

Name \_\_\_\_\_ ID# \_\_\_\_\_

Section \_\_\_\_\_ (use 01 for the 10:30 AM class; 02 for 12:30 PM class)

## OCN 201 Fall 2014 Final Exam (75 pts)

### True or False (1 pt each)

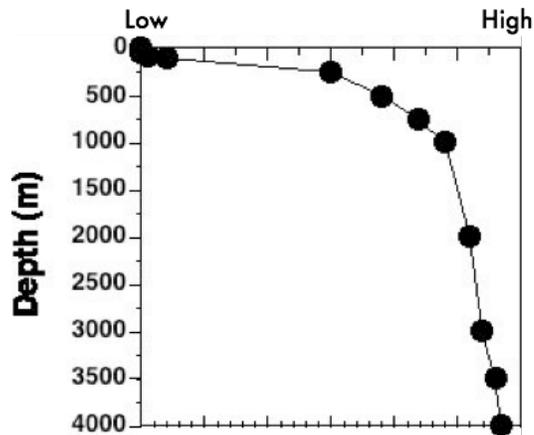
Note: on Scantron Sheet A = True, B = False

1. The scientific evidence suggests that amino acids (one of the building blocks of life) could not possibly have formed on early earth.
2. According to the serial endosymbiosis theory, prokaryotes developed from eukaryotes as a result of the sequential loss over time of more complicated internal structures.
3. Phytoplankton are photoautotrophs.
4. Pelagic organisms live on the sea floor.
5. Blue light penetrates deeper into the ocean than red light.
6. Marine snow refers to the salt that encrusts rocks near the seashore.
7. Polar oceans have very low productivity for most of the year because the phytoplankton are limited by light.
8. The euphotic zone refers to the deepest part of the sea into which no sunlight penetrates.
9. Deep diving marine mammals have collapsible lungs.
10. Flatworms have only one opening to their digestive cavity.
11. Zooxanthellae are parasites of coral
12. Many animals in the very deep sea are colored red or black
13. Coastal upwelling zones are areas of particularly high primary productivity.
14. Rings of coral reef left behind when a tropical island is pulled below the sea surface are called atolls.
15. Cnidarians are a group of organisms named for their stinging cells.
16. CO<sub>2</sub> and water are the two main factors limiting photosynthesis in the ocean
17. Hagfish produce copious amounts of slime as a defense mechanism.
18. Some bacteria can perform photosynthesis.

19. Tanker spills are the source of most oil pollution in the ocean.
20. Whales are classified as nekton.
21. The uppermost portion of the sea is known as the abyss.
22. Some octopuses can change their skin pigmentation to camouflage themselves.
23. Surface waters in tropical oceans are very warm, which makes it easier for nutrients in cold deep water to mix to the surface.
24. Biomass increases with depth in the ocean.
25. Yields of wild-caught fish have been dramatically increasing for the past ten years.

**Multiple Choice (2 points each)**

26. A placozoan is:
  - A. one of the most primitive types of animals
  - B. an extinct marine reptile
  - C. an encrusting alga
  - D. a geological epoch
27. Which of these variables changes with depth in the ocean as indicated in the graph:



28. At hydrothermal vents, bacteria get the energy to drive chemosynthesis from
  - A. hydrogen sulfide
  - B. sugar
  - C. sunlight
  - D. heat

29. Counterillumination refers to
- A. having a reduced silhouette to avoid being seen from the front
  - B. using chemiluminescent light flashes to attract mates
  - C. having light organs under the eyes to use as a flashlight to find prey
  - D. producing chemiluminescent light on the belly as a means of camouflage
30. Coccolithophores are phytoplankton that helped form which of these massive geological features:
- A. Uluru (Ayers Rock)
  - B. Bonneville Salt Flats
  - C. White Cliffs of Dover
  - D. Snake River Canyon
31. Which is NOT a feature of odontocete whales
- A. two blowhole openings
  - B. teeth
  - C. use echolocation
  - D. are mammals
32. Which of the following is not a mollusc?
- A. nudibranch
  - B. squid
  - C. whale shark
  - D. clam
33. Which of these animals is most closely related to humans:
- A. sea star
  - B. flat worm
  - C. octopus
  - D. crab
34. Biomagnification (or bioaccumulation) refers to:
- A. the aggregation of fish near objects floating in the water
  - B. the magnifying effect of water because of its refractive index
  - C. the accumulation of biomass on the sea floor
  - D. increasing concentrations of toxins in animals at higher trophic levels
35. Bony fish belong to the class:
- A. Chondrichthyes
  - B. Mammalia
  - C. Osteichthyes
  - D. Odontocetes

- 36 Gelatinous animals with eight “comb rows” of cilia are
- A. Anemones
  - B. Sea squirts
  - C. Ctenophores
  - D. Box jellies
37. Organisms that either don’t swim, or swim so weakly that they drift with the currents are referred to as:
- A. plankton
  - B. sessile
  - C. oceanic
  - D. nekton
38. Which of the following is the most abundant type of life in the sea:
- A. Prokaryotes (bacteria and archaea)
  - B. Fishes
  - C. Jellyfish
  - D. Protists (single-celled eukaryotes)
39. Geological evidence indicates that life first appeared on earth:
- A. More than 13 billion years ago
  - B. At least 3.5 billion years ago
  - C. No more than 5 million years ago
  - D. No more than 6 thousand years ago
40. Oil entering the ocean is not considered pollution if it:
- A. is not visible on the surface
  - B. is degradable by bacteria
  - C. is flowing from a natural seep
  - D. all of the above

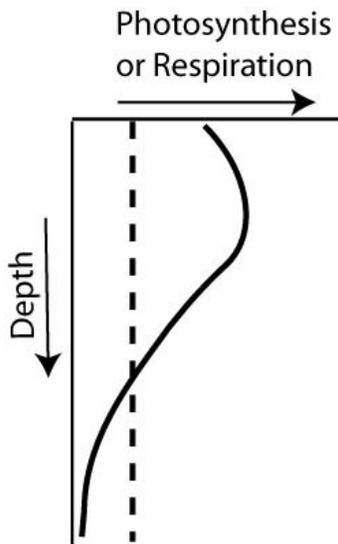
SHORT ANSWER QUESTIONS START ON THE NEXT PAGE

**Short Answer. (4 points each):**

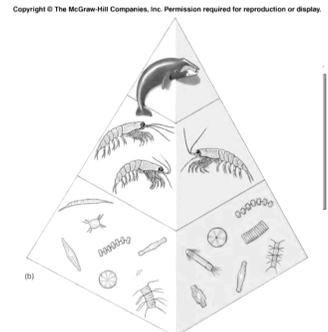
41. The graph below shows how photosynthesis and respiration change with depth. Fill in the blanks to indicate which line represents photosynthesis and which represents respiration (2 points). Also indicate on the graph (with a circle or an arrow) the location of the compensation depth (2 points).

Dashed line represents: \_\_\_\_\_

Solid line represents: \_\_\_\_\_



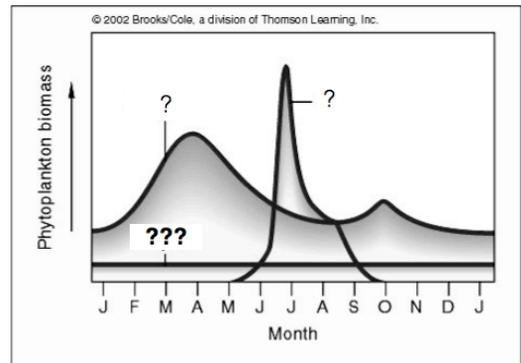
42. In a food chain, the amount of biomass is less and less at each successively higher trophic level (as illustrated below). What is the term for this distribution (2 points) and why does this happen (2 points)?



(three more questions on next page!)

43. Give ONE example of a symbiosis between two marine organisms (2 points). State what kind of symbiosis it is and why you consider it to be that type (2 points).

44. The graph below shows how the amount of phytoplankton in the water changes over the course of a year in three different areas of the ocean (tropical, temperate, and northern polar). One of the lines (running straight across near the bottom of the graph) is marked with three bold question marks. Which area of the ocean does this represent (2 points) and why does it display that pattern (2 points)?



45. The “Deep Scattering Layer” refers to the aggregation of many animals in the mesopelagic that reflect sound. Why do many of the animals in this layer move to the surface at night time (2 points)? Why does it move to deep waters during the day (2 points)?