

OCN 201 Fall 2005 Final Exam (90 pts)

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

1. The Miller-Urey experiment showed that Panspermia is not possible.
2. Holoplankton refers to plankton that spend their entire life in the plankton.
3. Polar bears are one of the main predators of penguins.
4. Phytoplankton photosynthesize, but do not respire.
5. Sponges are animals.
6. Tropical oceans typically have very low productivity all year round because they are nutrient limited.
7. The aphotic zone refers to the deepest part of the sea into which no sunlight penetrates.
8. Red light penetrates deepest into the ocean.
9. Tanker accidents are the largest source of oil entering the ocean.
10. The deep scattering layer moves toward the surface during the day.
11. The lateral line system of fish is used for camouflage.
12. Cnidarians are a group of organisms named after their stinging cells.
13. Most fisheries are being fished at well below their maximum sustainable yield.
14. Hagfish produce copious amounts of slime as a defense mechanism.
15. Some kinds of bacteria are photosynthetic
16. Drift nets are the preferred method for open ocean fishing because they minimize bycatch.
17. The upwelling of nutrients near the Galapagos increases during an El Niño.
18. The average temperature of the Earth has increased about 3 degrees Fahrenheit in the last 140 years.

19. Pollution particles in big cities offset some of the warming due to greenhouse gases.
20. The Earth's temperature is controlled by the balance between incoming infrared and outgoing visible light (radiation).

Multiple Choice (3 points each)

21. Which of the following is NOT part of Darwin's theory of evolution by natural selection
- A. mutation
 - B. heritability of traits
 - C. unlimited resources
 - D. selection by the environment
22. An organism that uses light energy to make its own food is a:
- A. Parasite
 - B. Secondary consumer
 - C. Chemoheterotroph
 - D. Photoautotroph
23. For decaying whales on the sea floor, the first of the three main stages of decomposition is characterized by
- A. chemoautotrophic bacteria
 - B. enrichment opportunists
 - C. mobile scavengers
 - D. ambush predators
24. At hydrothermal vents, bacteria get the energy to drive chemosynthesis from
- A. hydrogen sulfide
 - B. sugar
 - C. sunlight
 - D. heat
25. Counterillumination refers to
- A. having a reduced silhouette
 - B. using light flashes to attract prey
 - C. using light to find prey
 - D. producing light as camouflage
26. If mixing in the surface ocean is deeper than the "critical depth", then:
- A. Sperm whales do not need to dive as deep to find giant squid
 - B. Counterillumination is counterproductive
 - C. A phytoplankton bloom cannot occur
 - D. The conditions are right for a "red tide"

27. Which is NOT a feature of mysticete whales
- A. two blowholes
 - B. baleen
 - C. sharp triangular teeth
 - D. thick layer of blubber
28. Which of the following is an invertebrate?
- A. sea lion
 - B. squid
 - C. hagfish
 - D. penguin
29. Animals living within sediments are referred to as
- A. pelagic
 - B. infauna
 - C. epiflora
 - D. sedimentary
30. Fish with cartilaginous skeletons belong to the class:
- A. Chondrichthyes
 - B. Mammalia
 - C. Osteichthyes
 - D. Odontocetes
31. The preferred term for a red tide is
- A. tide of death
 - B. harmful algal bloom
 - C. toxic phytoplankton invasion
 - D. sea slime
32. Animals that can swim strongly enough to make headway against ocean currents are referred to as
- A. plankton
 - B. sessile
 - C. oceanic
 - D. nekton
33. Some corals harbor photosynthetic dinoflagellates known as
- A. mastigonemes
 - B. zooxanthellae
 - C. polyps
 - D. cnidocytes

34. Which of the following is the most abundant type of cellular life in the sea:
- A. Prokaryotes
 - B. Fishes
 - C. Jellyfish
 - D. Protists
35. "Greenhouse gases" affect our climate by
- A. Reflecting sunlight
 - B. Absorbing infrared
 - C. Promoting the growth of vegetation
 - D. All of the above
36. The ocean affects the climate by
- A. transporting heat toward the poles
 - B. absorbing some atmospheric CO₂
 - C. triggering circulation changes when salinity decreases
 - D. all of the above
37. Atmospheric CO₂ sources in Hawaii include
- A. plant respiration
 - B. automobile exhaust
 - C. electricity production
 - D. all of the above
38. In Hawaii, El Niño events cause
- A. a higher probability of hurricanes
 - B. stronger trade winds
 - C. more volcanic vog episodes
 - D. a greater probability of tsunamis

Short Answer. (4 points each):

42. Draw a graph indicating how photosynthesis and respiration change with depth (2 pts) and indicate (with a circle or an arrow) the location of the compensation depth (2 pts).

43. Give an example of a symbiosis between two marine organisms (2 pts) AND give a reason for why you would consider it a mutualism, commensalism, or parasitism (2 pts).

44. What is meant by a “Trophic pyramid” (2pts) and why does it exist (2pts)?

47. The diagram below shows a Hadley Cell. To the right of each arrow (at the Equator and 30N) **briefly describe** the most common type of weather at that latitude (2 pts). **AND** In the circles, **place arrowheads (>)** that clearly show which way the surface and upper-altitude winds are blowing (2 pts).

