Chapter 33
Invertebrates

1) Which of the following excretory structures is INCORREcrL Y matched with its class?
A) flame cells-Hydrozoa
.B) malpighian tubules-Insecta
C) flame cells- Turbellaria
D) thin region of cuticle-Crustacea
E) meta nephridia -Oligochaeta

2) All of the following animal groups have evolved terrestrial life forms EXCEPT
A) Mollusca.
B) Crustacea.
C) Echinodermata.
D) Arthropoda.
E) Vertebrata.

3) A new species of terrestrial animal is discovered with the following characteristics: exoskeleton;
tracheal system for gas exchange; modified segmentation. A knowledgeable zoologist would predict
that its adults probably also would have
A) eight legs.
B) a water vascular system.
C) a sessile lifestyle.
D) wings.
E) parapodia.

For the following questions, match the phrases with the choices below. Each choice may be used once, more than once, or *not at*
all.

A. Cnidaria
B. Annelida
C. Mollusca
D. Arthropoda
E. Echinodermata

4) protostomes that have an open circulatory system and an exoskeleton of chitin

5) deuterostomes that have an internal skeleton

6) protostomes that have a closed circulatory system and true segmentation

7) A radially symmetrical animal that has two embryonic germ layers belongs to which phylum?

A) Porifera (parazoa)
B) Cnidaria
C) Platyhelminthes
D) Aschelminthes
E) Echinodermata

8) An arthropod has all the following characteristics EXCEPT
A) protostome development.
B) bilateral symmetry.
C) pseudocoelom.
D) three embryonic germ layers.
E) true tissues.

Use Figure 33.1 *to answer the questions below. The following chart of the Animal kingdom* is *set up as a phylogenetic tree. The dashed lines on the tree represent certain evolutionary changes. For example, above line x , all organisms are triploblastic (three germ layers). Place each of the characteristics in the questions that follow on the appropriate line in the chart .*

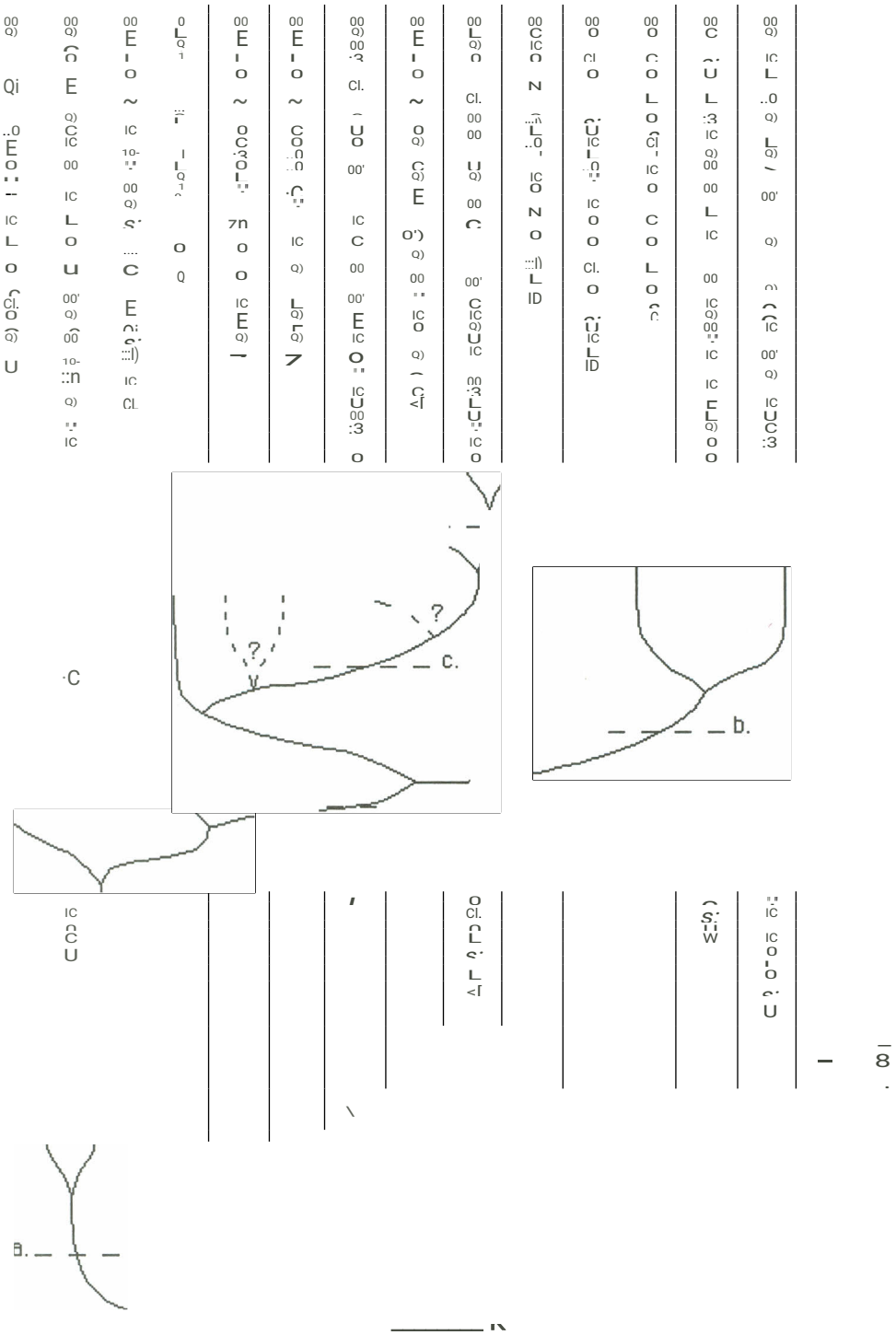

Figure 33.1

9) radial symmetry

10) protostome
development-schizocoelomate

11) deuterostome
development-enterocoelomate

12) backbone

13) 13) All of the following are characteristics of the phylum Cnidaria EXCEPT
A) a gastrovascular cavity.
B) a polyp stage.
C) a medusa stage.
D) cnidocytes.
E) a pseudocoelom.

14) Which class of the phylum Cnidaria occurs *only* as a polyp?
A) hydrozoa
B) scyphozoa
C) anthozoa
D) Only A and C are correct.
E) A, B, and C are correct.

15) Which class of the phylum Cnidaria occurs *primarily* as a polyp?
A) hydrozoa
B) scyphozoa
C) anthozoa
D) Only A and C are correct.
E) A, B, and C are correct.

16) Which class of the phylum Cnidaria includes the animals commonly called jellyfish?
A) Hydrozoa
B) Scyphozoa
C) Anthozoa
D) Only A and C are correct.
E) A, B, and C are correct.

17) Which of the following are NOT found in sponges?
A) oscula
B) spongocoels
C) cnidocytes
D) spicules
E) amoebocytes

18) In the phylum Platyhelminthes, which of the following classes is mostly nonparasitic?
A) Turbellaria
B) Trematoda
C) Cestoda
D) Only Band C are correct.
E) A, B, and C are correct.

19) In the phylum Platyhelminthes, which of the following classes is mostly parasitic?
A) Turbellaria
B) Trematoda
C) Cestoda
D) Only Band C are correct.
E) A, B, and C are correct.

20) In the phylum Platyhelminthes, which of the following classes has life cycles that are typically an alternation of sexual and asexual phases and may require an intermediate host?
A) Turbellaria
B) Trematoda
C) Cestoda
D) Only Band C are correct.
E) A, B, and C are correct.

21) All of the following correctly characterize nematodes EXCEPT that
A) they play an important role in decomposition.
B) they have both circular and longitudinal muscles.
C) they have a pseudocoelom.
D) they have a complete digestive system.
E) they are often parasitic.

22) Which molluscan class includes animals that undergo embryonic torsion?
A) Polyplacophora
B) Bivalvia
C) Cephalopoda
D) Gastropoda
E) All molluscan classes have this characteristic.

23) Which molluscan class includes clams?
A) Polyplacophora
B) Bivalvia
C) Cephalopoda
D) Gastropoda
E) None of the above; clams are not mollusks.

24) Which molluscan class includes the most "intelligent" invertebrates?
A) Polyplacophora
B) Bivalvia
C) Cephalopoda
D) Gastropoda
E) Both Band C are equally "intelligent."

25) Annelids are abundant and successful organisms characterized accurately by all of the following
EXCEPT
A) a hydrostatic skeleton.
B) segmentation.
C) a complete digestive system.
D) some parasitic forms.
E) a cuticle made of chitin.

26) All of the following are characteristics of arthropods EXCEPT
A) an exoskeleton.
B) numerous species.
C) jointed appendages.
D) a diversity of gas exchange structures.
E) a dorsal nerve cord.

27) Which of the following is a characteristic of echinoderms?
A) radial symmetry
B) spiral cleavage
e) incomplete digestive system
D) external skeleton
E) a lophophore

28) Sponges are limited to feeding on small food particles because
A) they have no mouth.
B) they have an incomplete digestive tract.
e) their cell membranes are highly selective.
C) their digestion is entirely intracellular.
D) they lack a mechanism for bringing food into their bodies.

29) Muscles and nerves in their simplest forms occur in the
A) sponges.
B) cnidarians.
e) nematodes.
C) flatworms.
D) ribbon worms.

30) The best way to describe the brain of a sea anemone would be as
A) a thick ring around the mouth.
B) a series of ganglia at the bases of the tentacles.
e) a pair of ganglia at the anterior end.
C) a single ganglion in the body wall.
D) nonexistent.

31) Which characteristic is shared by cnidarians and flatworms?
A) Both Band D below are correct.
B) flame cells
e) radial symmetry
D) a gut with a single opening
E) dorsoventrally flattened bodies

32) One method of reducing the incidence of blood flukes in a human population would be to
A) reduce the mosquito population.),
B) reduce the freshwater snail population.
C) purify all drinking wa ter.
D) ensure that all meat is properly cooked.
E) carefully wash all raw fruits and vegetables.

33) The larvae of many common human tapeworms are usually found
A) encysted in human muscle.
B) encysted in the muscle of an animal such as a cow or pig.
C) in the abdominal blood vessels of humans.
D) in the human intestine.
E) in the intestines of cows and pigs.

34) While snorkeling, a student observes an active marine animal that has a series of muscular tentacles bearing suckers associated with its head. There is no evidence of segmentation, but a pair of large, well-
developed eyes are evident. The student is observing an animal belonging to the class
A) Gastropoda.
B) Cephalopoda.
C) Polyplacophora.
D) Polychaeta.
E) Bivalvia.

35) Among the invertebrates, arthropods are unique in possessing
A) a notochord.
B) ventral nerve cords.
C) open circula tion.
D) jointed appendages.
E) segmented bodies.

36) The presence or absence of mandibles can be used to distinguish between
A) insects and centipedes.
B) insects and crustaceans.
C) insects and millipedes.
D) insects and spiders.
E) centipedes and millipedes.

37) The possession of two pairs of antennae will distinguish
A) spiders from insects.
B) crustaceans from insects.
C) millipedes from centipedes.
D) millipedes from insects.
E) insects from centipedes.

38) While working in your garden, you uncover an animal with many legs, mostly as two pairs per segment. The animal must be a
A) millipede.
B) caterpillar.
C) centipede.
D) polychaete worm.
E) sow bug.

39) The developmental process of which of the following animals involves a process called incomplete
metamorphosis?
A) starfish
B) butterfly
C) spider
D) grasshopper
E) crayfish

40) You find a small animal with eight legs crawling up your bedroom wall. Closer examination will reveal that this animal has
A) Both C and E below are correct.
B) Both D and E below are correct.
C) antennae.
D) no antennae.
E) chelicera.

41) Both echinoderms and cnidarians
A) Both D and E below are correct.
B) are radially symmetrical.
C) are segmented.
D) have stinging cells.
E) have three embryonic tissue layers.

Answer the following questions with the choices below. Each choice may be used once, more than once, 0; not at all.

A. class Crinoidea (sea lilies)
B. class Asteroidea (sea stars)
C. class Ophiuroidea (brittle stars)
D. class Echinoidea (sea urchins and sand dollars)
E. class Holothuroidea (sea cucumbers)

42) They can evert their stomach through their mouth to feed.

43) They have distinct central disks and long, flexible arms.

44) They are elongated in the oral-aboral axis.

45) Their mouth is directed upward.

46) They have long, movable spines.

47) Humans can acquire trichinosis by
A) failing to practice safe sex.
B) eating undercooked pork.
e) inhaling the eggs of worms.
C) eating undercooked beef.
D) being bitten by tsetse flies.

48) While sampling marine plankton, a student encounters large numbers of eggs in her samples. She rears some of the eggs in the laboratory for further study and finds that the blastopore becomes the mouth in a complete digestive system. The embryo develops into a trochophore larva and eventually has a coelom and open circulation. These eggs belonged to aln)
A) annelid.
B) echinoderm.
e) mollusk.
C) nemertine.
D) arthropod.

49) The cells in a sponge responsible for trapping food particles from circulating water are called
A) amoebocytes.
B) choanocytes.
C) mesophyl cells.
D) spongin fibers.
E) herma phrocytes.

50) Membes of the Cnidaria
A) are not capable of locomotion because they lack contractile tissue.
B) are primarily filter feeders.
C) come in two body forms: mobile polyps an sessile medusae.
D) have a hydrostatic skeleton.
E) are the simplest organisms with a complete gut (two openings).

51) The cnidoyctes of the Cnidaria are analogous to the _____of the Ctenophora.
A) colloblasts
B) choanocytes
C) flame cells
D) tentacles
E) amoebocytes

52) Corals are most closely related to
A) jellyfish.
B) freshwater hydras.
C) sea anemones.
D) sponges.
E) comb jellies.

53) Which of the following statements is UNTRUE about the method of feeding in the Cestoidea?
A) They lack a digestive tract.
B) They subsist on undigested food.
C) As adults, they live in a digestive tract.
D) They are parasites.
E) They absorb nutrients across the walls of their body.

54) In a small stream, you pick up a rock and observe inany small wormlike organisms crawling on its undersurface. You decide that they belong to the Platyhelminthes. To which class do th~y belong?
A) Cestoidea
B) Monogenea
C) Turbellaria
D) Trematoda
E) Plana ria

55) All of the following characterize the phylum Rotifera EXCEPT
A) a complete digestive tract.
B) a crown of cilia at the anterior end that seems to rotate.
C) parthenogenic reproduction.
D) life stages resistant to desiccation.
E) being mostly marine.

56) *Caenorhabditis elegans,* like the fly *Drosophila melanogaster,* has become a model research organism in
developmental biology. To which phylum does it belong?
A) Arthropoda
B) Annelida
C) Platyhelminthes
D) Nematoda
E) Rotifera

57) The proboscis of a ribbon worm (phylum Nemertea) is operated hydraulically by a fluid-filled sac. This sac is thought by some biologists to be homologous to what protostome structure?
A) coelom
B) pseudocoelom
C) digestive tract
D) blastopore
E) heart

58) A lophophore is used by bryozoans, phronids, and brachipods
A) for locomotion.
B) as a larval stage.
C) for feeding.
D) for sensory reception.
E) as a skeletal system.

59) All mollusks share the following EXCEPT
A) a muscular foot.
B) a visceral mass.
C) a mantle.
D) a trochophore larval stage.
E) an open circulatory system.

60) A terrestrial mollusk without a shell would have to belong to the class
A) Gastropoda.
B) Polyplacophora.
C) Bivalvia.
D) Cephalopoda.
E) Arthropoda.

61) A radula is not present in the
A) Gastropoda.
B) Polyplacophora.
C) Bivalvia.
D) Cephalopoda.
E) More than one of the above is correct.

Use the following choices to answer the following questions. Each choice may be used once, more than once, or *not at all.*

A. Oligochaeta
B. Polychaeta
C. Hirundinea
D. two of the above
E. all of the above

62) have para podia

63) parasitic feeding

64) segmented

65) agriculturally important

66) mostly marine

67) medically important

68) A synapomorphic characteristic for the arthropod subgroup Chelicerata would be the presence of
A) chelicerae.
B) an open circulatory system.
C) an exoskeleton.
D) chewing mandibles.
E) paired, segmented appendages.

69) Recent molecular evidence suggests that which of the following phyla are most closely related to the arthropods?
A) Annelida
B) Mollusca
C) Onychophora
D) Echinodermata
E) Nematoda

70) Spiders, insects, crustaceans, and centipedes are all arthropods. If you accept the Uniramia as a valid taxon, which of these four kinds of organisms are most closely related?
A) spiders and insects
B) insects and crustaceans
C) crustaceans and centipedes
D) centipedes and insects
E) spiders and crustaceans

71) Recent evidence from genetics and molecular biology challenges the answer to the preceding question.
If you accept this recent evidence, what would be your answer to the preceding question?
A) spiders and insects
B) insects and crustaceans
C) crustaceans and centipedes
D) centipedes and insects
E) spiders and crustaceans

72) Which of the following members of the class Arachnida are primarily parasitic?
A) spiders
B) scorpions
C) ticks and mites
D) trilobites
E) eurypterids

73) Which of the following characteristics most likely explains why insects are so successful?
A) exoskeleton
B) wings
C) jointed appendages
D) chewing mandibles
E) internal fertilization