

1. To which body segment are the elytra attached?
 - A prothorax
 - B first abdominal
 - C metathorax
 - *D mesothorax**

 2. The old shed skin left behind after an insect molts is known as the _____.
 - A ecdysis
 - *B exuvium**
 - C stadium
 - D sclerite

 3. The eastern population of monarch butterflies overwinter in _____.
 - A Baja California
 - *B Central Mexico**
 - C Florida
 - D Texas

 4. The abdomen of insects is specialized for:
 - A feeding and locomotion
 - *B reproduction and digestion**
 - C digestion and ingestion
 - D locomotion and reproduction

 5. What is the primary function of the wax layer of the exoskeleton?
 - *A water barrier**
 - B protection
 - C thermal insulation
 - D muscle attachment

 6. _____ represents the most speciose order of insects, with approximately _____ species
 - A Lepidoptera, 350,000
 - B Zoraptera, 500,000
 - C Collembola, 450,000
 - *D Coleoptera, 400,000**

 7. Firebrats and silverfish are common household pests in the order _____.
 - *A Thysanura**
 - B Mecoptera
 - C Odonata
 - D Hemiptera
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8. A tool used to collect insects using your mouth or a hand bulb and a small vial is called a/an _____.
- A sweep net
 - *B aspirator**
 - C berlese funnel
 - D pitfall trap
9. A geniculate insect antenna is _____.
- A clubbed
 - B serrated
 - *C elbowed**
 - D hairy
10. _____ is a family in the order _____.
- A Chrysomelidae, Collembola
 - B Tortricidae, Hemiptera
 - C Coleoptera, Chrysomelidae
 - *D Chrysomelidae, Coleoptera**
11. What is the visible characteristic that can be used to separate male and female mosquito adults?
- A females have smaller compound eyes
 - B hairy legs in male, females without hairy legs
 - C elongated mouthparts in males, shorter in females
 - *D males generally with plumose antennae, females with only a few short hairs**
12. Which structure would not be found on an insect's pretarsus?
- *A trochanter**
 - B sticky pads
 - C claws
 - D spines
13. The Johnston's organ _____.
- *A all of the above**
 - B Separates the Class Insecta from the Class Entognatha
 - C Senses physical environmental stimuli (vibrations, wind, gravity)
 - D Is used to detect changes between antennal segments
14. The following is the genus of the "yellow fever mosquito" and "Asian tiger mosquito" that vectors dengue, chikungunya and zika viruses.
- A Heterosternuta
 - B Anopheles
 - C Culex
 - *D Aedes**

15. Dolbear's law refers to what insect and environmental relationship?
- A Predicting snowfall with housefly abundance
 - *B Predicting air temperature with cricket chirps**
 - C Predicting wind speed with dragonfly flight
 - D Predicting rainfall with caterpillar growth
16. The following sections are parts of an insect's leg:
- A Tegula, cornicle, frenulum, petiole
 - *B coxa, trochanter, femur, tibia and tarsus**
 - C Coxa, femur, tibia and mentum
 - D Clypeus, corium, tegula and cornicle
17. _____ is found as both a supporting element in fungal cell walls and a key component of arthropod exoskeletons.
- A epicuticle
 - B colophore
 - C epidermis
 - *D chitin**
18. Predaceous diving beetles belong to what insect order?
- A Siphonaptera
 - *B Coleoptera**
 - C Dermaptera
 - D Diptera
19. Which of the following insect groups has hemimetabolous development?
- A weevils
 - *B mayflies**
 - C ants
 - D house flies
20. The majority of honey bees in a colony are females and called _____.
- A alates
 - B drones
 - *C workers**
 - D queens
21. An insect heart is best described as a _____.
- A four-chambered
 - B lymphatic system
 - *C dorsal vessel**
 - D closed circulation

22. _____ are thought to be one of the first arthropods.
- A Thysanura
 - B Flies
 - *C Trilobites**
 - D Trichoptera
23. If an insect is described as zoophilic, that insect prefers ____ to ____.
- A plants; animals
 - B humans; animals
 - C animals; plants
 - *D animals; humans**
24. Functions of the insect hemolymph includes:
- A wasted removal to excretory organs
 - B hormone transport
 - *C all of the above**
 - D distribution of nutrients from the gut
25. The reproductive organ in male insects for transferring sperm is the _____
- A scape
 - *B aedeagus**
 - C paraproct
 - D gonopore
26. When and where were the first fire ants discovered in North America?
- A Russellville, Arkansas in 1970s
 - B El Paso, TX in the 1920s
 - C Pensacola, Florida in the 1960s
 - *D Mobile, Alabama in the 1930s**
27. Ground beetles and cockroaches have _____ legs used for running.
- *A Cursorial**
 - B Saltatorial
 - C Raptorial
 - D Fossorial
28. The _____ civilization regarded dung beetles as sacred.
- A Aztec
 - *B Egyptian**
 - C Roman
 - D Syrian

29. What is the correct common name for *Solenopsis invicta* Buren?
- *A red imported fire ant
 - B Japanese beetle
 - C painted lady butterfly
 - D German cockroach
30. Why do insects molt?
- A to change from one instar to another
 - *B all of the above
 - C to complete a step in metamorphosis
 - D to grow
31. The butterfly pupa is known as a _____.
- A naiad
 - B cocoon
 - *C chrysalis
 - D caterpillar
32. _____ 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 cricket
 - D Cockroach
33. In which of the following insects do only the females suck blood?
- A louse
 - *B mosquito
 - C bedbug
 - D flea
34. 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
35. Mole crickets have _____ legs used for digging.
- A Saltatorial
 - B Cursorial
 - *C Fossorial
 - D Raptorial

36. In what order of insects are the front wings known as "elytra?"
- *A **Coleoptera**
 - B Hemiptera
 - C Hymenoptera
 - D Orthoptera
37. Oothecas, or egg cases, belonging to what insect order?
- A Coleoptera
 - B Diptera
 - *C **Mantodea**
 - D Hemiptera
38. Which of the following orders of insects is most closely related to Diptera?
- *A **Siphonaptera**
 - B Thysanura
 - C Mantodea
 - D Hymenoptera
39. The ____ is the ventral surface of the thorax of insects.
- A pleuron
 - *B **sternum**
 - C front
 - D notum
40. What order of insects is generally considered most important from a medical and veterinary standpoint?
- A Hymenoptera
 - B Pthiraptera
 - *C **Diptera**
 - D Zoraptera
41. Which insect structure develops from embryonic ectoderm?
- A muscle
 - B midgut
 - *C **brain**
 - D heart
42. The insect abdomen contains:
- *A **all of the above**
 - B the digestion tract
 - C organs for excretion
 - D the reproductive tract

43. A caterpillar of the cabbage butterfly is a common pest of _____.
- A turfgrass
 - B shrubs
 - C flowers
 - *D vegetables**
44. 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 diapause and dormancy
 - *B ectothermy and endothermy**
 - C dormancy and diapause
 - D endothermy and ectothermy
45. In what two states would one be most likely to contract rabbit fever, a disease that can be carried by ticks?
- A California and Nevada
 - *B Arkansas and Missouri**
 - C Ohio and Illinois
 - D Texas and Oklahoma
46. How does the honey bee queen decide the sex of her offspring?
- A By laying haploid eggs into small cells for drones, and diploid eggs into large cells for workers
 - B By laying diploid eggs into small cells for drones, and haploid eggs into large cells for workers
 - C By laying diploid eggs into large cells for drones, and haploid eggs into small cells for workers
 - *D By laying haploid eggs into large cells for drones, and diploid eggs into small cells for workers**
47. During the _____, German cockroaches are very active.
- A summer
 - B day
 - *C night**
 - D spring
48. Abdominal gills allow insects to utilize oxygen that is _____.
- A trapped in the tissues of aquatic plants
 - B atmospheric
 - C generated by metabolic activity
 - *D dissolved in the surrounding water**
49. What structure protects the midgut from abrasion by food particles and acts as a sieve?
- *A peritrophic membrane**
 - B intima
 - C proventriculus
 - D pyloric valve
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50. **Webspinners belong to which insect order?**
- A Dermaptera
 - *B Embioptera**
 - C Psocoptera
 - D Orthoptera
51. **If an insect is described as having haustellate mouthparts, it means that the insect consumes _____.**
- *A liquid food**
 - B solid food
 - C grasses only
 - D blood only
52. **Chemicals released from plants to attract parasitic or predaceous insects that combat herbivorous insects are called _____.**
- A steroids
 - *B kairomones**
 - C pheromones
 - D tannins
53. **The boll weevil *Anthonomus grandis* was a sever cotton pest belonging to which family of beetles?**
- A Coccinellidae
 - B Carabidae
 - C Meloidae
 - *D Curculionidae**
54. **Blister beetles have what substance in their bodies that can be toxic to livestock?**
- A resilin
 - *B cantharadin**
 - C serotonin
 - D chitin
55. **The renowned myrmecologist _____ established the field of sociobiology.**
- A John Bell
 - B Carl Linneaus
 - C C.V. Riley
 - *D E.O. Wilson**
56. **Which of the following arthropods are not insects?**
- *A all of these are not insects**
 - B daddy long leg
 - C tardigrade
 - D isopod

57. The eyes of caterpillars are called _____.
- *A stemmata
 - B hamuli
 - C tegmina
 - D ocelli
58. A dun is a fly fishing term used to describe what type of insect?
- A a mayfly adult
 - B a stonefly nymph
 - *C a mayfly sub-adult
 - D a caddisfly sub-adult
59. _____ secrete a bubbly liquid-covering on plants to conceal themselves or their eggs.
- A aphids
 - B wax moths
 - C scale insects
 - *D spittle bugs
60. _____ is the appropriate concentration of ethanol to preserve most insects.
- A 60%
 - *B 70%
 - C 100%
 - D 50%
61. As juvenile hormone levels fall in the hemolymph, what reaction is triggered in insects?
- A immatures remain immature
 - B none of the above
 - *C immature forms start to change towards adulthood.
 - D the corpora allata start to release more 23-hydroxy ecdysone
62. The butterfly that mimics the monarch in coloration because of the distastefulness of monarchs to predators is the _____.
- A Cabbage Looper
 - B Tiger
 - C Swallowtail
 - *D Viceroy
63. The following are some of the major insect wing veins:
- A medial, coxal, femoral
 - B anal, tibial, subcostal
 - C coxal ,radius, tibial
 - *D costa, radius, cubitus

64. The pleural suture lies just posterior to the _____.
- A trochanter
 - *B episternum**
 - C epimeron
 - D trochantin
65. _____ do not belong to the order Hemiptera
- A aphids
 - B leafhoppers
 - C cicadas
 - *D bristletails**
66. Which of the followings is the common name of the order Mecoptera?
- A caddisfly
 - *B scorpionfly**
 - C dragonfly
 - D firefly
67. Insects have evolved over a period of approximately _____ years.
- A 100 million
 - B 50 million
 - C 2 million
 - *D 400 million**
68. Which structures are innervated by the protocerebrum of an insect's brain?
- A antennae
 - *B compound eyes and ocelli**
 - C mouthparts
 - D bursa copulatrix
69. Some insect eggs hatch inside the mother's body before exiting. An insect with this type of reproduction is called _____.
- A oviparous
 - B none of the above
 - C ametabolous
 - *D viviparous**
70. The father of modern taxonomy who created the binomial system of nomenclature was _____.
- A Thomas Say
 - B Charles Darwin
 - C May Berenbaum
 - *D Carl Linnaeus**

71. Which part of the exoskeleton lies between the exocuticle and the wax layer?
- A endocuticle
 - B cement layer
 - *C cuticulin layer**
 - D procuticle
72. Which structure is not part of an insect's antenna?
- A scape
 - B flagellum
 - C pedicel
 - *D coxa**
73. What is the principle energy source for most insects?
- *A carbohydrates**
 - B vitamins
 - C proteins
 - D cellulose
74. In many insects, three light-sensitive “simple” eyes, or _____, are situated of the anterior vertex between the compound eyes.
- *A ocelli**
 - B obtect
 - C ostium
 - D oligopod
75. The “powder” left over from being in contact with moths or butterflies is actually tiny _____.
- *A scales**
 - B wax crystals
 - C trichomes
 - D filaments
76. A measure of insect dispersion gives an indication of _____.
- A the ability of insects to detoxify pesticides
 - B the length of the segmented bodies of insects
 - C the short or long distances of insect migration
 - *D the random, clumped, or uniform distribution of individuals across a given area**
77. Axillary sclerites form points of attachment for muscles that control the:
- *A wings**
 - B mouthparts
 - C antennae
 - D legs

78. Approximately _____ species of insects are used as food in many parts of the world.
- A 100
 - B 200
 - *C 500**
 - D 400
79. Which insects never develop wings?
- *A fleas**
 - B earwigs
 - C book louse
 - D aphids
80. Dermestid beetles that feed on dry and pinned specimens are commonly repelled with _____.
- *A naphthalene**
 - B plaster of Paris
 - C acetone
 - D ethyl acetate
81. 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
82. All of the following insects have holometabolous development, except _____.
- A Coleoptera
 - B Neuroptera
 - C Mecoptera
 - *D Thysanoptera**
83. A _____ is a trap used to separate insects from soil or leaf litter.
- A ultraviolet light trap
 - B pitfall trap.
 - *C berlese funnel**
 - D sweep net
84. What is a hematophagous insect?
- *A One that feeds on blood**
 - B One that feeds on saliva
 - C One that feeds on hair
 - D One that feeds on bone

85. Insects from this order do not act as pollinators:
- A Coleoptera
 - B Diptera
 - *C Phasmatodea**
 - D Hymenoptera
86. Junctions between abdominal segments are best described as _____.
- *A telescoping**
 - B dovetailed
 - C ball and socket
 - D hinged
87. What are some reasons that could have influenced the large size of insects prehistorically?
- A higher oxygen levels in the atmosphere and more aerial predators
 - B lower oxygen levels in the atmosphere and fewer aerial predators
 - C lower oxygen levels in the atmosphere and more aerial predators
 - *D higher oxygen levels in the atmosphere and fewer aerial predators**
88. When an insect has a vestigial mouthpart, that insect _____.
- A can consume only solids
 - B can consume only liquids
 - *C cannot eat**
 - D possesses both piercing-sucking and chewing mouthparts
89. What does it mean when an insect is described as hemimetabolous?
- A The insect has a nymphal and pupal stage.
 - B The insect has a larval stage.
 - C The insect has a pupal stage.
 - *D The insect has a nymphal stage.**
90. _____ are the individual light-sensing and image forming units of the insect's compound eye.
- A ocelli
 - B Rhabdomeres
 - *C ommatidia**
 - D Cornea
91. What is the function of an aeropyle of an insect's egg?
- A excrete nitrogenous wastes
 - B absorb moisture
 - C prevent water loss
 - *D gas exchange**

92. Which structure would not be found on an insect's leg?
- *A propodeum
 - B coxa
 - C tarsomere
 - D arolium
93. What order of insect vectors Chagas disease?
- *A Hemiptera
 - B Lepidoptera
 - C Diptera
 - D Orthoptera
94. Cochineal is a natural product produced from:
- *A scales
 - B grasshoppers
 - C beetles
 - D mites
95. After its second molt an insect is a _____ instar.
- *A third
 - B second
 - C final
 - D first
96. Which insect orders are exclusively herbivorous?
- *A Orthoptera and Phasmatodea
 - B Psocoptera and Trichoptera
 - C Thysanoptera and Neuroptera
 - D Lepidoptera and Hemiptera
97. _____ are the two orders of primitively wingless insects.
- A Diplura and Collembola
 - *B Archaeognatha and Thysanura
 - C Apterygota and Thysanura
 - D Protura and Microcoryphia
98. What do the orders Mantodea and Blattodea have in common?
- A sucking mouthparts
 - B blood suckers
 - *C eggs are produced inside a pouch or ootheca
 - D hind wings are modified into halteres

99. **Dermaptera or earwigs are most closely related to which insect order?**
- A Hemiptera
 - *B Orthoptera**
 - C Coleoptera
 - D Hymenoptera
100. **Katydids belong to which insect order?**
- *A Orthoptera**
 - B Zoraptera
 - C Hemiptera
 - D Embioptera
101. **A beating tray or beat sheet is best used to collect which type of insects?**
- A none of the above
 - B insects that are nocturnal and attracted to light
 - *C insects that frequent plants and are reluctant to fly or run**
 - D insects that scurry across the ground rather than fly
102. **A hearing organ of an insect is the _____.**
- A labrum
 - B vertex
 - C frons
 - *D tympanum**
103. **Most digestion in insects occurs in the:**
- A crop
 - *B midgut**
 - C foregut
 - D hindgut
104. **The phrase “endemic” insect refers to:**
- A invasive
 - B occurrence in a desert habitat
 - *C native to or limited to a certain region**
 - D occurrence in an unfavorable environment
105. **In what order of insects are the front and hind wings held together by hamuli?**
- *A Hymenoptera**
 - B Lepidoptera
 - C Hemiptera
 - D Diptera

106. _____ can be used as biological control agents to help control pests.
- *A all of these
 - B parasitic wasps
 - C lacewings
 - D ladybird beetles
107. The developmental stage of an insect between molts is called a/an _____.
- *A instar
 - B cocoon
 - C morph
 - D larva
108. Collophore and furcula are morphological terms associated with which order of insects?
- *A Collembola
 - B Lepidoptera
 - C Ephemeroptera
 - D Odonata
109. 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 endocuticle
 - B epicuticle
 - C cuticulin layer
 - D exocuticle
110. Digging legs of mole crickets are what functional type?
- A saltatorial
 - *B fossorial
 - C raptorial
 - D cursorial
111. This best choice for a chemical to use in an insect kill jar is _____.
- A naphthalene
 - B potassium cyanide
 - C paradichlorobenzene
 - *D ethyl acetate
112. Which part of an insect's antenna articulates with its head capsule?
- A arista
 - *B scape
 - C pedicel
 - D flagellum

113. Which structure lies between the crop and the gastric caecae in the insect digestive system?
- A colon
 - B esophagus
 - C pyloric valve
 - *D proventriculus**
114. An insect has a protective cuticle that allows it to _____.
- A produce biological defense compounds (immune response)
 - B use chemo-and mechano-receptors
 - *C all of the above**
 - D self-repair (if damaged)
115. A legless, eyeless, vermiform larva that is approximately 5 mm in length would probably belong to what insect order?
- A Orthoptera
 - B Blattodea
 - *C Siphonaptera**
 - D Odonata
 - E Ephemeroptera
116. The hypopharynx separates the mouth opening or food canal from the _____.
- A labrum
 - B mandibles
 - C cibarium
 - *D salivarium**
117. The furca is best described as:
- *A An internal brace for the legs.**
 - B A fulcrum for the wings.
 - C A hinge for the neck.
 - D A springing organ.
118. What was a major arthropod borne disease that resulted in great losses for Napoleon on his campaign to Russia?
- A malaria
 - *B epidemic typhus fever**
 - C plague
 - D yellow fever
119. Monarch butterflies depend on which plant for their survival?
- A trumpet vine
 - *B milkweed**
 - C red clover
 - D daisies

120. Puddling is a behavior in the _____ where adults aggregate and drink from mud puddles or moist soil.
- A Trichoptera
 - B Thysanoptera
 - C Phasmatodea
 - *D Lepidoptera**
121. The “scales” of butterflies are _____.
- *A flattened setae**
 - B campaniform sensilla
 - C halteres
 - D frons
122. A _____ is the immature, aquatic stage of a dobsonfly.
- A ant lion
 - B hellbender
 - *C hellgrammite**
 - D grub
123. 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
124. Giant water bugs belong to the order Hemiptera and are in the family _____.
- A Danaidae
 - B Dytiscidae
 - *C Belostomatidae**
 - D Muscidae
125. The "vampire" mite that has been a serious pest of managed honey bees is the _____.
- A wax mite
 - B scabies mite
 - *C varroa mite**
 - D honey mite
126. Which abdominal structure of an insect is unpaired?
- *A epiproct**
 - B paraproct
 - C cerci
 - D valvifer

127. Which part of the leg lies between the femur and the tarsus?
- A trochanter
 - B arolium
 - C coxa
 - *D tibia**
128. How many abdominal segments are found in a typical insect?
- A more than 15
 - *B 6 to 11**
 - C less than 5
 - D 12 or 13
129. Imaginal discs are best described as:
- A underdeveloped legs and wings.
 - B control centers for embryonic development.
 - C vestigial reproductive organs.
 - *D groups of undifferentiated cells.**
130. To which family do hard ticks belong?
- A Argasidae
 - B Simuliidae
 - *C Ixodidae**
 - D Heptageniidae
131. Immature scale insects are called _____.
- *A crawlers**
 - B gliders
 - C sliders
 - D walkers
132. Which insect order does not have aquatic stages of development?
- *A Thysanoptera**
 - B Hemiptera
 - C Coleoptera
 - D Neuroptera
133. In cicadas and other sucking insects, movement of liquid to the mouth results from the action of a _____.
- A corneal pump
 - *B cibarial pump**
 - C cuticle
 - D corneagen cell

134. Which larval type does not have walking legs?
- A eruciform
 - B Campodeiform
 - *C vermiform**
 - D scarabaeiform
135. What order of insects usually have their wings covered in flattened setae or scales?
- *A Lepidoptera**
 - B Diptera
 - C Hemiptera
 - D Coleoptera
136. An insect's cuticle is primarily made of _____, which has also been studied for its medicinal properties.
- A melanin
 - *B chitin**
 - C hemolymph
 - D melatonin
137. The bed bug, *Cimex lectularious*, is an effective vector of what pathogenic microorganism?
- A sporidia
 - *B none**
 - C loa loa
 - D wolbachia
138. Which of the following describes the jumping legs of grasshoppers.
- A natatorial
 - B raptorial
 - *C saltatorial**
 - D cursorial
139. The dorsal sclerite of each abdominal segment is called a _____.
- A coxite
 - B pleurite
 - *C tergite**
 - D sternite
140. _____ is the order of walkingsticks and leaf insects.
- *A Phasmatodea**
 - B Mantodea
 - C Mantophasmatodea
 - D Orthoptera

141. In integrated pest management, this is the point at which action must be taken to avoid economic damage from insect injury.
- A plant health level
 - *B economic threshold**
 - C economic injury level
 - D pest threshold
142. _____ is the largest professional society dedicated to the study of insects.
- *A Entomological Society of America**
 - B American Society for the Study of Insects
 - C Chinese Academy of Sciences
 - D European Entomological Society
143. Where do the larva of horse flies occur?
- A in turf
 - *B in aquatic or marshy environments**
 - C in flower beds
 - D in brush piles
144. If an insect's subesophageal ganglion were paralyzed, it would be unable to _____.
- *A eat**
 - B fly
 - C see
 - D walk
145. A caterpillar does not have _____.
- *A compound eyes**
 - B mandibles
 - C claws
 - D prolegs
146. Which of the following common name and order combination is correct?
- A Psocoptera—leafhopper
 - *B Blattodea—cockroaches**
 - C Mecoptera—lacewing
 - D Hemiptera—wasps
147. In centipedes, the "fangs" are what type of structure?
- *A modified legs**
 - B modified mouthparts
 - C maxilla
 - D mandibles

148. Which structure is NOT part of the head capsule of insects?
- A antennae
 - *B pronotum**
 - C tentorium
 - D vertex
149. _____ belong to the order Hymenoptera.
- *A wasps and ants**
 - B flies and mosquitoes
 - C grasshoppers and crickets
 - D beetles and weevils
150. A/an _____ is used by female insects to lay eggs.
- *A ovipositor**
 - B ovum
 - C cerci
 - D spermatheca
151. What is the branch of science concerned with describing, naming, and classifying organisms?
- A Phylogeny
 - B Speciation
 - C Zoology
 - *D Taxonomy**
152. Which of this information is not common on insect specimen labels?
- A county
 - B state
 - *C soil type**
 - D collector's name
153. Approximately how many species of insects have been described to date?
- A 5 million
 - B 12 million
 - *C 1 million**
 - D 500 thousand
154. The following are groups of eusocial insects:
- A ants
 - B termites
 - *C All of these are eusocial insects**
 - D gall-forming aphids

155. Ant lions belong to the order _____.
- A Diptera
 - B Coleoptera
 - C Isoptera
 - *D Neuroptera**
156. What material do solitary female bees provision for their offspring in cell chambers?
- A honey
 - B rotting meat
 - C fruit
 - *D pollen**
157. The _____ are structures of the insect head that are responsible for grinding solid food.
- A calyx
 - *B mandibles**
 - C labrum
 - D maxilla
158. Dichotomous keys are primarily based on differences and similarities in insect _____.
- A physiology
 - B pest status
 - *C morphology**
 - D behavior
159. The order Phthiraptera contains _____.
- A bristletails and silverfish.
 - *B chewing and sucking lice**
 - C dragonflies and damselflies
 - D roaches and mantids
160. The tracheal system of an insect is best described as _____.
- *A a network of hollow tubes**
 - B a radial pattern of filaments
 - C a chain of interconnecting cells
 - D a method of anaerobic respiration
161. Which structures would be found in an eruciform larva, but not in a scarabaeiform larva?
- A mandibles
 - B spiracles
 - C ocelli
 - *D prolegs**

162. The insect mouthparts include all of these structures except:
- A maxillae
 - *B clypeus**
 - C hypopharynx
 - D labium
163. 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 prothoracic gland
 - B tritocerebrum
 - C peritrophic membrane
 - *D malpighian tubules**
164. _____ are regarded as the most important group of insect pollinators.
- A Hymenoptera, Ichneumonidae
 - *B Hymenoptera, Apoidea**
 - C Coleoptera, Cantharidae
 - D Diptera, Syrphidae
165. Squash bugs belong to what insect order?
- *A Hemiptera**
 - B Diptera
 - C Coleoptera
 - D Lepidoptera
166. The followings are the parts of the insect thorax:
- A pirothorax, hexathorax and etathorax
 - *B metathorax, mesothorax and prothorax**
 - C mesothorax, metathorax and semithorax
 - D prothorax, mesothorax and entothorax
167. Approximately how many native bee species are known in North America?
- A 500
 - *B 4,000**
 - C 800
 - D 1,000
168. These insects typically hold their wings together above and over their abdomen when resting.
- A moths
 - *B butterflies**
 - C stoneflies
 - D dragonflies

169. What diseases do *Culex pipiens pipiens* and *C. p. quinquefasciatus* vector?
- A malaria
 - B dengue fever
 - C yellow fever
 - *D St. Louis encephalitis**
170. Which structures of insects are part of the ovipositor?
- A cerci
 - *B valvulae**
 - C aedeagus
 - D paraprocts
171. Malaria was eradicated in the U.S. in the mid 20th century in part because of the widespread use of _____.
- *A DDT**
 - B Sevin
 - C Deet
 - D Malathion
172. An insect with tracheal gills would probably be found in _____.
- *A a cold mountain stream**
 - B an oceanic community
 - C a sewage treatment lagoon
 - D a stagnant pond
173. Insects have _____ pair of legs and _____ primary body regions.
- A 6, 2
 - *B 3, 3**
 - C 3, 2
 - D 4, 2
174. Numerous families in the order _____ can transmit plant diseases with their piercing-sucking mouthparts.
- A Psocodea
 - B Plecoptera
 - C Strepsiptera
 - *D Hemiptera**
175. Solitary bees build nests in what type of habitat?
- A in the soil
 - *B all of the above**
 - C in hollow plant stems
 - D in existing small tree holes or cavities

176. 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, ability to live without a brain
 - *C high reproductive rate, the evolution of flight, size**
 - D size, the evolution of flight, lack of wings
177. Dutch elm disease is caused by a _____ that is carried by _____.
- *A fungus, beetles**
 - B mycoplasma, leafhoppers
 - C virus, aphids
 - D virus, thrips
178. Some insects are considered _____ because loss of their contributions to critical ecological functions could collapse a broader ecosystem.
- *A keystone Species**
 - B fundamental Species
 - C cornerstone Species
 - D base Species
179. A parsley worm is in the order _____ and the adult turns into a _____.
- A Diptera, mosquito
 - B Coleoptera, weevil
 - C Lepidoptera, cabbage looper
 - *D Lepidoptera, swallowtail**
180. The whirligig beetle has how many pairs of eyes?
- A one
 - B Four
 - *C two**
 - D three
181. _____ is an ability of insects to survive toxicity after chronic exposure to pesticides.
- A repellency
 - B resurgence
 - C tolerance
 - *D resistance**
182. One-way flow valves in the heart are called _____.
- A pulsatile organs
 - B apodemes
 - C spiracles
 - *D ostia**

183. What structures regulate air flow into and out of the tracheal system in insects?
- A ostia
 - B taenidia
 - *C spiracles**
 - D tracheoles
184. The plague, or "black death," is a disease of rodents and is transmitted by the _____.
- A Asian lady beetle
 - *B Oriental rat flea**
 - C western tarnished plant bug
 - D human body louse
185. Which of these events occurs first during insect egg development?
- A segregation of the germ cells
 - B enlargement of the germ band
 - C differentiation of germ layers
 - *D migration of the cleavage nuclei**
186. _____ is where digestive enzymes are secreted and most food absorption occurs in the insect gut.
- A stomodeum
 - *B mesenteron**
 - C proventriculum
 - D proctodeum
187. A sperm cell enters the insect egg through the _____.
- A oosome
 - B germ band
 - *C micropyle**
 - D morula
188. Which insect order contains the crickets and grasshoppers?
- A Hymenoptera
 - B Lepidoptera
 - C Blattodea
 - *D Orthoptera**
189. What is the primary chemical component of the insect's egg shell?
- A calcium
 - B lipid
 - C polysaccharide
 - *D protein**

190. Urticating hairs are associated with plants, tarantulas and what insect order?
- A Strepsiptera
 - B Mecoptera
 - C Blattodea
 - *D Lepidoptera**
191. Which structure would not be found on an insect's prothorax?
- A leg
 - B pronotum
 - *C wing**
 - D spiracle
192. Honey bees are valuable agricultural pollinators worth an estimated _____ annually in the United States.
- A \$25 Million
 - B \$98.8 Million
 - *C \$15 Billion**
 - D \$7.5 Billion
193. Which of these following components are not part of integrated pest management (IPM)?
- A economic thresholds
 - *B application of pesticides based only on calendar dates**
 - C information on the pest's life cycle and habitat
 - D biological control
194. A _____ is used to collect ground dwelling, crawling insects.
- A ultraviolet light trap
 - B Berlese funnel
 - *C pitfall trap**
 - D malaise trap
195. The state insect of Texas is the _____.
- A honey bee
 - *B monarch butterfly**
 - C Texas checkered spot butterfly
 - D lady bird beetle
196. Which of these occupies the largest volume in an unfertilized insect egg?
- *A yolk**
 - B nucleus
 - C periplasm
 - D embryo

197. Which of the following arthropods is not an insect
- A dragonfly
 - *B scorpion**
 - C fly
 - D cockroach
198. _____are not considered a biological control agent for killing insect pests.
- A microbes
 - B parasitoids
 - C predators or parasites
 - *D pheromones**
199. A suture of the exoskeleton is best described as a _____.
- A point of attachment between segments.
 - B membranous bridge.
 - C thick ridge of cuticle.
 - *D line or junction between two sclerites.**
200. Rigid, inflexible structures of the exoskeleton are called _____.
- *A sclerites**
 - B apodemes
 - C segments
 - D sutures
201. What percentage of flowering plants on Earth require insect pollination?
- A 50%
 - B 30%
 - C 95%
 - *D 75%**
202. What are the larva of mosquitoes commonly referred to as?
- A dancers
 - *B wigglers**
 - C tumblers
 - D crawlers
203. The snakeflies belong to the order _____.
- A Neuroptera
 - B Odonata
 - *C Raphidioptera**
 - D Coleoptera
 - E Megaloptera

204. The insect cuticle is between _____ and _____ microns thick.
- *A 100, 300
 - B 120, 1000
 - C 300, 400
 - D 50, 75
205. Very few insects are found in this habitat.
- *A ocean
 - B trees
 - C soil
 - D lakes
206. What are some characteristics of social insects?
- A cooperative care of the young
 - B usually associated with a confined space like a nest
 - C reproductive division of labor
 - *D All of these are characteristics of social insects
207. Which of these is not a longitudinal wing vein?
- A radius
 - B cubitus
 - *C furca
 - D costa
208. About _____ percent of people that get stung by stinging insects suffer serious reactions.
- A 4%
 - *B 3%
 - C 1%
 - D 10%
209. The blood of insects is called _____.
- A sebum
 - B hemoglobin
 - C hemocyanin
 - *D hemolymph
210. 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 Silent Spring
 - C A Bug's Life
 - D Sand County Almanac

211. Insects use their olfactory system for _____.
- A seeing
 - *B smelling**
 - C sucking
 - D hearing
212. The Hymenoptera from the list below that are not social are _____
- A sweat bees
 - B hornets
 - C honey bees
 - *D leafcutter bees**
213. 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 imago
 - B larva
 - C third instar
 - *D pupa**
 - E subimago
214. Water boatmen have _____ legs used for swimming.
- *A Natatorial**
 - B Cursorial
 - C Fossorial
 - D Raptorial
215. The aquatic insect order whose immature stages sometimes create rock cases is _____.
- A Odonata
 - B Ephemeroptera
 - *C Trichoptera**
 - D Diptera
216. What is the causal agent of pink eye in cattle that can be vectored by flies?
- *A Moraxella bovis**
 - B Sarcoptes scabiei
 - C Trypanosoma evansi
 - D Corethrella bovis
217. 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 monarch butterfly**
 - B flame skimmer
 - C green darner
 - D western tarnished plant bug

218. An insect's head is specialized for _____.
- *A ingestion and perception
 - B reproduction and digestion
 - C adaptation and respiration
 - D orientation and locomotion
219. Caddisflies belong to the order _____.
- *A Trichoptera
 - B Lepidoptera
 - C Isoptera
 - D Neuroptera
220. What function do protein cross-linkages have in the insect exoskeleton?
- A They make membranes more flexible.
 - *B They make sclerites more rigid.
 - C They lighten the color of the exoskeleton.
 - D They make it impermeable to water.
221. Insects that pass through the egg, larva, pupa, and adult stages in their life cycle have _____.
- A no metamorphosis
 - B gradual metamorphosis
 - *C complete metamorphosis
 - D incomplete metamorphosis
222. The discoverer of mosquito transmission of malaria was _____.
- A Carl Linnaeus
 - B Carlos Finlay
 - C E.O. Wilson
 - *D Sir Ronald Ross
223. The fireflies belong to which insect order?
- A Diptera
 - B Megaloptera
 - *C Coleoptera
 - D Neuroptera
224. Widely used pesticides that have been in the spotlight recently for being toxic to honey bees include _____.
- A spinosyns
 - B neem oil
 - *C neonicotinoids
 - D diamides

225. The frons and the clypeus, located on the head, are separated by the _____.
- A subgenal suture
 - B labrum
 - *C epistomal suture**
 - D gena
226. _____ is a primary characteristic of the order Orthoptera and is the type of forewing of this group.
- *A tegmina**
 - B elytra
 - C hamuli
 - D hemelytra
227. What insects are included in the order Pthiraptera?
- A flies
 - B cockroaches
 - *C lice**
 - D bed bugs
228. Which structures are not a component of the endocrine system in insects?
- A ventral ganglia
 - B corpora cardiac
 - *C salivary glands**
 - D prothoracic glands
229. Honeybees use the _____ dance to communicate the location of food sources from hive.
- A round
 - B square
 - *C waggle**
 - D figure eight
230. 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 Urban Entomology
 - *B All of the above**
 - C Insect Ecology
 - D Aquatic Entomology
231. _____ determines whether bee larvae become a queen or worker.
- *A food**
 - B morphology
 - C type of wings
 - D gender

232. The feces of triatomid bugs harbor the causative agent for what disease in humans?
- *A Chagas disease
 - B Pierce's disease
 - C Malaria
 - D Dengue
233. What are two distinguishing features of the subphylum Hexapoda that separates them from other classes of arthropods?
- A Having three pairs of legs and an exoskeleton
 - B A three-segmented body and the ability to molt
 - C The ability to undergo metamorphosis and having a three-part body
 - *D Having a three-part body and six legs
234. What is the name for the "shell" of an insect egg?
- A blástula
 - *B chorion
 - C serosa
 - D morula
235. Which part of the exoskeleton is formed by a single layer of epithelial cells?
- A procuticle
 - B basement membrane
 - *C epidermis
 - D cuticulin layer
236. An apodeme could NOT be described as _____.
- *A a flexible joint in the exoskeleton.
 - B a point of attachment for muscles.
 - C an internal ridge of the exoskeleton.
 - D a brace to strengthen the exoskeleton.
237. 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 shell; appendage
 - B hard; wing
 - C shield; appendage
 - *D sheath; wing
238. A mass of neural tissue that contains mostly nerve cell bodies and interneurons in an insect is called a _____.
- A synapse
 - *B ganglion
 - C motor neuron
 - D nerve

239. The following are natural products derived from insects:
- *A Silk, natural red 4, royal jelly and honey
 - B Silk, carmine and polysaccharides
 - C Carmine, silk, honey and blue dyes
 - D Natural green 6 and honey
240. A tool that allows one to adjust the height and position of a pinned specimen and accompanying label is a _____.
- *A pinning block
 - B spreading board
 - C forceps
 - D point
241. What is the mouthpart called for feeding within the Lepidoptera?
- *A proboscis
 - B pronotum
 - C paranota
 - D pylorus
242. 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 whitefly
 - B pirate bug
 - C scale
 - *D thrips
243. What was a major cotton pest that was successfully eradicated in the U.S.?
- A sunflower head moth
 - B lygus bug
 - *C boll weevil
 - D stink bug
244. What is the reservoir of louse-borne typhus?
- A cats
 - *B humans
 - C horses
 - D dogs
245. The majority of native bees nest in what type of habitat?
- A bamboo stems
 - B trees
 - *C soil
 - D flowering plants

246. Which structure never occurs on an abdominal segment?
- A spine
 - *B pleural suture**
 - C apodeme
 - D spiracle
247. Which abdominal structures of insects are primarily sensory in function?
- A sternites
 - B paraprocts
 - *C cerci**
 - D valvulae
248. What structure is found in Diptera, but NOT in Hymenoptera?
- A cerci
 - B stigma
 - C stinger
 - *D haltere**
249. The Latin word "Insectum" means:
- *A cut into pieces**
 - B segments
 - C insect
 - D small pieces
250. Which structure is not part of an insect's tracheal system?
- A spiracle
 - B tracheole
 - *C sinus**
 - D taenidia