

OCN201 Fall2006 Exam2 Section1

True/False

Indicate whether the sentence or statement is true or false.

- ___ 1. Hydrothermal chimneys are formed from lava at mid-ocean ridge hydrothermal vent sites.
- ___ 2. There are no hydrothermal vents in the Arctic Ocean
- ___ 3. It doesn't matter what the salinity of the seawater is -- you can always make it dense enough to form deep water if you cool it enough
- ___ 4. At constant wind speed the Ekman layer gets deeper as you approach the equator
- ___ 5. Wind waves are deep water waves
- ___ 6. Long wavelength waves travel more slowly than short ones
- ___ 7. When the crest of a wave overlaps with the trough of another wave this is called constructive interference
- ___ 8. Waves can refract around island chains
- ___ 9. Because of the dissolved salt in seawater its freezing point is higher than that of pure water
- ___ 10. Salinity is used to determine the density of sea water
- ___ 11. Salinities in the open ocean can vary from 32-39
- ___ 12. Outgoing radiation from the Earth is longwave
- ___ 13. Humid air is more dense than dry air
- ___ 14. The Hadley cell is an atmospheric circulation cell that moves air from the Equator to 30°N
- ___ 15. The atmospheric pressure at the top of Mauna Kea is approximately 562 mb
- ___ 16. Surface currents are driven by atmospheric processes
- ___ 17. During El Nino conditions hurricanes are more likely to come near Hawaii
- ___ 18. When wind blows over cold ocean water it is less likely to produce rain
- ___ 19. Wave packets travel more slowly than individual waves
- ___ 20. Carbon dioxide is one of several greenhouse gases

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- ___ 21. Most of the chemicals in seawater come from
 - a. hydrothermal vents
 - b. rivers
 - c. rain
 - d. phytoplankton
- ___ 22. How much of the Earth's surface water is in the oceans?
 - a. 10%
 - b. 97%
 - c. 99%
 - d. 73%

Name: _____

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- _____ 23. Hydrothermal fluids do not boil at 380 °C at the bottom of the ocean because
- Pressure has raised the boiling point
 - Sea water doesn't boil
 - There are too many chemicals dissolved in the sea water
 - The particles prevent boiling
- _____ 24. Hydrothermal fluids result from the reaction of sea water with high temperature magma below the bottom of the sea-floor. How deep can these fluids go:
- 10 m
 - 1 km
 - 5 km
 - 100km
- _____ 25. The freezing point of seawater of salinity 35 is approximately:
- 0°C
 - 2.9°C
 - 1.9°C
 - 4°C
- _____ 26. The thermohaline circulation is
- the process that moves deep water from the Atlantic to the Pacific Ocean
 - the process by which organisms remove chemicals in surface waters and remobilise them in deep water
 - the process which brings hydrothermal fluids to the sea floor
 - a new transport system at San Francisco airport
- _____ 27. Of the total water in the ocean the deep zone accounts for about
- 1%
 - 18%
 - 80%
 - 99.4%
- _____ 28. In water the speed of sound
- increases with decreasing temperature
 - increases with increasing pressure
 - all of the above
 - none of the above
- _____ 29. The SOFAR layer in the ocean is a region
- with maximum sound speed
 - with minimum sound speed
 - where submarines can hide from SONAR
 - where sound waves refract away from
- _____ 30. The speed of light in water, compared to air is:
- greater
 - less
 - same
- _____ 31. The mass of one square inch of the atmosphere at the Earth's surface is approximately
- 5 pounds
 - 1 pound
 - 15 pounds
 - 25 pounds
 - 10 pounds

Name: _____

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- _____ 32. The wavelength of the radiation entering and leaving the Earth are
- the same
 - incoming is short, outgoing is long
 - incoming is long, outgoing is short
 - none of the above
- _____ 33. At the equator the Earth is rotating eastward at approximately:
- 100 mph
 - 10,000 mph
 - 1,000 mph
 - 1,500 mph
- _____ 34. Western boundary currents are:
- slower than eastern boundary currents
 - colder than eastern boundary currents
 - all of the above
 - none of the above
- _____ 35. During the 1982/83 El Nino the weather conditions in Australia were:
- drought
 - heavy rainfall
 - hurricanes
 - unaffected
- _____ 36. The period of a wave is:
- the distance between its crests
 - the time it takes succeeding crests to pass a fixed point
 - the number of waves that pass a fixed point each second
 - the distance from the crest to the trough of a wave
- _____ 37. A wave behaves as a shallow water wave when the depth of the ocean is equal to or _____ less than:
- one wavelength
 - 1/2 wavelength
 - 1/20 wavelength
 - 1/23 wavelength
- _____ 38. If a wind wave has a period of 8 seconds its velocity in meters per second in deep water would be approximately:
- 8
 - 12
 - 24
 - 210
- _____ 39. If winds of 23 mi/hr blow for long enough they can produce waves with a height of
- 5 ft
 - 20 ft
 - 40ft
 - over 60 ft
- _____ 40. When a deep water wave approaches the shore which of the following is true:
- its velocity remains constant
 - its period remains constant
 - its wavelength remains constant
 - all of the above
- _____ 41. In the Pacific Ocean, Tsunami travel at approximately:
- 13 mph
 - 45 mph
 - 150 mph
 - 450 mph

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- _____ 42. The period of a typical Tsunami is:
a. 30 seconds
b. 2 minutes
c. 15 minutes
d. 35 minutes
- _____ 43. As a result of tides the length of a day on Earth is:
a. increasing
b. decreasing
c. not changing
- _____ 44. The tides in Hawaii are:
a. diurnal
b. semi-diurnal
c. mixed
- _____ 45. Each day high tide is approximately:
a. 1 hour later
b. 1 hour earlier
c. 2 hours later
d. exactly the same time
- _____ 46. Recent atmospheric CO₂ levels started to increase around
a. 1700
b. 1780
c. 1850
d. 1935
- _____ 47. The most recent measurements of sea level rise from satellites show sea level rising at:
a. 40cm/100 yrs
b. 6 metres/100 yrs
c. 60 metres/100 yrs
d. 100 cm/100 yrs
- _____ 48. During an ice age sea level
a. goes up
b. goes down
c. stays the same
- _____ 49. Data from ice-cores shows that when carbon dioxide levels in the atmosphere went down, average planetary temperatures:
a. stayed the same
b. went up
c. went down
- _____ 50. The Vostock ice core was drilled by French and Soviet scientists in
a. France
b. Greenland
c. Siberia
d. Antarctica
e. Alaska
- _____ 51. The source of energy for life around hydrothermal vents is:
a. Photosynthesis
b. Chemosynthesis
c. Hydrostatic pressure
d. Radioactive decay
e. Malasadas

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- _____ 52. Nutrients are removed from the surface waters of the ocean down to the point where the light level is
- 50%
 - 10%
 - 5%
 - 1%
- _____ 53. The thermocline is the part of the ocean where
- the density changes rapidly
 - salinity changes rapidly
 - the temperature changes rapidly
 - you are most likely to find Elvis
- _____ 54. The colour of light that is absorbed least in the ocean is
- violet
 - blue
 - green
 - red
- _____ 55. The average speed of sound in water is
- 5 metres/second
 - 500 m/s
 - 1500 m/s
 - 3000 m/s
 - the same as in air
- _____ 56. Approximately what % of incoming light reaches 10 m depth
- 1%
 - 6%
 - 16%
 - 46%
- _____ 57. The Southern Oscillation is:
- the change in direction of Coriolis force at the equator
 - the change in pressure differential between Darwin and Tahiti
 - the change in the thermocline depth between El Nino and La Nina
 - A popular dance from Brazil
- _____ 58. During El Nino the layer of warm water at the surface ocean in the Western Pacific is
- thicker than normal
 - thinner than normal
 - stays the same
- _____ 59. Spring tides occur when:
- the moon is in the third quarter
 - the sun and moon are aligned
 - Jupiter is aligned with Mars
 - none of the above
- _____ 60. Compared to the size of the atmospheric reservoir of carbon dioxide the fossil fuel reservoir is approximately:
- 13.5-times
 - 25.7-times
 - 100-times
 - 140-times
 - 10-tiimes

