

WQ Div B Part A

1. All the populations of blue whales are members of the same:

- A. community
- B. species**
- C. habitat
- D. ecosystem

2. Which of the following statements is true about food chains?

- A. Energy cycles, nutrients flow one way.
- B. Energy flows one way, nutrients flow one way.
- C. Energy cycles, nutrients cycle.
- D. Energy flows one way, nutrients cycle.**

3. A type of symbiosis in which one species benefits from the relationship while the other neither benefits nor is harmed is called:

- A. parasitism
- B. mutualism
- C. commensalism**
- D. benefitism

4. Which of the following does *not* do photosynthesis?

- A. Algae
- B. Leaves of plants
- C. Some bacteria
- D. Roots of plants**
- E. None of the choices is correct.

5. In an inverted aquatic biomass pyramid, which organism is likely found at the bottom?

- A. Sharks
- B. Phytoplankton**
- C. Trout
- D. Zooplankton
- E. Sea urchin

6. Acid precipitation is so deadly because it:

- A. changes the pH of the ecosystems it falls into**
- B. blinds animals
- C. increases rates of cancer
- D. adheres to breathing passages

7. Air and water pollution result mainly from:

- A. increased industrialization
- B. agricultural chemicals
- C. improper waste disposal
- D.** All of these are correct.

8. There are over 11,500 species of these protists that have ornate, glasslike shells.

- A. Green algae
- B. Brown algae
- C. Red algae
- D.** Diatoms

9. Most of the phyla of the animal kingdom are of animals that occur:

- A. on land
- B. in the sky
- C.** in the ocean
- D. in freshwater habitats

10. Which is incorrect about cnidarians?

- A. They exist as medusae and/or polyps.
- B. They undergo extracellular digestion.
- C.** They are herbivores that eat phytoplankton only.
- D. Medusae are commonly called jellyfish.
- E. They exhibit radial symmetry.

11. Sand dollars, sea stars, sea cucumbers, and sea urchins all belong to the phylum _____.

- A. Lophophorates
- B. Rotifera
- C. Chordata
- D.** Echinodermata
- E. Arthropoda

12. A type of ecosystem characterized by bioluminescent creatures eating debris can be found:

- A. in estuaries
- B. at the open ocean surface
- C. in shallow waters overlying the continental shelves
- D.** in the deep sea waters, below the level of light penetration

13. Which is *incorrect* about deep-sea organisms?

- A. Some prokaryotes extract energy from hydrogen sulfide.
- B.** Some prokaryotes are photosynthetic there.
- C. Some heterotrophic organisms obtain energy from debris that falls from above.
- D. Some prokaryotes live symbiotically within the tissues of heterotrophs that live there.

14. Which of the following is NOT true?

- A. Sodium chloride accounts for the majority of all dissolved solids in the ocean.
- B. Calcium and potassium salts are found in salt water.
- C. Dissolved carbon dioxide participates in the buffering system found in oceans.
- D. Saltwater freezes at a higher temperature than freshwater.**

15. Where is an estuary found?

- A. Below the top 300 meters of the sea where there is no light
- B. At the top 100 meters of the sea
- C. It is a small temporary pond of water.
- D. It is the water that forms at the mouth of a river where it meets the sea.**

For questions 16 to 20 choose from the following answers.

- A. Salt-wedge
- B. Fjord
- C. Slightly stratified
- D. Vertically stratified

16. Salinity decreases from ocean to river D

17. San Francisco Bay is an example C *TIE BREAKER 1

18. The river current pushes back the seawater A

19. Found along the coast of Alaska B

20. Characterized by a deep elongated basin B

21. True or false, once a river is polluted, it is impossible for it to recover.

FALSE

22. Several food chains woven together comprise a _____.

food web

23. Microscopic organisms floating on the surface of the ocean make up the _____.

plankton

24. A _____ is an example of a cnidarian.

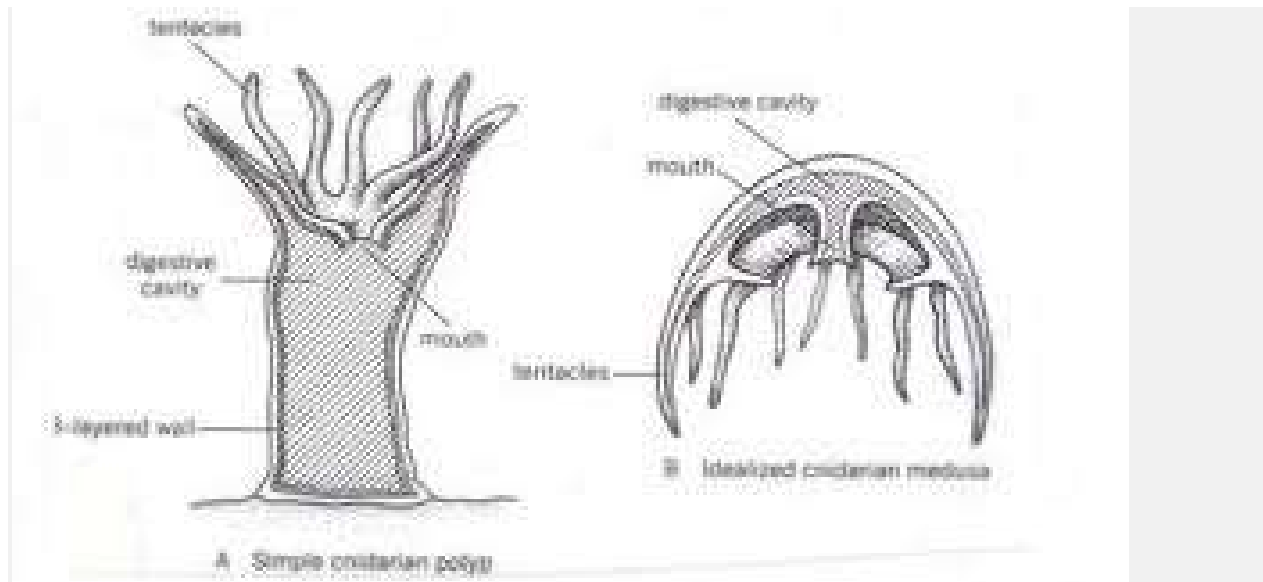
hydra, jellyfish, sea anemone, or coral

25. _____ estuarine habitat characteristics are defined by their specific combination of sand, silt, clay and organic matter content. Mudflat

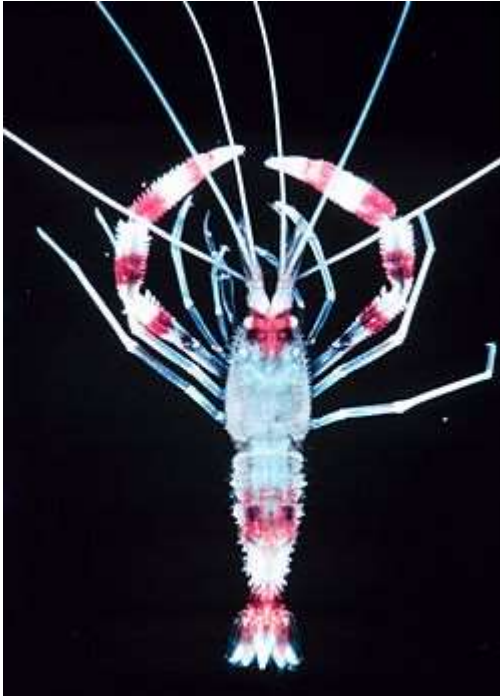
Part B

1. Coral reefs are formed by the accumulation and deposition of B
 - a. Calcium chloride
 - b. Calcium carbonate
 - c. Sodium bicarbonate
 - d. Sodium chloride
2. Coral reefs are a mutualistic relationship between coral polyps and _____ . Zooxanthanthellae

For questions 3 through 5 refer to the figure below.



3. What is A? tentacles
4. What is B? digestive cavity
5. What is C? mouth
6. Ocean warming C
 - a. Increases reef calcification
 - b. Impacts water quality
 - c. Can cause coral bleaching
 - d. Slows the growth of macroalgae
7. It is estimated that large reefs take how long to form? d
 - a. 100 years
 - b. 10000 years
 - c. 1 million years
 - d. 30 million years
8. List a threat to coral reefs.
 - a. Chemical pollutants, excess nutrients, sedimentation, coral bleaching, coral diseases, climate change (sea level rising), ocean acidification, overfishing, cyclones
9. List a 2nd threat to coral reefs.
10. List a 3rd threat to coral reefs.
11. Identify the organism pictured below. Banded coral shrimp



12. You are likely to find this organism in this zone. C
 - a. Benthic
 - b. Littoral
 - c. Intertidal
 - d. Pelagic

13. Identify the organism pictured below. Butterfly fish



14. How did the organism pictured in question 13 get its name? Many have eyespots like those found in many butterflies. Also the bright coloration and patterns.

15. If the organism pictured in question 11 met up with the organism pictured in question 13 what kind of interaction is likely? Banded coral shrimp would clean butterfly fish of any parasites if present.

16. Identify the organism pictured below. Triton



17. Is the organism above a hermaphrodite or does it have separate sexes? Separate sexes

18. Identify the organism pictured below. crown of thorns starfish



19. What does the organism pictured in question 18 eat? HINT- it is another of the indicator organisms on your list. Hard coral
20. If the organism pictured in question 16 met up with the organism pictured in question 18 what kind of interaction is likely? Triton would eat crown of thorns starfish
21. Identify the organism pictured below. Gorgonia



22. How does this organism get its food? Filter feeder, symbiotic photosynthetic dinoflagellates
23. Identify the organism pictured below. Flamingo tongue snail



24. Are the larvae of the organism pictured in question 23 nektonic, planktonic, or benthic?
*TIE BREAKER 2 planktonic

25. Where do you find the organisms pictured in questions 21 and 23? Hint- global, Indo-Pacific only, or Atlantic only Atlantic only

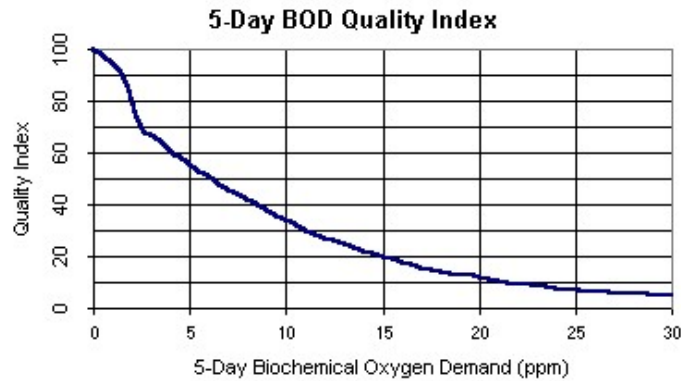
Part C

1. Looking at test tube 1, based on the salinity reading, what kind of aquatic biome did the sample most likely come from? Hint- 2uS/cm is the same as 1 mg/L.
2. Salinity is _____ by evaporation. Increased.
3. Looking at test tube 2, based on the pH, is the sample more likely from freshwater or saltwater?
4. As pH of oceans decreases, aragonite saturation _____. Decreases
5. Looking at test tube 3, what is the phosphate level?
6. Looking at test tube 4, what is the turbidity level?
7. Instead of using NTUs to measure turbidity you can use a _____ disc. Secchi
8. DO, when talking about water quality stands for _____.
Dissolved oxygen
9. Looking at test tube 5, what is the nitrate level?
10. Besides nitrate, aquatic plants can also use _____. Ammonia
11. Looking at the figure below, what is the simplest explanation for the water temperature in New Orleans being so different than Northern Florida? Mississippi river brings cold water from the north.



12. Would you expect the DO in these two regions to be similar? NO
13. Fecal coliforms are what type of organism? Bacteria

14. A high fecal coliform count means what kind of pollution has entered the water?
Feces from animals
15. Suppose from a sample of 500 mls you obtain 100 mg of dried residue. How many mg of total solids per liter are in the sample? $100/0.5 = 200$
16. One the graph below, what is the independent variable? Quality index



17. On the graph above, what is the dependent variable? BOD *TIE BREAKER 3
18. Why does quality index decrease with increasing BOD? Higher demand for oxygen is likely due to organic waste in the ecosystem which causes microbial growth to increase, using up valuable oxygen. Other larger organisms are likely to die.
19. Aragonite is also known as _____ carbonate. Calcium
20. Aragonite saturation levels are important for _____ growth.
Coral reef

PART C Station 12 Division B

1. This question requires you to demonstrate the use of your homemade salinometer. (5 points possible)
 - a. Show your salinometer to the event supervisor or designated volunteer and have them initial your answer sheet. (1 point)
 - b. You may wish to calibrate your salinometer prior to testing the 2 unknown solutions.
 - c. Record the concentration of solution A and solution B on your answer sheet. (2 points each)