

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 first organisms to evolve on earth were anaerobic about 3.8 billion years ago.
2. It is highly unlikely that life exists elsewhere (besides earth) in the Universe.
3. The main evidence for the Big Bang and an expanding universe is the blue shift.
4. The age of our Universe is about 4 billion years.
5. The Spark Chamber experiment provided evidence in favor of Panspermy.
6. All species in nature are "fixed" and do not change.
7. Sexual reproduction and oxygen are important factors that led to the Cambrian Explosion.
8. Phytoplankton blooms are most likely to occur when thermocline depth is less than critical depth.
9. Rich fishery grounds correspond with areas of low primary production.
10. All primary production in the surface ocean is a result of photosynthesis.
11. Chemoautotrophic bacteria manufacture food from H₂S at hydrothermal vents.
12. Autotrophs are secondary consumers.
13. The sea is about 20 times more productive than the land.
14. In general, terrestrial ecosystems have more trophic levels than marine ecosystems.
15. 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.
16. The deep scattering layer undergoes vertical migration to the surface on a diurnal basis.
17. The average per capita fish catch in the world is still increasing.
18. About 90% of all life exists in the sea but only about 1/5 of the world species exist there.
19. Carbon dioxide and methane are greenhouse gases that warm the earth.
20. Sewer outfall effluents in Hawaii pollute coral reefs.
21. Carbon dioxide is expected to double in the atmosphere by the year 2100.
22. The decline of reef fisheries in Hawaii is primarily due to over-fishing, not pollution.
23. Bleaching in corals is caused by expulsion of their symbiotic algae.
24. Global warming is linked to human population growth.
25. Chimpanzees share 98% of the same genes found in human beings.

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

26. If the evolutionary clock were to be replayed on planet earth again:
a) the same species would probably evolve, b) different species would probably evolve,
c) human beings would probably evolve again, d) life may not evolve at all.
27. The hierarchy of the modern taxonomic system (in order) is:
a) Kingdom, Class, Phylum, Family, Order, Genus, Species
b) Phylum, Kingdom, Class, Family, Order, Genus, Species
c) Kingdom, Phylum, Class, Order, Family, Genus, Species
d) Phylum, Kingdom, Class, Order, Family, Genus, Species

28. Primary production is controlled by: a) upwelling, b) the concentration of nutrients
c) depth of the mixed layer, d) all of the above.
29. 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.
30. The human population on earth is: a) about 6.0 billion people, b) beyond carrying capacity, c) increasing exponentially, d) all of the above.
31. Based on the best scientific evidence, life most likely evolved on earth by:
a) Divine intervention, b) Spontaneous generation, c) Biosynthesis, d) Panspermy.
32. 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.
33. Carbon dioxide warms the earth by: a) absorbing infrared radiation, b) increasing cloudiness, c) forming carbonate sediments, d) forming biomass in photosynthesis.
34. The most important sources producing sea level rise caused by increased atmospheric CO₂ 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. Many fish populations are overfished because of:
a) too much fishing effort, b) pollution, c) they grow too slow, d) natural mortality.

Fill in questions, 15 questions, fill in the blank spaces with the best answer, one point each:

36. Evolution takes place by way of _____, and or, _____.
37. Worms are the first Phylum on the tree of life to exhibit _____ symmetry.
38. The increase in the concentration of a pollutant as it moves up the food chain is called _____.
39. In a food chain, the feeding levels are called _____ levels.
40. The ecological efficiency of most food chains in the sea is about _____.
41. The formula for photosynthesis is: _____.
42. The role that an organism plays in its environment is called its _____.
43. Mutualism is an example of symbiosis in which both species _____.
44. The orderly replacement of species or communities over time within ecosystems is called _____.

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3. With the use of a graph, draw a curve showing primary production over the course of one year in a high latitude surface ocean environment and explain the dominant processes.

4. With the use of sketches, explain the difference between ecological efficiency and biomagnification between trophic levels.

5. With the use of a box model, explain the theory of fisheries management showing the effect of recruitment, growth, natural and fishing mortality on a given stock of fish. What compensatory factors are important?

