

Chapter 15 Questions

1. Members of phylum Porifera have skeletal networks composed of
 - a) glassy silica needles.
 - b) calcium carbonate needles
 - c) fibrous protein.
 - d) all of the above.
 - e) a) and b) above.

2. Sponges eat by
 - a) lying in wait on the seafloor, then leaping up, attaching to passing fish, and soaking up their body fluids.
 - b) drifting in the water, then leaping sideways, attaching to passing fish, and soaking up their body fluids.
 - c) sweeping water into their pores using flagellated cells, and straining out plankton and food particles.
 - d) squeezing themselves, then expanding to absorb water full of plankton and food particles.
 - e) wiping food from the plates of humans, then digesting it at night.

3. The two main forms in which cnidarians occur are
 - a) free-swimming polyps and sedentary medusae.
 - b) free-swimming medusae and sedentary polyps.
 - c) free-swimming vertebrates and sedentary invertebrates.
 - d) free-swimming autotrophs and sedentary heterotrophs.
 - e) free-swimming heterotrophs and sedentary autotrophs.

4. Which of the following is true about cnidarians?
 - a) They are voracious predators that use complex sensory systems to track down prey, which they immobilize by stinging with a toxin.
 - b) They are voracious predators that can out-swim their prey, which they immobilize by stinging with a toxin.
 - c) They are voracious predators that are attached to the seafloor, or that swim by rhythmic contractions of the body. They immobilize their prey by stinging them with a toxin.
 - d) They are herbivores (primary consumers) that are attached to the seafloor, or that swim by rhythmic contractions of the body.
 - e) They are herbivores with complex sensory systems including color vision that permits them to detect and select the choicest algae.

5. You would most likely find a coral reef in which of the following environments?
 - a) in clear shallow water near the poles, and near a large river.
 - b) in murky shallow water near the equator, and near a large river.
 - c) in clear shallow water near the poles, and far from any large river.
 - d) in murky shallow water near the equator, and far from any large river.
 - e) in clear shallow water near the equator, and far from any large river.

6. Coral reefs grow best in relatively shallow water. This is mostly because
 - a) the symbiotic dinoflagellates (zooxanthellae) they contain need light in order to carry on photosynthesis.
 - b) the symbiotic diatoms (zooxanthellae) they contain need light in order to carry on photosynthesis.
 - c) shallow water contains higher levels of oxygen than deep water does.
 - d) the calcium carbonate needed for reef building comes from land.
 - e) deep water is more dangerous, containing mean-looking fish with big teeth (like angler fish).

7. Which of the following is true about cnidarians?
- Their primitive structure, including the lack of a circulatory system, has kept them from being successful and widespread as a phylum.
 - Their advanced features such as their blind-sac digestive system, have led to their success as a phylum.
 - They are successful as a phylum despite their relative simplicity. Obviously complexity is not required for evolutionary success.
 - Their lack of success has nothing to do with their simple structure. It all comes down to motivation, and cnidarians are simply unmotivated.
8. Two of worm phyla – the nematodes and the annelids - are considered to be links to more advanced animals (including chordates), in part because they possess the following attributes:
- A head with a concentration of sensors, a flow-through digestive system, and a circulatory system.
 - Radial symmetry, a flow-through digestive system, and a circulatory system.
 - 2 types of cell: epidermis and gastrodermis, and radial symmetry.
 - A head with a concentration of sensors, a blind-sac digestive system, and a circulatory system.
9. Flatworms (members of phylum Platyhelminthes) must be flat in order to
- exchange gases and wastes with the environment by diffusion.
 - slide under rocks.
 - roll up easily like a piece of tape.
 - have an efficient flow-through digestive system.
 - avoid detection by predators.
10. One risk of eating sashimi is
- becoming parasitized by a member of phylum Rhodophyta.
 - becoming parasitized by a member of phylum Porifera.
 - becoming parasitized by a member of phylum Platyhelminthes.
 - becoming parasitized by a member of phylum Annelida.
 - becoming parasitized by a member of phylum Nematoda.
11. Members of phylum Annelida are of interest because
- They have segmented bodies, a feature found in more advanced organisms.
 - They lack true excretory systems, but otherwise show the full suite of advanced features such as having heads.
 - They lack true circulatory systems, but otherwise show the full suite of advanced features such as having heads.
 - They lack true muscular systems, but otherwise show the full suite of advanced features such as having heads.
 - They lack true excretory systems, but otherwise show the full suite of advanced features such as having heads.
12. The three classes of phylum Mollusca are
- Gastropoda (including snails and the like), Bivalvia (including clams and the like), and Cephalopoda (including squid and the like).
 - Gastropoda (including worms and the like), Bivalvia (including squid and the like), and Cephalopoda (including shrimp and the like).
 - Gastropoda (including clams and the like), Bivalvia (including snails and the like), and Cephalopoda (including squid and the like).
 - Gastropoda (including squid and the like), Bivalvia (including snails and the like), and Cephalopoda (including shrimp and the like).
 - Gastropoda (including squid and the like), Bivalvia (including clams and the like), and Cephalopoda (including snails and the like).
13. Which of the following is least likely to be true about gastropods?
- You might find one grazing on algae.
 - You might find one eating another animal.
 - You might find one on a sandy bottom.
 - You might find one on a rocky bottom.
 - You might find one up in the water, far from the bottom.

14. Bivalves are most likely to obtain energy from
- active pursuit of prey
 - lying in wait, then suddenly ambushing prey.
 - filtering food through their gills.
 - filtering food through their baleen.
 - chewing on seaweed.
15. Which of the following is least likely to be true about cephalopods?
- You might find one grazing on algae.
 - You might find one eating another animal.
 - You might find one on a sandy bottom.
 - You might find one on a rocky bottom.
 - You might find one up in the water, far from the bottom.
16. Which of these is *not* characteristic of members of the phylum Arthropoda?
- An exoskeleton made of chitin
 - Articulated appendages
 - Striated muscle
 - Extremely well developed nervous system compared to all other invertebrates
17. All chordates share these three characteristics:
- a large brain, a backbone, and warm blood.
 - gill slits during some part of the life, a notochord, and a dorsal nervous system.
 - vertebrae, a dorsal nervous system, and either gills or lungs.
 - an internal skeleton, gill slits during some part of the life, and warm blood.
 - a skeleton made of bone, gill slits during some part of the life, and a dorsal nervous system.
18. Tunicates are most likely to obtain energy from
- active pursuit of prey
 - lying in wait, then suddenly ambushing prey.
 - filtering food through a mucus net.
 - filtering food through their baleen.
 - chewing on seaweed.
19. The ancestor of all modern vertebrates probably lived about _____ and looked something like
- 20 million years ago ... *Amphioxus*
 - 120 million years ago ... A dinosaur
 - 500 million years ago ... *Amphioxus*
 - 800 million years ago ... a tunicate.
 - 2.2 billion years ago ... a trilobite.
20. The following is true about sharks and rays:
- They must swim constantly to keep a flow of oxygenated water over their gills.
 - They must swim constantly in order to find enough prey to stay alive.
 - They must swim constantly as part of the karmic punishment for their previous lives as attorneys.
 - It is a myth that sharks and rays must swim constantly. There are many that live on the seafloor.
 - It is a myth that all sharks and rays must swim constantly. Their air bladders permit them to drift at one depth.
21. Which of the following might be food for a shark?
- humans
 - plankton
 - marine mammals
 - all the above
 - a) and c)

22. All the following are true about swimming behavior of fish except
- a) the top speed measured for a fish is about 70 miles/hr.
 - b) S-shaped undulations like those employed by eels are the most efficient form of propulsion.
 - c) Fish having a torpedo-like body enjoy reduced drag compared to fish having other shapes.
 - d) a relatively inflexible body and a hinged tail helps reduce drag losses.
 - e) Fish must swim constantly to keep from sinking, unless they are benthic.
23. The biggest fish in the ocean is
- a) the blue whale.
 - b) the great white shark.
 - c) the whale shark.
 - d) the black sea bass.
 - e) the giant squid.
24. A school of fish
- a) is always led by a dominant fish called the *school master*.
 - b) is a very common occurrence – over 90% of all fish species form schools.
 - c) is a very uncommon occurrence – under 10% of all fish species form schools.
 - d) may appear to a potential predator as an even bigger predator.
 - e) is how fish learn to detect and avoid predators.
25. The following is true of all seabirds
- a) They must lay their eggs on land.
 - b) Some birds spend their entire lives at sea, including laying eggs that float in the water.
 - c) They have salt-excreting glands for ridding their body of excessive salt.
 - d) a) and c).
 - e) b) and c).
26. In order to stay aloft for weeks, the albatross has wings that are:
- a) short and wedge like.
 - b) long and wedge like.
 - c) short and aerodynamically efficient.
 - d) long and aerodynamically efficient.
 - e) broad, flat, and well adapted to slow flight.
27. All the following are true about penguins *except*:
- a) the species found near the North Pole are typically larger than those found near Antarctica.
 - b) they range from the size of a duck to a height of more than one meter, depending on species.
 - c) they prey on fish and zooplankton.
 - d) they can't fly, but they swim with grace and agility.
 - e) they are the most important avian (bird) predators in the southern ocean.
28. Some of the key characteristics of mysticete whales include the fact that
- a) they hunt using sonar.
 - b) they hunt squid at ocean depths of over 1000 m.
 - c) they eat by straining phytoplankton through their baleen.
 - d) they eat by straining zooplankton through their baleen.
 - e) they can stun prey using sound.
29. Some of the key characteristics of odontocete whales include the fact that
- a) they hunt using sonar.
 - b) they eat by straining phytoplankton through their baleen.
 - c) they eat by straining zooplankton through their baleen.
 - d) They require 3 metric tons of krill a day to survive.

30. Some of the adaptations all whales have for aquatic life include:
- a) special salt excreting glands.
 - b) a nostril or nostrils on the top of the head instead of the front.
 - c) thick blubber to provide insulation.
 - d) a body temperature similar to that of the surrounding seawater
 - e) b and c above
31. Two main differences between seals and sea lions are:
- a) sea lions have external ears, and partially fused hind limbs that make it hard to walk on land.
 - b) seals have external ears, and partially fused hind limbs that make it hard to walk on land.
 - c) sea lions have external ears, and hind limbs with a range of motion that makes it easy to walk on land.
 - d) seals have external ears, and hind limbs with a range of motion that makes it easy to walk on land.
32. Which of the following is true about sirenians?
- a) They include manatees and dugongs, and they are voracious eaters of small fish and crustaceans.
 - b) They include manatees and dugongs, and they are voracious eaters of squid and crustaceans.
 - c) They include manatees and dugongs, and they are voracious eaters of autotrophs.
 - d) They include manatees and walruses, and they are voracious eaters of small fish and crustaceans.
 - e) They include manatees and walruses, and they are voracious eaters of autotrophs.
33. According to the text the most successful animal phylum on earth is:
- a) Phylum Chordata
 - b) Phylum Nematoda
 - c) Phylum Porifera
 - d) Phylum Arthropoda
 - e) Phylum Echinodermata
34. The animals generally considered the most intelligent of the marine invertebrates are:
- a) dogfish
 - b) hagfish
 - c) cephalopods
 - d) polychaetes
 - e) cnidarians
35. This phylum is characterized by organisms that eat and defend themselves using stinging cells:
- a) Mollusca
 - b) Arthropoda
 - c) Cnidaria
 - d) Porifera
 - e) Platyhelminthes
36. Which of the following organisms shares the same phylum as humans?
- a) A lobster
 - b) An octopus
 - c) A sea star
 - d) A tunicate
 - e) A sea wasp
37. This phylum is characterized by individuals having radial symmetry based on 5 sections at some point in their development
- a) Phylum Chordata
 - b) Phylum Nematoda
 - c) Phylum Porifera
 - d) Phylum Arthropoda
 - e) Phylum Echinodermata

Chapter 14.8 Questions

38. The most common zooplankton in terms of number of individuals are
- a) jellyfish.
 - b) krill.
 - c) ctenophores.
 - d) copepods.
 - e) featherduster worms.
39. The word *krill* refers to
- a) a family group of killer whales.
 - b) a shrimplike crustacean belonging to genus *Euphausia*.
 - c) any zooplankton eaten by whales.
 - d) any phytoplankton eaten by whales.

Additional Questions

40. Compare the feeding behavior of odontocete and mysticete whales. How do these differences affect 1) body shape and 2) brain size (odontocetes have much bigger brains relative to their body weight than do mysticetes).
41. In your opinion, what constitutes “success” for a group of animals? Specifically, if a genus hasn’t changed much in millions of years, is it a successful genus, or an unsuccessful one? If one genus is more complex than another, is it more successful? If one genus is more intelligent than another, is it more successful? If one genus is more “evolutionarily advanced” than another, is it more successful?