

Last Name \_\_\_\_\_ First name \_\_\_\_\_ SS

No. \_\_\_\_\_

Check to make sure that your name and SS# 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. The likelihood that life exists elsewhere (besides earth) in the Universe is good.
2. Evolution is simply genetic change in a population that leads to a new species.
3. The solar system and the earth formed about 15 billion years ago.
4. The course of evolution has changed several times in earth history due to impacts from outer space.
5. Photosynthetic bacteria are the most abundant primary producers in the ocean.
6. The microbial loop contributes at least one trophic level to oceanic foodwebs.
7. Rich fishery grounds correspond with areas of low upwelling.
8. All primary production in the ocean is a result of photosynthesis.
9. Chemoautotrophic bacteria manufacture food from H<sub>2</sub>S.
10. Autotrophs are secondary consumers.
11. The sea is about 20 times more productive than the land.
12. In general, terrestrial ecosystems have more trophic levels than marine ecosystems.
13. 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.
14. The deep scattering layer undergoes vertical migration to the surface on a weekly basis.
15. Aquaculture contributes over 50% of the total fisheries production in the world.
16. Cod and pollack comprise the biggest catch of commercial fisheries in the world.
17. The average per capita fish catch in the world is steadily declining due to human population growth.
18. Productive fishery areas have long food chains.
19. Purse seining uses hooks deployed over long distances in the ocean.
20. Dead whales represent one pathway of transfer of organic carbon from the euphotic zone to the deep sea.
21. The Darwin Point is a place where atolls drown due to insufficient coral growth.
22. Water vapor, carbon dioxide and methane are all greenhouse gases.
23. El-Nino Events will probably increase due to Global Climate Warming.
24. Human population is expected to double in the next 50-100 years.
25. The decline of reef fisheries in Hawaii is primarily due to over-fishing.

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

26. The temperature of the earth's atmosphere is expected to increase by about \_\_\_\_\_ in the next 100 years. a) -1.8 to +10 C, b) +1.5 to +4.0 C, c) 0 C to +100 C, d) +5 C to +10 C.
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 85 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) critical depth, d) all of the above.
30. Terrestrial ecosystems have \_\_\_\_\_ food chains than marine ecosystems  
a) longer and less efficient, b) shorter and more efficient, c) longer and more efficient, d) shorter and less efficient.
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. Carbon dioxide warms the earth by: a) absorbing infrared radiation, b) increasing cloudiness, c) forming carbonate sediments, d) forming biomass in photosynthesis
33. Chemosynthetic communities on whale falls get their energy from: a) the sun, b) hydrogen sulfide, c) manganese nodules, d) giant worms
34. The most important sources producing sea level rise caused by increased atmospheric CO<sub>2</sub> 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

Fill in questions, 20 questions, fill in the blank spaces with the best answer, one point each:

36. The results of the Spark Chamber experiment support the \_\_\_\_\_ theory for the origin of life.
37. The primary evidence that the Universe is expanding is the \_\_\_\_\_.
38. The first organisms to appear on earth were \_\_\_\_\_.
39. The Mar's Rock is evidence of \_\_\_\_\_; that life exists elsewhere in the Universe.
40. Cod are most often caught in \_\_\_\_\_.
41. In a food chain, the feeding levels are called \_\_\_\_\_ levels.
42. The efficiency of transfer of food energy up the food chain is about \_\_\_\_\_%.
43. The distribution pattern of abundance for most species is \_\_\_\_\_.
44. The role that an organism plays in its environment is called its \_\_\_\_\_.
45. Mutualism is an example of symbiosis in which both species \_\_\_\_\_.



**Student Name** \_\_\_\_\_

3. Illustrate a biomass trophic pyramid with a sketch and identify 5 trophic levels. Explain ecological efficiency.

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. List and describe five processes that determine the evolution of new species.

