

Oceanography Final

Part of the Easy Peasy All-in-One Homeschool, questions/answers from Georgia Virtual Learning

1. What are the four branches of oceanography? (4)

The four main branches of oceanography include geological oceanography, chemical oceanography, physical oceanography, and marine oceanography.

2. More than 70% of the earth's surface is covered in water. True or False? (1)

Seventy one percent (71%) of the Earth's surface is covered by water.

3. Which ocean basin is the deepest and has the greatest surface area? (1)

The Pacific Basin contains about half of the earth's water and has the greatest surface area of all of the ocean basins (179.7 x 106 km²).

4. The largest coral reef system in the world is called the _____ and is located off the coast of _____. (2)

Great Barrier Reef, Australia

5. The seabed stretching out from the shores of a continent is called the _____. (1)

continental shelf

6. What is the process of sea-floor spreading? (2)

The process of plates moving apart allowing magma to form new crust, or the formation of new ocean floor due to volcanic activity.

7. Water is made up of what two types of atoms? (2)

hydrogen and oxygen

8. Why is water referred to as the universal solvent? (2)

because many substances dissolve easily in water

9. Put these parts of the hydrologic cycle in order: infiltration, evaporation, precipitation, condensation (4)

evaporation, condensation, precipitation, infiltration (It is cyclical, so it doesn't matter which one you start with as long as the go in order, then from infiltration back to evaporation....)

10. The saltiness of a body of water is called its _____. (2)

salinity

11. The degree of acidity or alkalinity of a liquid is known as its _____. (1)

ph

12. What is dissolved oxygen? (1)

The amount of oxygen dissolved in water.

13. You are on a vacation in Las Vegas and while you are there, you and your family attend a magic show. For the grand finale, the magician takes two glasses of water and places them on the table. He then takes an egg and drops it in one glass of water and it sinks right to the bottom. He takes the egg out of the glass and places it into the second glass of water and it floats! Everyone is impressed by the magician's trick, except for you. You immediately know how he managed his magic! Explain how the magician performed his trick from a scientific example. (2)

The one glass is full of salt water, making it denser than the egg, causing it to float.

14. What is the Coriolis Effect? (2)

the apparent deflection of a moving object due to the rotation of a greater object or the Coriolis Effect deflects ocean currents north of the equator to the right and currents south of the equator to the left

15. What is an important impact of the Coriolis Effect? (2)

The Coriolis Effect directly influences ocean surface currents. Currents on the western coast of continents are usually cold and currents on the eastern coast are warm because they originate from the equator. This is important because the movement of these currents distributes heat from the equatorial regions of the Earth to cooler regions.

16. Name at least two causes of ocean currents? (2, extra credit for more)

Ocean currents can be generated by wind, density differences in water masses caused by temperature and salinity variations, gravity, and events such as earthquakes.

(from <http://oceanexplorer.noaa.gov/facts/currents.html>)

17. Currents are important in marine ecosystems because they redistribute water, heat, nutrients, and oxygen about the ocean. At the same time, currents inevitably sweep over and carry off living organisms. Write two ways that current flows might affect ocean organisms and species. (4, There is no absolute answer, so just be thoughtful in your response.)

Scientists seek to understand and explain how the natural world works. Many of the questions raised in this endeavor have no absolute answers.

Although many sea creatures are powerful, efficient swimmers, many others are ungainly or even immobile. For these animals, currents could offer a free ride. Corals and sponges, for instance, are attached to the bottom as adults, but when they reproduce, they release volumes of planktonic larvae into the water column. These tiny creatures are free to "go with the flow" and could be carried long distances. This could allow individuals to escape overpopulated areas with too much competition for resources, and allow the species to spread into and colonize new habitat.

Once the juveniles settle down, currents will continue to bring other plankton and organic debris their way, providing a steady supply of food.

Even the free-swimming animals can benefit from riding currents. Many marine vertebrates such as herring, eels, and turtles, hatch in rivers or close to the coast. Small and weak, the juveniles need currents to carry them to the open ocean feeding grounds where they grow and mature.

Because currents tend to concentrate food resources in limited areas, such as by upwelling, they make it easier for predators to find prey.

But a reliance on currents - for transportation and for maintaining water conditions - could be the downfall of individuals and populations. When currents shift, because of plate tectonics or climate change, ecosystems would be thrown into turmoil. The young could be carried into areas where they could not survive, and adults could be bathed in water whose temperature, salinity, or chemistry they cannot tolerate.

from NROC

18. This ocean current was named by Benjamin Franklin. It carries warm water from the Gulf Coast up the Eastern seaboard of America. Name it. (1) _____

Gulf Stream

20. These describe where water moves vertically. (2)

upwelling, downwelling

21. Easterly surface winds found in the tropics near the equator. (1)

trade winds

22. _____ are the waves that are generated by the gravitational pull of the sun and the moon. (1)

Tides

23. Earthquakes can cause large ocean waves by transmitting the energy from the moving earth to the water. The resulting wave is called a _____. (1)

tsunami

24. What zone is the area that is exposed at low tide and submerged at high tide? (2)

intertidal

25. How do upwellings help fish in the surface waters? (2)

Upwelling is the movement of deep cold water to the surface of the ocean. The movement of this water brings up high concentrations of nutrients from organisms from deep water and allows fish to flourish.

26. What are plankton? (2)

Plankton are any floating or feebly swimming organisms that live close to the surface of the ocean. These organisms include animals, plants, bacteria, or any other organisms which cannot resist the ocean current.

27. What type of organism breaks down the body of a dead animal? (1)

decomposers

28. How do the carbon and oxygen cycles work together? (4)

Carbon cycle: occurs as photosynthesizing plants and algae take in carbon, in the form of carbon dioxide (an inorganic compound), and produce carbohydrates (organic compounds); animals take in carbon compounds when they eat plants, then they give off this carbon, again in the form of carbon dioxide, as a waste product of cellular respiration; the carbon once again becomes available to plants for photosynthesis.

Oxygen cycle: releases this crucial element as a by-product of photosynthesis from algae and plants; oxygen is taken up by animals and plants for cellular respiration; the carbon and oxygen cycles together are called the carbon-dioxide–oxygen cycle, which shows how plants and animals are dependent upon one another.

Simpler explanation: animals give off carbon, plants take in carbon and produce oxygen, needed by the animals

29. Three biological limiting factors include: competition, predation, and herbivory. Take each one and describe how it causes a decrease in living organisms. (3)

- Competition tends to increase when resources are limited.
- Predation is the interaction between organisms in which one organism captures and feeds upon another.
- Herbivory is described as the act of organisms eating producers. If there are limited amounts of primary food sources, the consumers will perish.

30. Name one type of symbiotic relationship. Define it and give an example of it. (3)

Mutualism

Mutualism is a relationship in which both species benefit. A common example found in the ocean is the relationship between the clownfish and the sea anemone. The clownfish benefits from this relationship because it is protected from predators by the sea anemone's stinging tentacles, which do not harm the clownfish. The sea anemone benefits from the relationship by receiving scraps of food left over by the clownfish and the bright colors of the clownfish attract other fish to the anemone tentacles.

Commensalism

Commensalism is a relationship in where one species benefits, while the other is not affected by the association. A marine example includes the remora and sharks. The remora often swims below or attached to the underside of a shark. The remora benefits by eating leftovers from the shark's meals and the shark appears to be neither helped nor harmed by the remora.

Parasitism

Parasitism is a relationship in which one species benefits at the expense of the other. In the case of fin rot, the parasite is the beneficiary, while the fish, also referred to as the host is harmed. From this relationship, the fish suffers and eventually dies from disease while the parasite lives by causing the infection in host fish.

31. What is the name of a long narrow island that runs parallel to the coast and offers some protection to the mainland against storms. (1)

barrier island

32. Define wetlands and give an example of a type of wetland. (2)

Wetlands are areas where there is a gradual transition from land to water. Wetlands include swamps, tidal flats, lagoons and marshes.

33. What is a semi-enclosed body of water where the salt water of the ocean meets fresh water of a river? (1)

An estuary

34. Name two threats to the coral reefs? (2)

Humans continue to threaten the coral reefs. Currently, pollution and over-fishing are the most serious threats to these ecosystems. Reefs are also destroyed by boat and shipping traffic. Human also use cyanide and other chemicals to capture fish that live in the reefs. These chemicals harm the reef's ecosystem and kill the coral.

35. As you have learned, the producers of the sea are huge groups of microscopic, single celled plants known collectively as phytoplankton. They are responsible for providing the foundation for the marine food chain. However, there are also organisms found deep in the ocean that use the heat, chemicals and minerals found near volcanic vents to produce food.

Which organisms do you think are the more efficient producers? Why? (4)

You score the points if you state an answer and give a clear reason to support it.

36. Animals in the Echinodermata Phylum

often have spines and radial symmetry. Name one member of the phylum. (1)

sea stars, sea urchins, sand dollars and sea cucumbers

37. The animals in the Mollusca Phylum

are vertebrates. True or False? (1)

False

38. Name a crustacean? (1)

crustaceans include crabs, shrimp, barnacles, and lobsters.

39. Jawless, cartilaginous, and bony are the three types of what? (1)

fish

40. Name two reptiles that live in the water. (2) Name two more for extra credit, but minus 1 point for any wrong answer.

sea snakes, marine lizards, crocodiles, and sea turtles

41. Birds are endotherms. True or False? (1)

True

42. What type of animal is being described? warm blooded vertebrates that have hair, breathe air, live birth, and are cared for by and receive milk from the mother (1)

mammal

43. Shark skeletons are made of cartilage. True or False? (1)

True

44. Give two manatee facts. (2)

Just need to have two reasonable answers

45. Name two things that you think should be done to help and protect the oceans and ocean dwellers. (2)

Just need to have two reasonable answers

46. How do humans use the ocean for food, commerce, and energy? (3)

Just need to have reasonable answers for each thing listed

47. Why is the ocean critical for human life? (4)

Just need to have reasonable answers

48. Explain how waves, tides, and sea level influence the physical structure of the shore. (3)

Need to explain using each factor listed

49. Describe the relationship between biotic and abiotic factors in marine ecosystems. (4)

There are different answers possible.

50. Name five ways marine organism adapt to live in the ocean and seawater? (5)

Need five answers