

Water Quality Multiple Choice Test

1. Free floating aquatic organisms are known as...
 - a) nekton
 - b) symbiodinium
 - c) plankton
 - d) benthos
 - e) pelagic inhabitants
2. Flowing-water ecosystems, especially headwater streams, receive most of their energy from:
 - a) Organic matter
 - b) Mineral matter
 - c) Wind power
 - d) Solar power
 - e) None of the above

For Questions 3-5, choose one of following methods of solid-waste disposal and treatment for each. (Answers may be used more than once or not at all)

- I. Sanitary Landfill
- II. Incineration
- III. Discharge to sewers, streams, and rivers
- IV. Chemical Treatment
- V. Biological Treatment

3. Which method reduces the volume of waste but could release toxic emissions into the atmosphere?
4. Which method is used most frequently in the United States today?
5. Which method introduces microorganisms to break down hazardous organic compounds?
6. Which method would be best suited for neutralizing the acidic components of waste?
7. All of the following are considered toxic metal pollutants EXCEPT
 - a) Chromium
 - b) Cadmium
 - c) Potassium
 - d) Lead
 - e) Mercury

8. Which of the following is *decreased* by the breakdown of organic waste?
- a) Salinity
 - b) Total Suspended Solids
 - c) Acidity
 - d) Dissolved Oxygen
 - e) Both C and D
9. Which of the following is an example of commensalism?
- a) A bird laying eggs in its nest built in the branches of a tree
 - b) Butterflies consuming nectar and carrying pollen from flower to flower
 - c) Moss growing on a tree trunk in the forest
 - d) Both A and B
 - e) Both A and C
10. Which of the following is most likely to occur as a result of wetland destruction around a river?
- a) Decreased levels of nitrates in the river
 - b) Decreased sediment load in river
 - c) Increased DO content in the river
 - d) Increased species diversity in the area
 - e) Increased flooding frequency in the area
11. Since the Clean Water Act of 1972, the quantities of nitrate and phosphate entering surface waters have...
- a) Decreased significantly for both point and nonpoint sources
 - b) Decreased significantly for nonpoint sources but not point sources
 - c) Decreased significantly for point sources but not nonpoint sources
 - d) Changed insignificantly
 - e) None of the above
12. *Pfiesteria piscicida* is known to be...
- a) Extremely toxic to humans
 - b) Associated with polluted water
 - c) Capable of changing from non-toxic to toxic forms depending on its surroundings
 - d) Both A and B
 - e) All of the above
13. Which of the following characteristics about the Chesapeake Bay is true?
- a) It contains brackish water

- b) Its water is slightly basic
 - c) It is the 5th largest estuary in the world
 - d) It has an excessive amount of oyster reefs that has become problematic
 - e) Both A and C
14. Negative impacts of sediments include...
- a) Creating unaesthetic murky water
 - b) Covering up fish spawning areas
 - c) Blocking available light for aquatic plants
 - d) Both A and C
 - e) All of the above
15. Which of the following is the best example of a point source of water pollution?
- a) Storm water
 - b) Acid rain
 - c) Agricultural Runoff
 - d) Factory effluent
 - e) Residential pesticide runoff
16. In the United States, the largest single component of municipal solid waste is...
- a) Food scraps
 - b) Paper
 - c) Glass
 - d) Wood
 - e) None of the above
17. The Clean Water Act has turned out to be ____ in achieving their promises with regards to point sources of water pollution.
- a) Extremely effective
 - b) Somewhat effective
 - c) Somewhat Ineffective
 - d) Extremely ineffective
 - e) The Clean Water Act doesn't primarily deal with point sources of water pollution.
18. The central goal of the Clean Water Act was to...
- a) Categorize water into types of use and then establish an array of different cleanup goals
 - b) End all water pollution in the U.S. by 2050
 - c) Eliminate all nonpoint source pollution where economically feasible
 - d) Make all surface waters swimmable and fishable

e) All of the above

19. Which of the following are other names for estuaries?

- a) Bays
- b) Lagoons
- c) Inlets
- d) Sloughs
- e) All of the above

20. The Chesapeake Bay in Maryland is an example of what type of estuary?

- a) Drowned river valley
- b) Tectonic estuary
- c) Bar-built estuary
- d) Delta
- e) Fjord

For questions 21-26, read the statements and decide whether each is true (a) or false (b).

21. Air pollution can lead to water contamination via a process called atmospheric deposition.

22. A marsh is a type of wetland ecosystem characterized by poorly drained mineral soils and many grasses.

23. MTBE is a gasoline additive that was intended to reduce carbon monoxide content in vehicle exhaust, but is now a very serious source of groundwater pollution in the United States.

24. High levels of fecal coliform indicate that the water is highly pathogenic.

25. Acid rain can have a pH of as low as 4.

26. It is best for shore birds to catch stranded fish and invertebrates during the tidal ebb.

27. The high productivity of estuaries has been attributed to the presence of several primary production units. Which of the following would NOT be considered a primary production unit in an estuary ecosystem?

- a) Phytoplankton suspended in the water column
- b) Benthic algae in areas where sunlight reaches the bottom
- c) Marsh grasses and other macroflora
- d) Juvenile zooplankton that come in with the tidal cycles
- e) All of the above

28. In the situation where a main sewage system is not provided, sewage may be collected from homes by pipes into ____, or cesspits.

- a) Lagoons

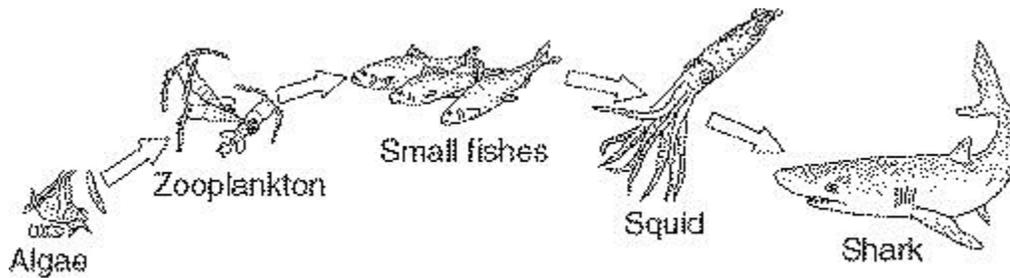
- b) Septic Tanks
- c) Mound System
- d) Either B or C
- e) None of the above

29. Hardness in water is measured by the amount of...

- a) Ca^{2+}
- b) Zn^{2+}
- c) Mg^{2+}
- d) Both A and B
- e) Both A and C

30. The two major processes in the carbon cycle are...

- a) Weathering and respiration
- b) Photosynthesis and Respiration
- c) Evaporation and Condensation
- d) Deposition and Withdrawal
- e) Combustion and Photosynthesis



31. The 3rd order consumer in this food chain is:

- a.) Algae
- b.) Squid
- c.) Shark
- d.) Small fish

32. Given the following:

- I. Sewage treatment facility
- II. Runoff from the roads of a suburban area
- III. Volatile organic compounds from groundwater

IV. Lawns and gardens

Which of the above are examples of nonpoint source pollution?

- | | | |
|--------------|-------------------|---------------------|
| a.) Only I | d.) Only IV | g.) II and IV only |
| b.) Only II | e.) II, III, IV | h.) III and IV only |
| c.) Only III | f.) I and II only | i.) I and III only |

33. Which disaster caused the formation of the National Environment Protection Act (NEPA)?

- a.) Santa Barbara Oil Spill
- b.) Cuyahoga River Fire
- c.) Hexavalent chromium pollution in Hinckley, CA.
- d.) None of the above

34. True or False: Approximately 12,000 people die a day from ingesting poor-quality water.

35. What does the process of flocculation consist of and which sewage treatment type is it a part of?

- a.) Removal of dissolved/colloidal compounds through oxidation; Municipal
- b.) Velocity of water is reduced, allowing suspended materials to form negatively charged colloids; Potable
- c.) Removal of dissolved/colloidal compounds through oxidation; Potable
- d.) Velocity of water is reduced, allowing suspended materials to form negatively charged colloids; Municipal

36. The Pollution Prevention Act of 1990 followed:

- a.) The Exxon Valdez oil spill in 1989
- b.) The Santa Barbara Oil Spill

- c.) Hexavalent Chromium Pollution in Hinckley, CA.
- d.) None of the above

37. Which option is not a description of part of the carbon cycle?

- a.) Plants take CO₂ from the soil where organic carbon in manure and fertilizer is used to sustain soil using plants.
- b.) Animals gather the carbon atoms from eating plants and release it through respiration
- c.) As dead animals and other detritus such as leaves or wood decays, the carbon atoms enter the ground
- d.) The carbon atoms found in the ground become fossil fuels that is potentially used by human, therefore releasing carbon back into the atmosphere

38. True or false: Carbon is released into the atmosphere through the respiration of animals, the burning of fossil fuels, deforestation, and forest fires.

39. Which of the following is NOT an example of a carbon sink?

- a.) Oceans
- b.) Terrestrial ecosystems
- c.) Fossil fuel deposits
- d.) All of the above are examples of carbon sinks.

40. Which of the following describe riffles?

- a.) Slow-moving water, deep in streams.
- b.) Sandy and muddy bottoms with little variety in macroinvertebrates.
- c.) Shallow, rocky sections of a stream with fast moving water.

d.) None of the above describes riffles.

41. What sets the phosphorous cycle apart from the other biogeochemical cycles?

a.) It has no gaseous phase.

b.) It is the slowest cycle.

c.) A + B

d.) None of the above.

42. Which act gave the Environmental Protection Agency primary authority to establish water-quality standards?

a.) The Clean Water Act of 1972

b.) The Water Pollution Control Act of 1972

c.) The Water Quality Act of 1987

d.) The Environmental Protection Act of 1970

43. What happens right after coagulation during wastewater treatment?

a.) Sedimentation

b.) Filtration

c.) Activated Sludge Process

d.) Flocculation

44. When pH most acidic?

a.) At night

b.) Around midday

c.) In the morning

d.) The time of day has no effect on pH levels.

45. T/F: There are 8 ways to calculate water quality: dissolved oxygen, turbidity, total solids, total phosphates, pH, BOD, nitrates, and fecal coliform.

46. Which of the following is the most important indicator of water quality?

a.) Fecal coliform

b.) Biochemical oxygen demand

c.) Total solids

d.) Dissolved oxygen

47. What percent of earth's total global water is freshwater?

a.) 67.9%

b.) 4.8%

c.) 2.5%

d.) 98%

48. What does a secchi disk measure?

a.) Turbidity

b.) Fecal Coliform

c.) Dissolved Oxygen

d.) pH

49. T/F: Mining, fertilizing, and sewage runoff can contribute to extra phosphorus which will help some species like algae take over.

50. What is the purpose of a carbon sink?

- a.) Release carbon into the air
- b.) Absorb CO₂ from the atmosphere
- c.) Keep CO₂ from accumulating at a more rapid rate in the atmosphere
- d.) Both b and c

Estuarine Focus Section



51. Identify this estuarine habitat & another name for it.

52. What is this habitat threatened by? (The more listed, the better)

53. Name 2 species that can be found in this habitat.

54. Which of the following is this type of estuarine habitat, located in the United States?

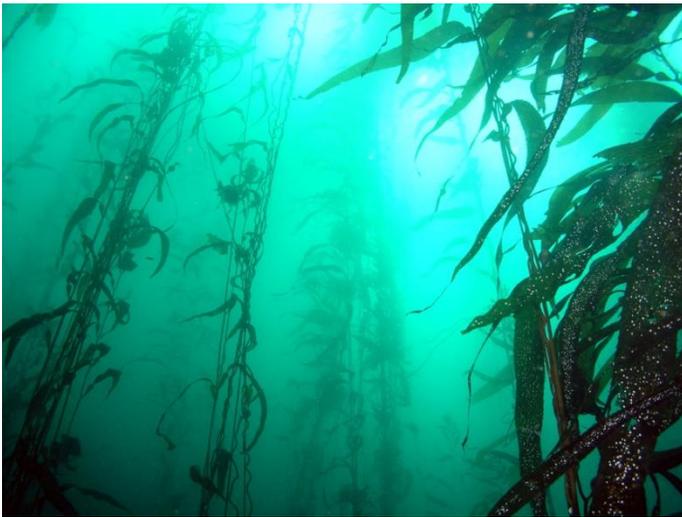
- a. Chesapeake Bay
- b. Plymouth Bay
- c. Hudson River Shoreline
- d. Morton Bay



This estuary is in the "Old Woman Creek Reserve", and is located in Erie County, Ohio.

55. This is a special kind of estuary, and many others like it are located around the Great Lakes area. What is it?

56. Why aren't these estuaries tidally-driven? What are they driven by?



57. Identify this kind of estuarine habitat.

58. How would you describe the water in this estuarine habitat? (with regards to temperature & nutrient content)

59. The upmost layer of the plants that make up this habitat is called the *canopy*. What are the two layers under that called? Briefly describe both.

BONUS

60. The name "estuary" is derived from a Latin word meaning what?