Oceanography 201 Spring, 2004 Final Exam

Last Name_____First name_____ID No. (optional) _____
Check to make sure that your last and first name are coded correctly on your computer answer sheet
Answer questions 1-35 on the Scantron

True/False (A = true, B = false), 25 questions, one point each

1. Photosynthetic bacteria are the most abundant primary producers in the ocean.
2. The microbial loop is an appendage to classic oceanic foodwebs.
3. Speciation is a fairly constant process.
4. Rats share 90% of the same genome found in humans.
5. Liebig's law of the minimum states that the most abundant nutrient controls primary production.
6. Chlorophyll-a is a good indicator (proxy) of phytoplankton biomass.
7. Approximately 83% of the biomass in the ocean is found in the upper 200 m.
8. Rich fishery grounds correspond with areas of low primary production.
9. 90% of the world's fish catch is caught in 90% of the ocean's area.
10. All primary production in the surface ocean is a result of photosynthesis.
11. The trace metal iron has an insignificant effect on primary production in the open ocean.
12. Chemoautotrophic bacteria manufacture food from H_2S.
13. Autotrophs are secondary consumers.
14. In the sea, at each trophic level, about 90% of the organic matter produced is passed up the food chain to the next trophic level.
15. The deep scattering layer undergoes vertical migration to the surface on a diurnal basis.
16. Aquaculture contributes a large percentage of total fisheries production in the world.
17. Tunas and billfish comprise the biggest catch of commercial fisheries in the world.
18. Dead whales represent one pathway of transfer of organic carbon from the euphotic zone to the deep sea.
19. The Darwin Point is a place where atolls drown due to insufficient coral growth.
20. Carbon dioxide is expected to double in the atmosphere by the year 2100.
21. Most coral reefs in the world are significantly impacted by pollution.
22. Phytoplankton make up 1% of the biomass in the world's oceans but account for 50% of the primary production.
23. Sometimes "nothing" is the best thing to do after an oil spill.
24. DDT kills mosquitoes but does little harm to other organisms.
25. One of the biggest problems facing mankind is human overpopulation.

Multiple choice; 10 questions, pick the best answer; one point each

26. Life on earth evolved by way of a) spontaneous generation, b) divine creation, c) biosynthesis.

27. The human population on earth is: a) about 6.0 billion people, b) beyond carrying capacity, c) increasing exponentially, d) all of the above.

28. The world annual fish harvest from the ocean is: a) about 100+ million tons, b) is no longer increasing, c) taken primarily in areas of high productivity, d) all of the above.

29. Primary production is controlled by: a) upwelling, b) the concentration of nutrients, c) depth of the mixed layer, d) all of the above.

30. Fishery products constitute about what % of the protein consumed by the world's human population.
a) 5%, b) 18%, c) 50%, d)90%.

31. Upwelling usually: a) increases the temperature of surface waters, b) decreases productivity of surface waters, c) decreases the nutrients in surface waters, d) none of the above.

32. Global warming is caused by a) excess atmospheric pollution, b) increasing greenhouse gases in the atmosphere, c) increasing volcanic eruptions, d) sun-spots.

33. Chemosynthetic communities at hydrothermal vent sites get their energy from: a) the sun,
b) chemicals in the heated water, c) manganese nodules, d) giant worms.

34. The most important sources producing sea level rise caused by increased atmospheric CO_2 levels are: a) melting of mid latitude glaciers, b) melting of polar ice caps,
c) warming of the surface ocean causing thermal expansion, d) all of the above.

35. Which of the following is not an important factor in controlling primary production
a) nutrients, b) light, c) temperature, d) detritus.

<u>Fill-in questions, 20 questions, fill in the blank spaces with the best answer, one point each:</u>

36. Give an approximate range in depth for the euphotic zone in the open ocean _____

37. Cod are most often caught in _____nets.

38. Biological production at hydrothermal vents in the deep sea is called _____

39. Whale falls serve as _____ for the dispersal of many deep sea benthic organisms.

40. The increase in the concentration of a pollutant as it moves up the food chain is called_____.

41. In a food chain, the feeding levels are called _____levels.

42. The efficiency of transfer of food energy up the food change is about _____%.

43. Organisms capable of feeding within different trophic levels are called _____

44. The role that an organism plays in its environment is called its _____.

45. The MSY for the world's oceans is about _____

46. Mutualism is an example of symbiosis in which both species_____.

47. Most reef building corals have _____ symbionts in their tissues.

48. Coral reefs are the most _____ communities in the sea.

49. The point where atolls drown in the Hawaiian chain due to subsidence and plate motion is called the _____.

50. Fisheries in the Eastern Pacific collapse during periods of El Nino because upwelling is_____.

51. The loss of symbiotic algae in corals due to stress is called _____.

52. The compensation depth is usually found at the _____ % light level in the sea.

53. Minimata disease is caused by _____poisoning.

54 & 55. List two types (species groups) of phytoplankton: _____ and _____.

Essay questions, five points each (answer only 4 out of 5 questions)

1. List the five Kingdoms of life.

2. Illustrate a biomass trophic pyramid with a sketch and identify 5 trophic levels. Explain ecological efficiency and distinguish it from biomagnification.

3. With the use of a graph, plot primary production over the course of one year in a typical high latitude surface ocean environment (use the Northern Hemisphere).

4. With the use of a diagram, explain the theory of fisheries management showing the effect of recruitment, growth, natural and fishing mortality on a given stock of fish. In the case of fishing, explain what compensatory factors are important.

5. With a sketch, show how coral reef growth varies across the Hawaiian Archipelago (from Hawaii to Kure Atoll) and define the term, Darwin Point.