Here are the study questions for the Exam 3. There are quite a number of questions so I’ve included answers. There may be some short answer questions from the lectures and videos.

Chapter 12: Test Bank

Multiple Choice Questions

1. A good “working definition” for life might be: “A highly organized system that can capture, store, and transmit ____________.”
   (a) energy
   (b) raw materials
   (c) metabolic products
   (d) waste products
   (e) none of these
   Answer: a [p. 272]

2. The organisms that produce food are called:
   (a) primary consumers.
   (b) primary producers.
   (c) heterotrophs.
   (d) secondary consumers.
   (e) none of these
   Answer: b [p. 272]

3. In photosynthesis, the energy of sunlight ultimately rests in:
   (a) carbon dioxide molecules.
   (b) the carbon-hydrogen bonds of carbohydrates.
   (c) oxygen molecules.
   (d) water molecules.
   (e) none of these
   Answer: b [p. 273]

4. Roughly _____ of the biomass consumed by any consumer is stored in the consumer as flesh.
   (a) 5 percent
   (b) 10 percent
   (c) 15 percent
   (d) 25 percent
   (e) none of these
   Answer: b [p. 276]

5. The organisms that cannot produce their own food are called:
   (a) primary producers.
   (b) primary consumers.
   (c) heterotrophs.
   (d) secondary consumers.
   (e) none of these
   Answer: c [p. 277]

6. The molecules that make up living things are called:
   (a) monomers
   (b) polymers
   (c) macromolecules
   (d) nucleotides
   (e) carbohydrates
   Answer: c [p. 278]
(b) heterotrophs.
(c) secondary producers.
(d) secondary consumers.
(e) none of these

Answer: b [p. 276]

6. The zone of lighted ocean where marine autotrophs are able to thrive is called:
   (a) the disphotic zone.
   (b) the euphotic zone.
   (c) the aphotic zone.
   (d) the mesopelagic zone.
   (e) none of these

Answer: b [p. 278]

7. Which of the following statements best characterizes natural selection?
   (a) Natural selection is the mechanism by which predetermined adaptations are passed to offspring from parents.
   (b) Natural selection is the differential survivorship and reproduction of organisms that have favorable adaptations.
   (c) The natural environment is not involved with the process of natural selection; the heritability of traits is what drives evolution.
   (d) For natural selection to occur, mutations have to be embedded in the genome.
   (e) none of these

Answer: b [p. 286]

8. Though it is difficult to generalize for the ocean as a whole, the bottom of the euphotic zone is about ________ meters (feet) in mid-latitudes.
   (a) 20 meters (66 feet)
   (b) 40 meters (130 feet)
   (c) 70 meters (230 feet)
   (d) 80 meters (265 feet)
   (e) none of these

Answer: c [p. 285]

9. The main inorganic nutrients necessary for photosynthesis, growth and reproduction in marine autotrophs are:
   (a) carbon dioxide and carbohydrates.
   (b) glucose and oxygen.
   (c) nitrates and phosphates.
   (d) nitrates and carbohydrates.
   (e) none of these

Answer: c [p. 280]

10. The movement of water across a cell membrane from an area of high concentration to low concentration is called:
    (a) diffusion.
(b) osmosis.
(c) active transport.
(d) chemosynthesis.
(e) none of these

Answer: b [p. 282]

11. Most marine organisms have an internal temperature very close to that of their surroundings. They are known as ____________ organisms.
   (a) poikilothermic
   (b) endothermic
   (c) homeothermic
   (d) ectothermic
   (e) none of these

Answer: d [p. 280]

12. All other factors begin equal, a greater quantity of dissolved gas can be held in solution in ____________ seawater.
   (a) cold
   (b) warm
   (c) high salinity
   (d) low salinity
   (e) none of these

Answer: a [p. 281]

13. When carbon dioxide dissolves in water, the water becomes slightly more:
   (a) acidic; its pH is higher.
   (b) acidic; its pH is lower.
   (c) alkaline; its pH is higher.
   (d) alkaline; its pH is lower.
   (e) none of these

Answer: b [p. 281]

14. The requirements for photosynthesis include:
   (a) light.
   (b) carbon dioxide.
   (c) nutrients.
   (d) pigments (chlorophyll).
   (e) all of these

Answer: e [p. 278]

15. The open ocean realm, away from land.
   (a) pelagic
   (b) benthic
   (c) neritic
   (d) oceanic
   (e) hadal
Answer: d [p. 284]

16. The open ocean environment, in general.
   (a) pelagic
   (b) benthic
   (c) neritic
   (d) oceanic
   (e) hadal
Answer: a [p. 284]

17. Refers to the bottom, in general.
   (a) pelagic
   (b) benthic
   (c) neritic
   (d) oceanic
   (e) hadal
Answer: b [p. 284]

18. The open ocean environment, over the continental shelves.
   (a) pelagic
   (b) benthic
   (c) neritic
   (d) oceanic
   (e) hadal
Answer: c [p. 284]

19. A group of organisms of the same species occupying a specific area is called a ________________.
   (a) community
   (b) habitat
   (c) population
   (d) biome
   (e) none of these
Answer: c [p. 290]

20. The many populations of organisms that interact with one another at a particular location form a ________________.
   (a) community
   (b) habitat
   (c) niche
   (d) biome
   (e) none of these
Answer: a [p. 290]

21. An organism’s “address” within a community is its ________________, while an organism’s ________________ is its “occupation” within that habitat.
(a) biome; niche
(b) habitat; biome
(c) niche; habitat
(d) habitat; niche
(e) biome; habitat

Answer: d [p. 290]

22. A stable, long-established community is known as:
   (a) a keystone.
   (b) a climax community.
   (c) a succession.
   (d) a niche.
   (e) a biome.

Answer: b [p. 291]

23. A form of autotrophy other than photosynthesis is:
   (a) respiration.
   (b) chemosynthesis.
   (c) heterotrophy.
   (d) decomposition.
   (e) none of these

Answer: b [p. 273]

24. Which of the following is an example of a primary producer?
   (a) a diatom
   (b) chemosynthetic bacteria
   (c) fish
   (d) two or more of these
   (e) none of these

Answer: d [p. 272]

25. Scientists can observe primary productivity in the ocean from space by measuring the ___.
   (a) temperature of the surface water.
   (b) depth of the euphotic zone.
   (c) amount of chlorophyll in surface waters.
   (d) salinity of surface waters.
   (e) none of these

Answer: c [p. 276]

26. In the ocean as a whole, the limiting factor for primary productivity is:
   (a) oxygen.
   (b) light.
   (c) carbon dioxide.
   (d) carbohydrates.
   (e) none of these
True/False Questions

1. Hydrogen sulfide is a high-energy molecule that can be used to make carbohydrates through the process of chemosynthesis.
   (a) True
   (b) False

   Answer: True [p. 274]

2. Primary productivity measures the grams of carbon bound into organic material per square meter of ocean surface area per year.
   (a) True
   (b) False

   Answer: True [p. 274]

3. A tuna is an example of a top consumer.
   (a) True
   (b) False

   Answer: True [p. 277]

4. The aphotic zone is the upper layer of the ocean where there is enough light for photosynthesis and vision.
   (a) True
   (b) False

   Answer: False [p. 278]

5. Nitrogen and phosphorous can be depleted rapidly in the deep sea by photosynthetic organisms.
   (a) True
   (b) False

   Answer: False [p. 281]

6. Marine organisms are limited in terms of where in the ocean they can live because of the enormous amount of pressure in the deep sea.
   (a) True
   (b) False

   Answer: False [p. 282]

7. An important part of Darwinian natural selection is that traits must be inheritable.
   (a) True
   (b) False

   Answer: True [p. 286]

8. Life is categorized into two domains: one for all the prokaryotic organisms and one for all the eukaryotic organisms.
9. The scientific name of an organism includes the genus and species name.
   (a) True
   (b) False

   **Answer:** True [p. 290]

10. Asteroids hitting Earth may result in mass extinctions.
    (a) True
    (b) False

   **Answer:** True [p. 292]

**Essay Questions**

1. Describe energy flow through a generalized marine trophic system. [pp. 276-278]

2. Most marine organisms have the same body temperature and salinity as the surrounding environment. Why? [p. 280]

3. How is photosynthesis different from chemosynthesis? How are they similar? [pp. 272-274]

4. In your own words, describe the mechanism of natural selection. [pp. 285-286]

**Chapter 13: Test Bank**

**Multiple Choice Questions**

1. __________ refers to organisms that live on or are associated with the bottom.
   (a) Pelagic
   (b) Neretic
   (c) Planktonic
   (d) Benthic
   (e) none of these

   **Answer:** d [p. 297]

2. Adaptations that offset sinking in fish include:
   (a) swim bladders.
   (b) continuous swimming.
   (c) fat-filler bladders.
   (d) fins shaped like airplane wings.
   (e) all of these

   **Answer:** e [p. 312]
3. The whale shark is the largest species of shark and eats:
   (a) seals and other smaller marine mammals.
   (b) fish, especially tuna.
   (c) plankton near the surface of the water.
   (d) benthic crabs.
   (e) none of these
   **Answer:** c [p. 309]

4. Which of the following statements best describes the global distribution of phytoplankton?
   (a) In the poles, phytoplankton populations increase during the summer months.
   (b) There is a constant amount of phytoplankton year-round in the tropics.
   (c) Phytoplankton are most abundant when there are ample nutrients and light.
   (d) Phytoplankton populations vary with latitude and season.
   (e) all of these
   **Answer:** e [p. 306]

5. An example of a zooplankton that is very important to many pelagic communities is:
   (a) krill.
   (b) squid.
   (c) dinoflagellates.
   (d) diatoms.
   (e) none of these
   **Answer:** a [p. 6]

6. Drag is determined by:
   (a) frontal area.
   (b) body shape.
   (c) surface texture.
   (d) all of these
   (e) none of these
   **Answer:** d [p. 312]

7. Which of the following statements is **FALSE** concerning the baleen whales?
   (a) They are marine mammals and hence are air breathers.
   (b) Some species of baleen whales migrate long distances between their feeding and breeding grounds.
   (c) The baleen whales are the smallest of the true whales because they only feed on plankton which is filtered by the baleen.
   (d) Some species of baleen whales use complex songs to group communicate.
   (e) none of these
   **Answer:** c [p. 317]

8. What is produced in primary productivity?
   (a) carbon dioxide
(b) cold, blue light
(c) carbohydrates
(d) gametes (egg cells and sperm cells)
(e) none of these
Answer: c [p. 300]

9. Where, through a year, is the greatest total oceanic primary productivity?
   (a) in the tropics
   (b) in the temperate zones
   (c) in the polar regions
   (d) productivity is about equal at all latitudes
   (e) none of these
Answer: b [p. 304]

10. The “seals” of seal shows are:
    (a) sea lions.
    (b) true seals.
    (c) sea otters.
    (d) manatees.
    (e) none of these
Answer: a [p. 320]

11. Part of the organism’s life cycle is spent as a member of the plankton community.
    (a) plankton
    (b) meroplankton
    (c) holoplankton
    (d) phytoplankton
    (e) zooplankton
Answer: b [p. 307]

    (a) plankton
    (b) meroplankton
    (c) holoplankton
    (d) phytoplankton
    (e) zooplankton
Answer: d [p. 300]

13. Drifting with the currents.
    (a) plankton
    (b) meroplankton
    (c) holoplankton
    (d) phytoplankton
    (e) zooplankton
Answer: a [p. 299]
   (a) plankton
   (b) meroplankton
   (c) holoplankton
   (d) phytoplankton
   (e) zooplankton
Answer: e [p. 302]

15. The sharks, skates, and rays are members of this group:
   (a) Reptilia
   (b) Chondrichthyes
   (c) Osteichthyes
   (d) Agnatha
   (e) none of these
Answer: b [p. 311]

16. Organisms such as diatoms or copepods that spend their entire life cycle in the plankton are called:
   (a) nanoplankton.
   (b) meroplankton.
   (c) holoplankton.
   (d) zooplankton.
   (e) none of these
Answer: c [p. 307]

17. Bony fish (like tuna or anchovies) are members of this group:
   (a) Mammalia
   (b) Chondrichthyes
   (c) Osteichthyes
   (d) Agnatha
   (e) none of these
Answer: c [p. 312]

18. In the gill of a fish, water and blood circulate ________________, which ________________ transfer efficiency.
   (a) in the same direction; increases
   (b) in opposite directions; increases
   (c) in the same direction; decreases
   (d) in opposite directions; decreases
   (e) by mixing together; increases
Answer: b [p. 313]

19. The wings of the most “severely oceanic” birds (that is, birds spending nearly all of their life span aloft over the ocean) tend to be:
   (a) short and blunt.
   (b) long, thick, and pointed.
(c) long, thin, and pointed.
(d) long, thin, and blunt.
(e) none of these

**Answer:** c [p. 312]

20. Animals that generate and regulate metabolic heat and maintain an internal body temperature generally higher than that of their surroundings are called:
   (a) ectotherms.
   (b) mesotherms.
   (c) paratherms.
   (d) endotherms.
   (e) none of these

**Answer:** d [p. 315]

21. Which of the following describes marine mammals?
   (a) Cetacea
   (b) Pinnipedia
   (c) Sirenia
   (d) all of these

**Answer:** d [pp. 317, 320]

22. Into which category do whales fit?
   (a) Cetacea
   (b) Pinnipedia
   (c) Sirenia
   (d) all of these

**Answer:** a [p. 317]

23. Which of the following characterizes manatees and sea cows?
   (a) Cetacea
   (b) Pinnipedia
   (c) Sirenia
   (d) all of these

**Answer:** c [p. 320]

24. Into which of the following groups do seals, sea lions, and walruses fit?
   (a) Cetacea
   (b) Pinnipedia
   (c) Sirenia
   (d) all of these

**Answer:** b [p. 317]

25. All of the following characteristics apply to the Cetacea *EXCEPT*:
   (a) Cetaceans have nearly complete hair loss.
   (b) They have large and deeply convoluted brains.
   (c) The cetaceans are air-breathing mammals.
(d) They all have teeth in powerful jaws that make them efficient predators.
(e) none of these

Answer: d [p. 317]

26. Baleen whales are:
(a) in the suborder Odontoceti.
(b) in the suborder Mysticeti.
(c) in the class Osteichthyes.
(d) are in the order Teleostei.
(e) none of these

Answer: b [p. 317]

True/False Questions

1. Pelagic organisms live in the open ocean.
   (a) True
   (b) False

Answer: True [p. 297]

2. The huge wings allow the albatross to fly great distances but they also require a tremendous amount of energy.
   (a) True
   (b) False

Answer: False [p. 297]

3. The active swimmers of the pelagic realm are called the zooplankton.
   (a) True
   (b) False

Answer: False [p. 309]

4. Photosynthetic plankton are called phytoplankton and include the diatoms and dinoflagellates.
   (a) True
   (b) False

Answer: True [p. 300]

5. Coccolithophores are zooplankton that form oozes on the seabed.
   (a) True
   (b) False

Answer: False [p. 304]

6. The distribution of phytoplankton in the ocean is directly influenced by the distribution of nutrients.
   (a) True
   (b) False

Answer: True [p. 306]
7. Zooplankton are the most numerous primary consumers in the ocean.
   (a) True
   (b) False
   **Answer:** True [p. 307]

8. Sharks have skeletons made of cartilage, not bone.
   (a) True
   (b) False
   **Answer:** True [p. 311]

9. Gill membranes evolved from lungs and function in gas exchange.
   (a) True
   (b) False
   **Answer:** False [p. 313]

10. Penguins are found worldwide and although they cannot fly, they can swim great distances.
    (a) True
    (b) False
    **Answer:** False [p. 316]

**Essay Questions**

1. Discuss adaptations in fish that function to reduce drag. [p. 312]

2. Compare and contrast the toothed whales and the baleen whales. [p. 317]

3. The pelagic realm is massive and supports a great diversity of living things. Considering zonation in the pelagic realm, where would you expect to find most of the organisms and why? [p. 306]

4. Some of the very large species of animals in the ocean, namely whale sharks and baleen whales, feed on plankton. How can they support their large size eating microscopic organisms? [p. 317]

**Chapter 14: Test Bank**

**Multiple Choice Questions**

1. Benthic organisms live:
   (a) on or associated with the bottom.
   (b) suspended in the water column.
   (c) by drifting through the water, unable to swim against currents.
   (d) as parasites.
   (e) near the water’s surface.
   **Answer:** a [p. 325]
2. The most common pattern for benthic organism distributions is:
   (a) clumped distribution.
   (b) negative binomial distribution.
   (c) random distribution.
   (d) uniform distribution.
   (e) none of these
Answer: a [p. 326]

3. The group of marine algae best adapted to deep water is:
   (a) brown algae, the Phaeophyta.
   (b) green algae, the Chlorophyta.
   (c) blue-green algae, the cyanobacteria.
   (d) golden algae, the Chrysophyta.
   (e) none of these
Answer: e [p. 326]

4. Which of the following statements is *FALSE* concerning hydrothermal vents?
   (a) They are found in shallow waters near subduction zones.
   (b) Certain animals are found at hydrothermal vents such as pogonophorans.
   (c) Hydrothermal vents are found associated with spreading centers.
   (d) Vent waters cool as they are released from the vent.
   (e) none of these
Answer: a [p. 343]

5. Intertidal organisms can protect themselves from wave shock by:
   (a) hiding when a wave comes.
   (b) adhering themselves to the rocks.
   (c) sliding into a small crack as the wave crashes around them.
   (d) moving to a new location.
   (e) all of these
Answer: e [p. 331]

6. The coral reef community:
   (a) is made up exclusively of various species of coral polyps.
   (b) is limited to carnivorous animals.
   (c) lies within the kelp forest habitat of the tropics.
   (d) is made up of filter and suspension feeders living off the abundant plankton.
   (e) none of these
Answer: e [pp. 336-340]

7. Which of the following is *FALSE* concerning seed-sea floor communities?
   (a) Biodiversity in the deep-sea is surprisingly high.
   (b) Phytoplankton thrive.
   (c) Chemoautotrophic bacteria are common at hydrothermal vents.
   (d) Gigantism is a common characteristic of deep sea organisms.
8. The symbiotic dinoflagellate that lives within coral tissue is called:
   (a) kelp.
   (b) Riftia.
   (c) zooxanthellae.
   (d) polyp.
   (e) none of these
   Answer: c [p. 340]

9. The commensal algae that live in the tissues of the coral polyps:
   (a) provide carbon dioxide and phosphates for the polyps.
   (b) feed on the tissues of the polyps and are dangerous parasites.
   (c) are the main cause of coral bleaching, and are threatening the reefs of the world.
   (d) provide additional nourishment and oxygen to the polyps through photosynthesis.
   (e) all of these
   Answer: d [p. 340]

10. Perhaps the most difficult oceanic habitat is/are:
    (a) the abyssal zone.
    (b) intertidal coarse black sand beaches.
    (c) intertidal rocky shores.
    (d) intertidal beaches.
    (e) intertidal coarse black sand beaches and intertidal rocky shores.
    Answer: b [p. 333]

11. Coral reefs are found only in areas:
    (a) of deep water below 200 meters (660 feet).
    (b) of cold water or in cold currents.
    (c) tropical latitudes with warm temperatures and slightly higher salinity.
    (d) near rivers of stream deltas.
    (e) none of these
    Answer: c [pp. 336-337]

12. According to Darwin, the last stage in the cycle of reef formation is:
    (a) the fringing reef.
    (b) the atoll.
    (c) the algal rim.
    (d) the barrier reef.
    (e) none of these
    Answer: b [p. 340]

13. Life in productive tropical reefs is characterized by:
(a) extreme competition for food, territory, and reproductive opportunities.
(b) very few species, but large numbers of each species.
(c) large adults in each species that reproduce late in life.
(d) organisms with extremely long lifespans.
(e) none of these

**Answer:** a [p. 337]

14. Which of these statements is *FALSE* concerning estuaries?
   (a) Larvae are often abundant there.
   (b) Estuaries are in danger of development and pollution.
   (c) Very few autotrophs live in estuaries, but many animals can be found there.
   (d) Estuaries are places where saltwater and fresh water meet.
   (e) All of these statements are false.

**Answer:** c [p. 330]

15. Food in the intertidal zone is:
   (a) not particularly abundant.
   (b) abundant but inaccessible.
   (c) abundant and accessible, but there are no organisms to take advantage of it.
   (d) abundant and accessible, and there are many animals to take advantage of it.
   (e) relatively abundant.

**Answer:** d [p. 331]

16. Which of these areas is most productive and inhabited by the largest number of species?
   (a) The deep open ocean below the photic zone.
   (b) Salt marshes associated with estuaries.
   (c) The relatively shallow ocean floor of the continental shelves.
   (d) Gravel beaches.
   (e) none of these

**Answer:** b [p. 330]

17. A fringing reef:
   (a) forms around an island.
   (b) has a deep lagoon that separates the reef from the island.
   (c) is ring-shaped and is not associated with an island.
   (d) is formed as a volcanic island sinks.
   (e) none of these

**Answer:** a [p. 337]

18. Ahermatypic corals are:
   (a) found in shallow waters in the tropics.
   (b) have symbiotic algae.
   (c) are found in the deep-sea.
   (d) are actually plants.
(e) are plants found in shallow water.
Answer: c [p. 337]

19. The most important physical factor for intertidal communities is:
   (a) lack of light.
   (b) high salinity.
   (c) lack of nutrients.
   (d) the rise and fall of the tides.
   (e) none of these
Answer: d [p. 333]

20. Animals that are attached to the bottom are called:
   (a) sessile.
   (b) benthic motile.
   (c) infaunal.
   (d) interstitial.
   (e) none of these
Answer: a [p. 333]

21. Seaweeds are:
   (a) vascular plants.
   (b) unicellular algae.
   (c) multicellular algae.
   (d) zooxanthellae.
   (e) none of these
Answer: c [p. 326]

22. Algae are classified by:
   (a) how they photosynthesize.
   (b) their location in the intertidal.
   (c) their accessory pigments.
   (d) what they feed on.
   (e) their location in the intertidal and what they feed on.
Answer: c [p. 327]

23. An example of a vascular plant that is successful in low, muddy areas of tropical and
   semitropical areas are:
   (a) mangroves.
   (b) ahermatypic corals.
   (c) kelp.
   (d) macroalgae.
   (e) none of these
Answer: a [p. 329]

24. Primary productivity in estuaries is high because of:
(a) light is seasonal and dim.
(b) nutrients are abundant.
(c) symbiotic autotrophs live within the tissues of estuary animals.
(d) nutrients are abundant and light is seasonal and dim.
(e) none of these

**Answer:** b [p. 330]

25. Common organisms in the rocky intertidal include:
   (a) benthic multicellular algae.
   (b) snails.
   (c) sea stars.
   (d) small sculpins.
   (e) all of these

**Answer:** e [p. 333]

26. One physical condition that contributes to the transparent waters of the tropics is:
   (a) low salinity.
   (b) no thermocline.
   (c) abundant nutrients.
   (d) an abrupt deep thermocline.
   (e) none of these

**Answer:** d [p. 336]

**True/False Questions**

1. Marine algae are nonvascular plants.
   (a) True
   (b) False

**Answer:** True [p. 327]

2. The biomass of benthic algae in the ocean is greater than the biomass of phytoplankton.
   (a) True
   (b) False

**Answer:** False [p. 326]

3. Species abundance and diversity is generally higher on the deep ocean floor than in that part of the water column immediately above it.
   (a) True
   (b) False

**Answer:** True [p. 341]

4. Deep sea vent communities depend on specialized photoautotrophs that extract the exceedingly dim light that filters down to that depth.
   (a) True
   (b) False
5. Kelp forests are most common in tropical latitudes.
   (a) True
   (b) False
   **Answer:** False [p. 327]

6. An estuary is where rivers meet the ocean and where freshwater and seawater mix.
   (a) True
   (b) False
   **Answer:** True [p. 330]

7. Desiccation is the drying out of tissues and is a major cause of stress on subtidal rocky reefs.
   (a) True
   (b) False
   **Answer:** False [p. 333]

8. Interstitial animals are very small and live between sand grains.
   (a) True
   (b) False
   **Answer:** True [p. 335]

9. Hermatypic corals are corals that build reefs in tropical areas.
   (a) True
   (b) False
   **Answer:** True [p. 336]

10. Hydrothermal vents that support biological communities exist because of primary productivity in the form of chemosynthesis.
    (a) True
    (b) False
    **Answer:** True [p. 342]

**Essay Questions**

1. Coral bleaching is a phenomenon that is becoming more common. What is coral bleaching? What causes it and how has environmental change influenced coral bleaching? [p. 340]

2. Hydrothermal vents support a community of organisms including pogonophorans, clams, crabs and worms, just to name a few. But hydrothermal vents are found in the deep-sea far from the photic zone. If no light reaches hydrothermal vents, what is the basis of the primary productivity that supports the community? [pp. 342-343]

3. The intertidal zone represents one of the most stressful environments in terms of
changing environmental conditions. Explain this comment using specific examples of stresses and how organisms are able to survive in the intertidal. [p. 331-333]

4. Discuss Darwin’s hypothesis for coral reef formation. [pp. 337-339]