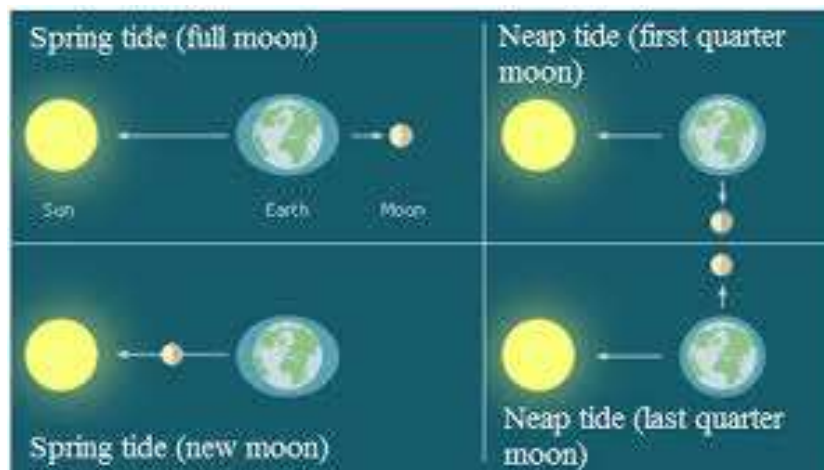


NAME _____

MARK YOUR ANSWER CLEARLY AND UNAMBIGUOUSLY

DO ALL THE SHORT ANSWERS (1-25) OR ANY TWO OF THE FOUR ESSAYS – NOT BOTH

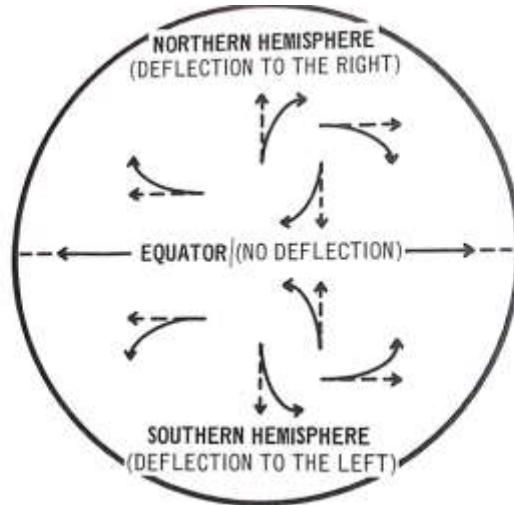
1. The thermohaline generally (on an average) occurs at about
 - a. 10 meters
 - b. **50 meters (see the diagrams in the notes)**
 - c. 500 meters
 - d. 1000 meters
2. “Rip tides” form when
 - a. Heavy storms are in the area
 - b. Tides are at their highest
 - c. Between 2 sets on incoming waves
 - d. **Do not exist (There are rip currents, but not rip tides)**
3. Classification systems
 - a. **Are culturally constructed (Classification is a cultural event. All things are different)**
 - b. Are useful only when based on natural phenomenon
 - c. Are useful only when based on cultural phenomenon
 - d. None of these.
4. Neap tides occur when the sun, Earth and moon form
 - a. A straight line with the moon between the Earth and the sun
 - b. A straight line with the Earth between the sun and the moon
 - c. **A right angle with the Earth at the 90° point (Check diagrams in notes)**
 - d. A right angle with the moon at the 90° point



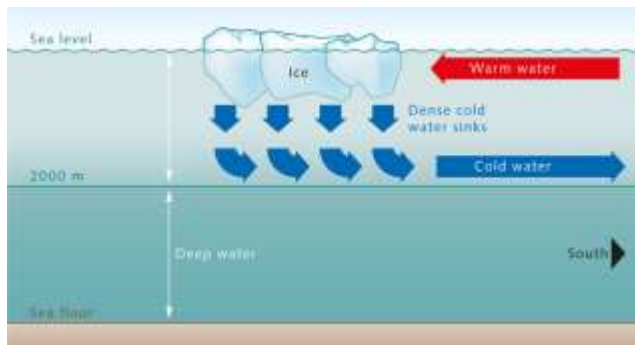
5. The sun
 - a. Has a greater impact on the tides because it is bigger than the moon

- b. **Has a lesser impact on the tides because it is further away than the moon (Check notes)**
 - c. Has a lesser impact on the tides because it is small than the moon
 - d. Has no impact on the tides.
- 6. Which kind of breaker does the most damage to beaches?
 - a. **Surging (Check notes)**
 - b. spilling
 - c. plunging
 - d. underwater waves
- 7. Waves that are caused by displacement are known as
 - a. Tidal waves (caused by incoming tide)
 - b. **Tsunami (require some modification of ocean bottom)**
 - c. Rogue waves
 - d. Underwater waves
- 8. The start of the science of seismology is associated with a disaster in and around which city?
 - a. Santorini
 - b. **Lisbon (Earthquake and tsunami interested German scientists who started seismology)**
 - c. Fukushima
 - d. Galveston
- 9. Which scale is used to measure specifically hurricane winds
 - a. Richter (Earthquakes)
 - b. Beaufort (wind)
 - c. Fujita (tornado)
 - d. **Safir Simpson (hurricanes)**
- 10. Water pushed onto the shore by strong winds is known as
 - a. **Storm surge (see notes)**
 - b. Tsunami
 - c. Rogue waves
 - d. Spring tides
- 11. The Coriolis force moves objects moving on the Earth
 - a. To the right in all cases (only in N. hemisphere)
 - b. To the left in all cases (only in S. hemisphere)
 - c. **In different directions in the North and South hemisphere (R in north H.; L in south H.)**
 - d. More dramatically near the equator (vanishes near equator)

Diagram 2



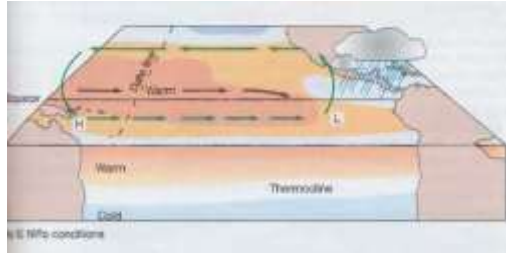
12. The greatest inland water disaster in the U.S. occurred in Galveston and was caused by
 - a. A tsunami
 - b. A rogue wave
 - c. A dam break
 - d. **Storm surge (as a result of hurricane. See notes)**
13. The demonstration in class showed that (cold water from melting ice sank)
 - a. **Cold water is denser than warm** (cold water from melting ice sank)
 - b. Cold water is less dense than warm (not true)
 - c. Ice is denser than cold water (not true)
 - d. Ice is denser than warm water.



Also in the notes.

14. Hurricanes rotate
 - a. Clockwise (only in S. hemisphere)
 - b. counter clockwise (only in N. hemisphere)
 - c. toward the east (what does that mean?)
 - d. **Clockwise or counterclockwise depending on which hemisphere (N/S) they are in, (Yes)**
15. During an ENSO event
 - a. **The thermocline is depressed in the Eastern Pacific (true)**

- b. The thermocline rises in the Eastern Pacific (no, it is depressed)
- c. The trade winds become stronger (No. Become weaker, stop or reverse)
- d. A high pressure center develops over Peru (No. Low pressure appears. See diagrams)

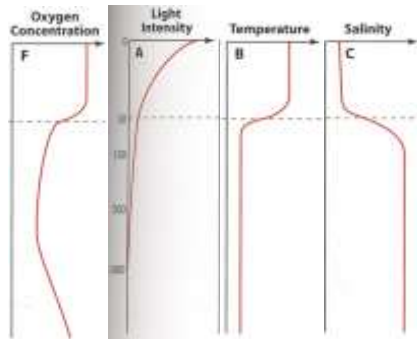


16. Nitrogen fixing refers to

- a. Repairing broken nitrogen (What?!?!?)
- b. Increasing the amount of nitrogen in an area so there is enough for autotrophs
- c. Decreasing the amount of nitrogen to protect animals that can't use it in its pure form
- d. **Taking nitrogen and putting it into an organic compound so it is usable by living things (usually into ammonia – see notes)**

17. Which graph showing distributions of things in a “two layered” ocean was “most complex” was

- a. **Oxygen (changes direction on the graph several times)**
- b. Light (just gets less - see charts)
- c. Temperature (just gets less - see charts)
- d. Salinity (just increases - see charts)

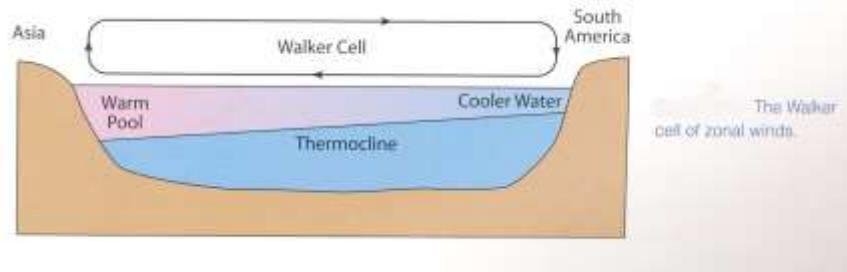
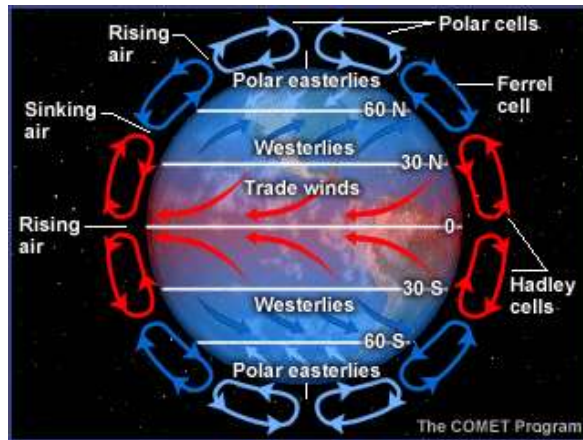


18. What aspect of the Indian Ocean is involved in the monsoons in India?

- a. Temperature
- b. salinity
- c. nutrients
- d. **location and distribution (basically in S. hemisphere. Large land mass in N. Hemisphere)**

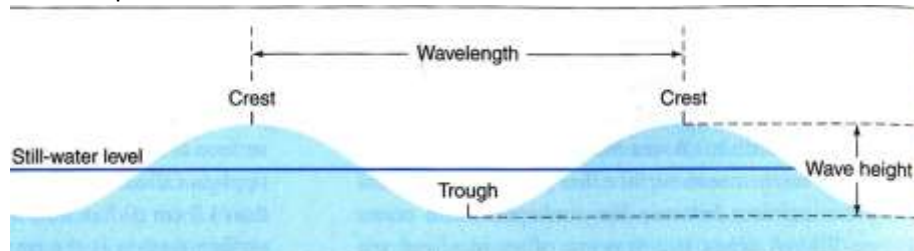
19. Which of the three world wide wind cells is closest to the equator?

- a. **Hadley (nearest equator- next cells are Ferrel and then Polar)**
- b. Ferrel (between 30 and 60 degrees from equator)
- c. Walker (the cell that involves E-W movement in ENSO)
- d. Polar (between 60 and 90 degrees from equator)



20. The distance between wave crests is known as

- a. Wave amplitude
- b. Wave height
- c. **Wave length**
- d. Wave depth



21. The required material which is in least supply for what is needed to obtain some result is

- a. The fixed nitrogen
- b. The nutrient content
- c. **The limiting factor**
- d. The cyanobacteria

22. The resolution to the problem of the separation on nutrients and light is

- a. Nitrogen fixing
- b. Increased oxygen
- c. **upwelling**
- d. suppression of the thermocline

23. Ocean currents

- a. Are involved with heat transport
- b. Are used by some animals to make swimming less demanding
- c. Were and are used by ships to decrease their sailing time between ports
- d. **All of these**

24. Which has an impact on wave height?

- a. The speed of the wind
- b. The duration of the wind
- c. The fetch
- d. **All of these**

25. The difference in the depth of the tide in the Bay of Fundy and in Cuxhaven

- a. **Is caused by the shape of the land**
- b. The temperature of the water
- c. The Coriolis Effect
- d. The force of the wind

ESSAYS (DO ANY 2)

1. What kinds of waves are there? How are they formed and what impact does each have on people.
2. Discuss the concept of a two level ocean. What is involved with the two levels? What problems does it cause and how are the problems handled?
3. The ocean can cause many different “disasters” choose any three kinds of events which threaten life and property and explain and discuss what they are, how they operate and the kinds of problems they create.
4. There are complex interactions between the ocean and the atmosphere. Discuss the interactions between the ocean and the atmosphere and the impact these have on people.