

Test Bank

to accompany

Marine Biology: Function, Biodiversity, Ecology, 5e
by Jeffrey S. Levinton

Chapter 2

The Oceanic Environment

1. Submarine canyons are found in

- a. Mid-oceanic ridges
- b. The continental slope
- c. Estuaries
- d. The abyssal plain

Answer: b

2. Which of the following slopes corresponds most closely to that of the continental slope?

- a. 10 degrees
- b. 3 degrees
- c. 0.1 degrees
- d. 20 degrees

Answer: b

3. Which of the following is the deepest?

- a. Abyssal
- b. Hadal
- c. Continental slope
- d. Continental rise

Answer: b

4. Marginal seas tend to have properties that differ from the adjacent open ocean because

- a. Local evaporation may be high relative to precipitation
- b. Marginal seas usually have restricted circulation with the adjacent open ocean
- c. Local river input might reduce the salinity of the marginal sea
- d. All of the above

Answer: d

5. The abyssal plain

- a. Drains large river systems such as the Amazon River
- b. Is an average of about 4,000 m deep
- c. Actually has a slope of 3 degrees seaward
- d. Never connects with an oceanic trench

Answer: b

6. As one proceeds away from a mid-oceanic ridge
- a. One finds that first the ridge is magnetically neutral, but then there is a polar magnetic field
 - b. The oceanic crust becomes younger and younger
 - c. The oceanic crust becomes older and older
 - d. The ridge has a reversed magnetic field, which reflects its formation many thousands of years ago

Answer: c

7. Parts of the oceanic crust where new crust originates are known as
- a. Subduction zones
 - b. Mid-oceanic ridges
 - c. Transform faults
 - d. Plates

Answer: b

8. Plate boundaries include
- a. Trenches
 - b. Mid-oceanic ridges
 - c. Transform faults
 - d. All of the above

Answer: d

9. Which of the following is a reasonable rate of seafloor spreading
- a. One meter per year
 - b. One cm per year
 - c. One cm per million years
 - d. Ten cm per million years

Answer: b

10. A study of oceanic geology shows that there are few oceanic crustal rocks found that are older than 80 million years. Why?
- a. Oceanic crust was not formed until the beginning of the Precambrian, 80 my ago.
 - b. Current radiometric dating techniques cannot date rocks older than 50 million years.
 - c. Subduction remelts oceanic rock and most has been destroyed of that age
 - d. Oceanic crust is only found at the ridges, which are mostly unsampled.

Answer: c

11. Which is good evidence for continental drift?
- a. Reconstructions of the orientation of ancient landmasses using magnetic minerals
 - b. The fit of continents much like a jigsaw puzzle
 - c. Matches of specific geological elements from different continents, such as faults
 - d. All of the above

Answer: d

12. Water is a good solvent because

- a. Of the charge asymmetry of the water molecule
- b. It is a good polar solvent
- c. Of its high transparency
- d. All of the above

Answer: a

13. Seasonal temperature changes are the greatest in

- a. Polar waters
- b. The equatorial region
- c. Midlatitudes
- d. The deep sea

Answer: c

14. Many elements in seawater are found in constant ratios throughout the ocean because

- a. The input of dissolved substances from rivers is broadly constant throughout the ocean
- b. Dissolved material in the ocean has been there for millions of years, with no input or removal
- c. They remain in the ocean longer than the mixing time
- d. This is not true; no elements are generally found in constant ratios

Answer: c

15. Trace elements in sea water include

- a. Chlorine and potassium
- b. Sodium and aluminum
- c. Iron and strontium
- d. Sodium and chlorine

Answer: c

16. Salinity is often estimated by chlorinity because

- a. Chlorine is the only major element of sea water
- b. Chlorine is in constant ratio to sodium and other major elements
- c. Chlorine can be separated from the rest of sea water simply by evaporation
- d. Salinity is not estimated by chlorinity but by sodium concentration

Answer: b

17. Which of the following is a typical range of open-ocean salinity in practical salinity units?

- a. 5–10
- b. 32–38
- c. 40–50
- d. 15–18

Answer: b

18. Which of the following does *not* decrease salinity?

- a. Precipitation
- b. Sea ice formation
- c. River water flow
- d. Melting of sea ice

Answer: b

19. Practical salinity units are based upon

- a. The conductivity of sea water
- b. The mass of salts found after evaporating a sea water sample
- c. The carbon content of sea water
- d. The chlorine plus calcium concentration of sea water

Answer: a

20. Salt has the following effect on sea water

- a. Reduces the bulk density
- b. Decreases its light transmission
- c. Lowers its freezing point
- d. Causes it to rise to the surface

Answer: c

21. Ultraviolet light is important because

- a. It is harmful to marine life, owing to the damage it does to DNA
- b. It penetrates much deeper than other wave lengths of light and is important in photosynthesis
- c. It causes beneficial warming of living tissues
- d. It stimulates protein synthesis

Answer: a

22. The Coriolis effect causes a deflection to the right in

- a. The Southern Hemisphere
- b. The Equator
- c. The Northern Hemisphere
- d. The Poles

Answer: c

23. The Coriolis effect does *not* operate when

- a. Traveling east in the Northern Hemisphere
- b. Traveling east at latitude 45 degrees north
- c. Traveling east at the Equator
- d. All of the above

Answer: c

24. The Coriolis effect increases

- a. With increasing latitude
- b. With increasing water depth
- c. With decreasing latitude
- d. Actually its effect is the same all over the Earth's surface

Answer: a

25. Oxygen is added to sea water in

- a. respiration

- b. photosynthesis
- c. rapid swimming by fish
- d. increasing the temperature

Answer: b

26. Sea water is oxygenated on the deep-sea bottom because

- a. Bottom sea water originates in shallow water in the tropics, where oxygen is abundant
- b. Wind mixes oxygenated water from the surface to the deep sea
- c. A small amount of photosynthesis occurs on the deep-sea bed
- d. Sea water in the deep sea originates at the surface in high latitudes

Answer: d

27. Lows in dissolved oxygen are usually found

- a. At the bottom of trenches
- b. In mid-water depths in the eastern parts of the Pacific Ocean
- c. In estuaries in summer
- d. All of the above

Answer: d

28. Western ocean boundary currents such as the Gulf Stream owe their origin partially to

- a. The eastward rotation of the Earth
- b. A local reversal of the Coriolis effect
- c. Thermohaline convection effects
- d. All of the above

Answer: a

29. Upwelling on the eastern sides of oceans is controlled by

- a. The Coriolis effect
- b. Local winds
- c. Global-scale effects on climate
- d. All of the above

Answer: d

30. Gyres revolve

- a. clockwise near the Antarctic peninsula
- b. clockwise in the North Pacific
- c. clockwise around the Equator
- d. counterclockwise in the North Atlantic

Answer: b

31. Pycnoclines are

- a. Vertical gradients in temperature only
- b. Vertical gradients in sea water density
- c. Vertical gradients in oxygen concentration
- d. Small-scale changes in current structure

Answer: b

32. The motion of wind-driven waves affects the bottom

- a. At all depths
- b. Only in water depths less than 20 m
- c. At depths less than half the wave length
- d. At depths less than two times the wave length

Answer: c

33. Tidal forces on the ocean are affected the most by

- a. The Sun in winter
- b. The Sun during summer solstice
- c. The Moon
- d. The Moon, but only at new moon

Answer: c

34. During spring tides

- a. The Sun, Moon, and Earth are in line, but the Earth can be between, or on either side of, the Sun and Moon
- b. The Earth must be in line with the Sun and Moon, but the Earth must be on one side of the Sun and Moon combined
- c. The Spring Solstice occurs
- d. The tidal range is the least

Answer: a

35. Which of the following is true about tides?

- a. There are always two high and low tides each day
- b. Tidal heights are always equal
- c. Tidal currents are strongest during spring tides
- d. Tidal currents are strongest during neap tides

Answer: c

36. Fjords

- a. Have an open connection with the ocean and are usually well oxygenated
- b. Always have the same salinity as the adjacent oceanic area
- c. Are never affected by tides
- d. Are likely to have anoxic bottom waters

Answer: d

37. Estuaries often do not have a discrete layer of low-salinity water on top of high-salinity water because of

- a. Wind mixing
- b. Tidal motion
- c. Basin shape
- d. All of the above

Answer: d

38. The two factors that most affect sea water density are

- a. Temperature and salinity
- b. Temperature and oxygen
- c. Oxygen and salinity
- d. Nitrogen and temperature

Answer: a

39. An oxygen minimum layer develops

- a. In a fjord at low tide
- b. At a depth in the water column in the open ocean in the western Pacific
- c. Within the sediment, just above a burrowed zone
- d. All of the above

Answer: b

40. Wave motion affects the bottom

- a. When the water depth is 10 m or less
- b. When a wave arrives on shore
- c. When the water depth is half the wave length or less
- d. When the water depth is half the wave length or more

Answer: c

41. The North Atlantic Deep Water lies above the Antarctic Bottom Water because

- a. Pleistocene glaciers are the source of the Antarctic Bottom Water
- b. The North Atlantic Deep Water is formed later in the season, after the Antarctic Bottom Water
- c. The North Atlantic Deep Water is of lower density than the Antarctic Bottom Water
- d. The Antarctic Bottom Water is a permanent feature on the seafloor and never moves

Answer: c