OCN 201 Spring 2012 Final Exam (75 pts)

True or False (1 pt each).  A = TRUE;  B = FALSE

1. Evidence suggests that amino acids (one of the building blocks of life) can only form under laboratory conditions.

2. According to the “serial endosymbiosis theory”, the eukaryotes arose through the merger of multiple prokaryotes.

3. Benthic marine organisms live on the sea floor

4. Red light penetrates deeper than blue light in the ocean.

5. No sunlight penetrates into the disphotic zone of the ocean.

6. Prochlorococcus is the most abundant phytoplankton in the ocean.

7. Phytoplankton are photoautotrophs.

8. CO₂ and water are the main factors limiting photosynthesis in the ocean.

9. Sea grasses are responsible for most of the primary productivity in the ocean

10. Octopuses can change their pigmentation for camouflage.

11. The most productive fisheries are in coastal waters and areas of upwelling

12. Anemones and corals are cnidarians.

13. Whale sharks are filter feeders.

14. Marine snow refers to salt crystals formed from sea spray.

15. Equatorial upwelling results in a band of very low primary productivity around the equator

16. Many animals in the very deep sea are black or red.

17. The “Deep Scattering Layer” was first detected by sonar.

18. Most of the biomass in the ocean is found in the upper 200 m.

19. Diatoms have tests (shells) made of silica.
20. Humpback whales spend their summers feeding in tropical waters.

21. Biomagnification results in toxin levels increasing at successively higher trophic levels.

22. Bioluminescence is used by some fish as a lure to catch other fish.

23. There are more phytoplankton than fish in the ocean.

24. Tanker spills are the source of most oil pollution in the ocean.

25. Fisheries yields have been dramatically increasing for the past ten years.

Multiple Choice (2 points each)

26. The age of fossilized stromatolites indicates that life first appeared on earth:
   A. at least 6 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

27. An animal that eats only other herbivorous animals is a:
   A. parasite
   B. secondary consumer
   C. primary producer
   D. photoautotroph

28. The White Cliffs of Dover:
   A. are found in southern England
   B. are largely comprised of the calcareous plates from coccolithophores
   C. have inspired songwriters and musicians
   D. all of the above

29. Primary production in the tropical gyres is limited by:
   A. nutrients
   B. strong currents
   C. water
   D. light

30. Sponges are:
   A. plants
   B. filter feeders
   C. planktonic
   D. all of the above
31. 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

32. Countershading refers to
   A. having a reduced silhouette
   B. using light flashes to attract prey
   C. producing light to use as a flashlight to find prey
   D. having a light belly and a dark back

33. Which of these animals is most closely related to humans:
   A. sea star (starfish)
   B. sponge
   C. octopus
   D. comb jelly (Ctenophore)

34. Which is NOT a feature of mysticete whales
   A. two blowholes
   B. baleen
   C. teeth
   D. feed on plankton and small fish

35. Which of the following refers to an animal that can swim faster than the ocean currents?
   A. nekton
   B. plankton
   C. neuston
   D. babylon

36. In the graph below, Line B illustrates the seasonal change in phytoplankton biomass in which one of the following regions:
   A. Equator
   B. Temperate Coast
   C. Tropical gyre
   D. Arctic Ocean
37. Animals living on the surface of marine sediments are referred to as
   A. pelagic
   B. epifauna
   C. sessile
   D. sedimentary

38. Bony fish belong to the class:
   A. Chondrichthyes
   B. Mammalia
   C. Osteichthyes
   D. Odontocetes

39. Which of the following is not an arthropod?
   A. copepod
   B. krill
   C. crab
   D. snail

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. (4 points each):**

41. Please briefly note the criteria that determine whether a symbiosis is a

   • Parasitism (1 pt):

   • Commensalism (1 pt):

   • Mutualism (1 pt):

   And give one example of a **mutualism** between two marine organisms(1 pt):
42. For the graph below, depicting how photosynthesis and respiration change with depth during daylight hours, indicate which line represents photosynthesis and which represents respiration (2 pts). Also indicate on the graph (with a circle or an arrow) the location of the **compensation depth** (2 pts).

Dashed line represents: ____________________

Solid line represents: _________________

43. Why are the most abundant fish in the ocean filter feeders?
44. What name has been given to the point at which atolls drown (2 pts) and why does this happen (2 pts)?

45. On the graph below are three lines showing how three different variables vary with depth in the ocean. Write the letter of the line that represents the expected shape for NUTRIENTS (2 pts): __________. Briefly explain why it has that shape (2 pts).