Bio HL: Summer 2010 Assignment

Please do the following readings and assignments. Read first, answer the questions afterward. Submit the assignments to turnitin.com (Turnitin course code: 2956851; password: hlbio1). Each assignment will be named by its due date, e.g. July 6).
You may submit assignments early.

Due July 6, 2010 (Main text read pgs. 112-120)

1. Distinguish between the following pairs of terms
i. community and ecosystem
ii. autotroph and heterotroph
iii. detritivore and saprotroph

2. Create a food chain using the following organisms:
shark, daphnia (a tiny crustacean), minnow (small fish), algae, cod (large fish)
(use ----------> to indicate an arrow)
and assign a trophic level name, e.g. 'primary consumer' (not T1, T2), to each of the organisms in your food chain.

3. Explain why energy is lost when moving from one trophic level to the next and state approximately the percentage of energy that flows from one trophic level to the next.

4. State the units used in an energy pyramid (write out the name and the abbreviation).

5. Explain why energy is 'lost' from an ecosystem.

Due July 13, 2010 (Main text read pgs. 130-133)

6. State whether each of the following factors increases or decreases the size of a population:
natality
mortality
immigration
emigration

7. Examine the population growth curve at the bottom of page 131. State the name of and give a brief explanation of the parts of the graph numbered 1, 2, and 3.

8. Define 'carrying capacity'.

9. List 4 factors that define the carrying capacity of a population in its habitat.

Due July 20, 2010 (Main text read pgs. 552-559)

10. State 3 abiotic factors affecting the distribution of plants and 3 different abiotic factors affecting the distribution of animals.

11. (Briefly) explain the purpose of a quadrat (do *not* describe how it is used).

12. Define 'niche' and state the components of the niche concept.

13. Distinguish between 'herbivory' and 'predation' and between 'parasitism' and 'mutualism'.

Due July 29, 2010 (Main text read pgs. 559-565)

14. State the competitive exclusion principle.

15. Distinguish between "fundamental niche" and "realized niche"

16. Explain why a plant must be dried out in order to determine its biomass.

17. Define 'gross production' and 'net production'

18. If gross production = 189 kJ m^{-2} yr^{-1} and respiration = 170 kJ m^{-2} yr^{-1}, calculate the net production. Show work and include units.

Due August 5, 2010 (Main text read pgs. 566-569)

19. Examine the food web on page 566. Determine the trophic level**s** (primary consumer, secondary consumer, etc.) of the rattlesnake and the roadrunner.

20. Define 'ecological succession'.

21. Distinguish between primary and secondary succession.

22. Outline 3 ways that living organisms change the abiotic environment.

Due August 12, 2010 (Main text read pgs. 570-571 and pgs. 122-124)

23. Distinguish between 'biome' and 'biosphere'.

24. Choose 3 biomes and compare their temperatures, moistures, and characteristics of vegetation.

25. List 4 processes that move carbon through the environment in the carbon cycle and list 3 places where carbon is found.

26. Examine the graph at the top of page 124. How has the amount of atmospheric carbon dioxide changed since 1960? Explain the up-and-down pattern seen in this graph's data.

Due August 19, 2010 (Main text read pgs. 124-130)

27. Explain the greenhouse effect.

28. State the name of 3 greenhouse gases.

29. State the precautionary principle.

30. State 3 changes in Arctic ecosystems that involve living things.

Due August 26, 2010 (Main text read pgs. 572-577)

31. State the purpose of the Simpson Diversity index.

32. Outline 3 reasons for conserving biodiversity.

33. State the names of 2 invasive (alien) species, their native habitats, where they were introduced, and how they were introduced.

34. Outline 2 ways that invasive species impact the ecosystems into which they have been introduced.

Due September 1, 2010 (Main text read pgs. 578-583)

35. Define "biological control" and state one example.

36. In an ecosystem that includes algae, zooplankton, fish, and fish-eating birds of prey, explain which group will be most affected by biomagnification (include a definition of biomagnification in your answer).

37. Explain the connections between the ozone layer, UV radiation, and CFCs. List 3 effects of UV radiation on living things.

38. State what can be learned from an indicator species.

Due September 9, 2010 (Main text read pgs. 585-594)

39. Outline 2 features of nature reserves that promote biodiversity and list 3 management practices that maintain theses reserves.

40. Distinguish between *in situ* and *ex situ* conservation methods.

41. Distinguish between the parental strategies known as 'r-strategy' and 'K-strategy'.

42. State the purpose of the capture-mark-release-recapture method.

43. Define 'maximum sustainable yield'