective cuticle that allows it to _____.
A produce biological defense compounds (immune response)
B use chemo-and mechano-receptors
C self-repair (if damaged)
***D all of the above**
148. What are some reasons that could have influenced the large size of insects prehistorically?
A lower oxygen levels in the atmosphere and fewer aerial predators
B lower oxygen levels in the atmosphere and more aerial predators
C higher oxygen levels in the atmosphere and more aerial predators
***D higher oxygen levels in the atmosphere and fewer aerial predators**
149. How does the honey bee queen decide the sex of her offspring?
***A By laying haploid eggs into large cells for drones, and diploid eggs into small cells for workers**
B By laying haploid eggs into small cells for drones, and diploid eggs into large cells for workers
C By laying diploid eggs into small cells for drones, and haploid eggs into large cells for workers
D By laying diploid eggs into large cells for drones, and haploid eggs into small cells for workers
150. What is the causal agent of pink eye in cattle that can be vectored by flies?
A *Corethrella bovis*
B *Sarcoptes scabiei*
C *Trypanosoma evansi*
D *Moraxella bovis
151. The body temperature of insects changes with ambient environmental temperatures. Therefore, most insects cannot efficiently change their internal body temperature above the temperature of the environment. The first sentence describes _____ while the second sentence describes _____.
***A ectothermy and endothermy**
B diapause and dormancy
C endothermy and ectothermy
D dormancy and diapause
-

152. What diseases do *Culex pipiens pipiens* and *C. p. quinquefasciatus* vector?
A malaria
B yellow fever
C dengue fever
***D St. Louis encephalitis**
153. What is the mouthpart called for feeding within the Lepidoptera?
A pylorus
B pronotum
***C proboscis**
D paranota
154. What is the primary function of the wax layer of the exoskeleton?
A thermal insulation
B muscle attachment
C protection
***D water barrier**
155. Dermaptera or earwigs are most closely related to which insect order?
A Hymenoptera
B Hemiptera
***C Orthoptera**
D Coleoptera
156. Insects use their olfactory system for _____.
A sucking
B hearing
C seeing
***D smelling**
157. Which of the following insect groups has hemimetabolous development?
***A mayflies**
B house flies
C ants
D weevils
158. The phrase “endemic” insect refers to:
***A native to or limited to a certain region**
B invasive
C occurrence in an unfavorable environment
D occurrence in a desert habitat
159. Solitary bees build nests in what type of habitat?
***A all of the above**
B in existing small tree holes or cavities
C in the soil
D in hollow plant stems

160. The renowned myrmecologist _____ established the field of sociobiology.
- A C.V. Riley
 - B John Bell
 - C Carl Linneaus
 - *D E.O. Wilson**
161. During the _____, German cockroaches are very active.
- A spring
 - B summer
 - C day
 - *D night**
162. The bed bug, *Cimex lectularious*, is an effective vector of what pathogenic microorganism?
- A sporidia
 - B wolbachia
 - *C none**
 - D loa loa
163. What function do protein cross-linkages have in the insect exoskeleton?
- A They make membranes more flexible.
 - B They make it impermeable to water.
 - *C They make sclerites more rigid.**
 - D They lighten the color of the exoskeleton.
164. The pleural suture lies just posterior to the _____.
- *A episternum**
 - B trochantin
 - C epimeron
 - D trochanter
165. What insects are included in the order Pthiraptera?
- A cockroaches
 - B bed bugs
 - C flies
 - *D lice**
166. What was a major cotton pest that was successfully eradicated in the U.S.?
- *A boll weevil**
 - B stink bug
 - C lygus bug
 - D sunflower head moth
167. The aquatic insect order whose immature stages sometimes create rock cases is _____.
- A Ephemeroptera
 - B Diptera
 - C Odonata
 - *D Trichoptera**

168. _____ is a primary characteristic of the order Orthoptera and is the type of forewing of this group.
- *A tegmina
 - B elytra
 - C hemelytra
 - D hamuli
169. Which of the followings is the common name of the order Mecoptera?
- A dragonfly
 - B firefly
 - C caddisfly
 - *D scorpionfly
170. The reproductive organ in male insects for transferring sperm is the _____
- A paraproct
 - B scape
 - *C aedeagus
 - D gonopore
171. Which structure would not be found on an insect's pretarsus?
- *A trochanter
 - B spines
 - C sticky pads
 - D claws
172. What order of insects usually have their wings covered in flattened setae or scales?
- A Coleoptera
 - *B Lepidoptera
 - C Diptera
 - D Hemiptera
173. The following are groups of eusocial insects:
- A termites
 - B gall-forming aphids
 - *C All of these are eusocial insects
 - D ants
174. Insects from this order do not act as pollinators:
- A Hymenoptera
 - B Diptera
 - C Coleoptera
 - *D Phasmatodea
175. What is the principle energy source for most insects?
- A vitamins
 - *B carbohydrates
 - C cellulose
 - D proteins

176. What are the larva of mosquitoes commonly referred to as?
A dancers
B crawlers
C tumblers
***D wigglers**
177. The insect cuticle is between _____ and _____ microns thick.
***A 100, 300**
B 120, 1000
C 50, 75
D 300, 400
178. Which of these occupies the largest volume in an unfertilized insect egg?
A periplasm
B nucleus
C embryo
***D yolk**
179. In Diptera, hindwings are modified into small, club-like structure called _____ that serves as gyroscopes, informing the insect about rotation of the body during flight.
A pronotum
B proboscis
***C halteres**
D hamuli
180. _____ is a family in the order _____.
A Tortricidae, Hemiptera
B Coleoptera, Chrysomelidae
***C Chrysomelidae, Coleoptera**
D Chrysomelidae, Collembola
181. Abdominal gills allow insects to utilize oxygen that is _____.
***A dissolved in the surrounding water**
B generated by metabolic activity
C atmospheric
D trapped in the tissues of aquatic plants
182. All of the following insects have holometabolous development, except _____.
***A Thysanoptera**
B Coleoptera
C Neuroptera
D Mecoptera
183. Digging legs of mole crickets are what functional type?
A raptorial
***B fossorial**
C cursorial
D saltatorial

184. The insect abdomen contains:
- *A all of the above
 - B organs for excretion
 - C the reproductive tract
 - D the digestion tract
185. What percentage of flowering plants on Earth require insect pollination?
- A 95%
 - *B 75%
 - C 30%
 - D 50%
186. Webspinners belong to which insect order?
- *A Embioptera
 - B Psocoptera
 - C Dermaptera
 - D Orthoptera
187. One-way flow valves in the heart are called _____.
- A pulsatile organs
 - B spiracles
 - C apodemes
 - *D ostia
188. _____ represents the most speciose order of insects, with approximately _____ species
- A Collembola, 450,000
 - B Zoraptera, 500,000
 - C Lepidoptera, 350,000
 - *D Coleoptera, 400,000
189. Which abdominal structure of an insect is unpaired?
- A valvifer
 - B paraproct
 - C cerci
 - *D epiproct
190. _____ are the individual light-sensing and image forming units of the insect's compound eye.
- A ocelli
 - B Rhabdomeres
 - C Cornea
 - *D ommatidia
191. A sperm cell enters the insect egg through the _____.
- A oosome
 - *B micropyle
 - C germ band
 - D morula

192. The followings are the parts of the insect thorax:
A mesothorax, metathorax and semithorax
***B metathorax, mesothorax and prothorax**
C pirothorax, hexathorax and etathorax
D prothorax, mesothorax and entothorax
193. In what order of insects are the front wings known as "elytra?"
A Orthoptera
B Hemiptera
C Hymenoptera
***D Coleoptera**
194. What are two distinguishing features of the subphylum Hexapoda that separates them from other classes of arthropods?
***A Having a three-part body and six legs**
B A three-segmented body and the ability to molt
C Having three pairs of legs and an exoskeleton
D The ability to undergo metamorphosis and having a three-part body
195. A tool used to collect insects using your mouth or a hand bulb and a small vial is called a/an _____.
A berlese funnel
B sweep net
C pitfall trap
***D aspirator**
196. What do the orders Mantodea and Blattodea have in common?
***A eggs are produced inside a pouch or ootheca**
B hind wings are modified into halteres
C blood suckers
D sucking mouthparts
197. An insect with tracheal gills would probably be found in _____.
***A a cold mountain stream**
B a stagnant pond
C a sewage treatment lagoon
D an oceanic community
198. If you wanted to study entomology in college, what types of courses might you take at a university offering an undergraduate or graduate degree in entomology?
A Aquatic Entomology
B Urban Entomology
C Insect Ecology
***D All of the above**
199. What structure is found in Diptera, but NOT in Hymenoptera?
A stigma
B stinger
C cerci
***D haltere**

200. A _____ is used to collect ground dwelling, crawling insects.
A malaise trap
B Berlese funnel
C ultraviolet light trap
***D pitfall trap**
201. Chemicals released from plants to attract parasitic or predaceous insects that combat herbivorous insects are called _____.
A tannins
***B kairomones**
C pheromones
D steroids
202. _____ flour has been developed and marketed in recent years as a new form of supplemental protein and a cooking agent.
A ant Lion
B ground Beetle
C Cockroach
***D cricket**
203. Firebrats and silverfish are common household pests in the order _____.
A Mecoptera
B Odonata
***C Thysanura**
D Hemiptera
204. To which body segment are the elytra attached?
A first abdominal
B metathorax
C prothorax
***D mesothorax**
205. The ____ is the ventral surface of the thorax of insects.
***A sternum**
B pleuron
C front
D notum
206. Squash bugs belong to what insect order?
***A Hemiptera**
B Diptera
C Lepidoptera
D Coleoptera
207. The Johnston's organ _____.
A Is used to detect changes between antennal segments
B Senses physical environmental stimuli (vibrations, wind, gravity)
C Separates the Class Insecta from the Class Entognatha
***D all of the above**

208. A tool that allows one to adjust the height and position of a pinned specimen and accompanying label is a _____.
- A spreading board
 - *B pinning block**
 - C point
 - D forceps
209. Insects have _____ pair of legs and _____ primary body regions.
- A 6, 2
 - B 3, 2
 - C 4, 2
 - *D 3, 3**
210. The old shed skin left behind after an insect molts is known as the _____.
- A ecdysis
 - B sclerite
 - *C excuvium**
 - D stadium
211. After its second molt an insect is a _____ instar.
- *A third**
 - B first
 - C final
 - D second
212. To which family do hard ticks belong?
- A Simuliidae
 - B Argasidae
 - *C Ixodidae**
 - D Heptageniidae
213. Which larval type does not have walking legs?
- A eruciform
 - B Campodeiform
 - C scarabaeiform
 - *D vermiform**
214. The abdomen of insects is specialized for:
- A feeding and locomotion
 - B locomotion and reproduction
 - *C reproduction and digestion**
 - D digestion and ingestion
215. The Hymenoptera from the list below that are not social are _____
- A honey bees
 - B hornets
 - C sweat bees
 - *D leafcutter bees**

216. **Urticating hairs are associated with plants, tarantulas and what insect order?**
A Blattodea
B Strepsiptera
C Mecoptera
***D Lepidoptera**
217. **The developmental stage of an insect between molts is called a/an _____.**
***A instar**
B morph
C cocoon
D larva
218. **The following sections are parts of an insect's leg:**
***A coxa, trochanter, femur, tibia and tarsus**
B Clypeus, corium, tegula and cornicle
C Coxa, femur, tibia and mentum
D Tegula, cornicle, frenulum, petiole
219. **Oothecas, or egg cases, belonging to what insect order?**
A Coleoptera
B Hemiptera
C Diptera
***D Mantodea**
220. **You are hired as an extension entomologist for the state of Texas. Your first task in this job is to identify a pest in cotton. You go out to the cotton fields to collect specimens and find that this new pest is tiny (less than 1 mm long), has rasping-sucking mouthparts, and fringed wings. Based on this information this cotton pest is likely a:**
***A thrips**
B scale
C pirate bug
D whitefly
221. **The following are some of the major insect wing veins:**
A coxal ,radius, tibial
B anal, tibial, subcostal
C medial, coxal, femoral
***D costa, radius, cubitus**
222. **When an insect has a vestigial mouthpart, that insect _____.**
A can consume only solids
B can consume only liquids
C possesses both piercing-sucking and chewing mouthparts
***D cannot eat**
223. **During a molt, which layer of the old exoskeleton is digested by molting fluid, reabsorbed by the epidermal cells, and reconstituted as new procuticle?**
A epicuticle
B cuticulin layer
C exocuticle
***D endocuticle**
-

224. Rachel Carson published a book titled _____ that highlighted pesticide issues and environmental contamination as a result of the overuse of DDT in the mid 20th century.
- A The Hungry Caterpillar
 - B A Bug's Life
 - C Sand County Almanac
 - *D Silent Spring**
225. _____ are regarded as the most important group of insect pollinators.
- A Hymenoptera, Ichneumonidae
 - *B Hymenoptera, Apoidea**
 - C Diptera, Syrphidae
 - D Coleoptera, Cantharidae
226. What is the correct common name for *Solenopsis invicta* Buren?
- A painted lady butterfly
 - B German cockroach
 - C Japanese beetle
 - *D red imported fire ant**
227. A geniculate insect antenna is _____.
- A hairy
 - *B elbowed**
 - C serrated
 - D clubbed
228. The following are natural products derived from insects:
- A Silk, carmine and polysaccharides
 - *B Silk, natural red 4, royal jelly and honey**
 - C Carmine, silk, honey and blue dyes
 - D Natural green 6 and honey
229. Which insects never develop wings?
- A earwigs
 - B aphids
 - C book louse
 - *D fleas**
230. In integrated pest management, this is the point at which action must be taken to avoid economic damage from insect injury.
- A economic injury level
 - *B economic threshold**
 - C pest threshold
 - D plant health level
231. Puddling is a behavior in the _____ where adults aggregate and drink from mud puddles or moist soil.
- *A Lepidoptera**
 - B Trichoptera
 - C Thysanoptera
 - D Phasmatodea

232. What structures regulate air flow into and out of the tracheal system in insects?
A taenidia
B tracheoles
C ostia
***D spiracles**
233. The whirligig beetle has how many pairs of eyes?
***A two**
B one
C three
D Four
234. Which insect order does not have aquatic stages of development?
***A Thysanoptera**
B Hemiptera
C Neuroptera
D Coleoptera
235. The discoverer of mosquito transmission of malaria was _____.
A Carl Linnaeus
B Carlos Finlay
C E.O. Wilson
***D Sir Ronald Ross**
236. Which structures are innervated by the protocerebrum of an insect's brain?
***A compound eyes and ocelli**
B bursa copulatrix
C antennae
D mouthparts
237. Why do insects molt?
A to grow
B to change from one instar to another
***C all of the above**
D to complete a step in metamorphosis
238. What are some characteristics of social insects?
A reproductive division of labor
***B All of these are characteristics of social insects**
C usually associated with a confined space like a nest
D cooperative care of the young
239. The tracheal system of an insect is best described as _____.
A a method of anaerobic respiration
B a chain of interconnecting cells
C a radial pattern of filaments
***D a network of hollow tubes**

240. _____ is found as both a supporting element in fungal cell walls and a key component of arthropod exoskeletons.
- A epicuticle
 - *B chitin**
 - C collophore
 - D epidermis
241. If an insect is described as zoophilic, that insect prefers _____ to _____.
- A humans; animals
 - B plants; animals
 - *C animals; humans**
 - D animals; plants
242. Which part of the exoskeleton is formed by a single layer of epithelial cells?
- A cuticulin layer
 - B procuticle
 - *C epidermis**
 - D basement membrane
243. Giant water bugs belong to the order Hemiptera and are in the family _____.
- *A Belostomatidae**
 - B Muscidae
 - C Dytiscidae
 - D Danaidae
244. Dutch elm disease is caused by a _____ that is carried by _____.
- A virus, aphids
 - *B fungus, beetles**
 - C virus, thrips
 - D mycoplasma, leafhoppers
245. The blood of insects is called _____.
- A hemoglobin
 - *B hemolymph**
 - C sebum
 - D hemocyanin
246. Dolbear's law refers to what insect and environmental relationship?
- *A Predicting air temperature with cricket chirps**
 - B Predicting rainfall with caterpillar growth
 - C Predicting snowfall with housefly abundance
 - D Predicting wind speed with dragonfly flight
247. The "vampire" mite that has been a serious pest of managed honey bees is the _____.
- A scabies mite
 - *B varroa mite**
 - C wax mite
 - D honey mite

248. _____ do not belong to the order Hemiptera
- *A **bristletails**
 - B aphids
 - C cicadas
 - D leafhoppers
249. What is the primary chemical component of the insect's egg shell?
- A calcium
 - B lipid
 - *C **protein**
 - D polysaccharide
250. The ____ are structures of the insect head that are responsible for grinding solid food.
- *A **mandibles**
 - B labrum
 - C calyx
 - D maxilla