Science 10: Ecosystems Review

1. Two cougars are fighting over the carcass of a deer. This is an example of:

 A. Commensalism B. Mutualism C. Parasitism D. Symbiosis

 ***E. Competition*** F. Predation G. Photosynthesis H. Community

2. Three toed sloths live in the forest canopy of a tropical rainforest. The sloths have a type of alga that grow on their fur. The alga are green and provide the sloth with camouflage. The sloth provides the alga with warmth via their body-heat. This is an example of:

 A. Commensalism ***B. Mutualism*** C. Parasitism D. Symbiosis

 E. Competition F. Predation G. Photosynthesis H. Community

3. Pilot fish have a suction-cup mouth that they use to attach themselves to the side of a great white shark. The pilot fish then detach themselves to feed off the scraps left behind when the shark feeds. The sharks are completely unaffected by the presence of the fish. This is an example of:

 ***A. Commensalism*** B. Mutualism C. Parasitism D. Symbiosis

 E. Competition F. Predation G. Photosynthesis H. Community

4. When two organisms of different species live in close contact with one another the relationship is described as:

 A. Commensalism B. Mutualism C. Parasitism ***D. Symbiosis***

 E. Competition F. Predation G. Photosynthesis H. Community

5. The primary food source of a species of barn owl is mice. This is an example of:

 A. Commensalism B. Mutualism C. Parasitism D. Symbiosis

 E. Competition ***F. Predation*** G. Photosynthesis H. Community

6. Male big-horn sheep use their large horns to fight other big-horn sheep in order to establish mating dominance. This is an example of:

 A. Commensalism B. Mutualism C. Parasitism D. Symbiosis

 ***E. Competition*** F. Predation G. Photosynthesis H. Community

7. Give two examples of each of the following. Try to come up with examples that we have not used in class if you can.

 A. Predation:

 B. Parasitism:

 C. Competition:

 D. Mutualism:

 E. Commensalism:

8. Put the following terms in order from the simplest to the most complex, ecologically.

 ***Individual Population Community Habitat Ecosystem***

9. Give an example of a biotic process in the carbon cycle.

***Photosynthesis, Cellular Respiration, Decomposition, Animals consuming plants…***

10. What are the four main steps in the water cycle?

***Precipitation, Collection, Evaporation, Condensation***

11. All energy in any ecosystem originates from \_***The SUN***\_\_.

12. What type of organism is found at the first trophic level in every food chain? ***A Producer***

13. Which of the following is responsible for removing nitrogen gas (N2) from the atmosphere?

 A. Plants B. Animals C. Decomposers D. Nitrifying bacteria

 E. Denitrifying bacteria ***F. Nitrogen-fixing bacteria*** H. Photosynthesis

14. Which of the following is responsible for converting ammonium (NH4+) into nitrate (NO3 -) for uptake by p;lants from the soil?

 A. Plants B. Animals C. Decomposers ***D. Nitrifying bacteria***

 E. Denitrifying bacteria F. Nitrogen-fixing bacteria H. Photosynthesis

15. If you were studying the niche of a bird species, what might you study?

A. the food it eats B. its predators C. the temperatures required for it to reproduce

D. the types of areas where it builds its nest ***E. all of these***

16. Which of the following is **not** an example of two organisms in a mutualistic relationship?

***A. humans and malaria-carrying mosquitoes*** B. flowering plants and pollinators

C. clown fish and sea anemones D. nitrogen-fixing bacteria and legumes

E. That Gobi-fish and the blind shrimp

17. Which of the following is most likely a decomposer?

A. nitrogen ***B. mushroom*** C. rock D. bird E. vulture

F. legume G. rabbit H. flower I. hawk J. water

18. Which of the following best defines an ecosystem?

A. a group of organisms that can interbreed B. smaller organisms that get eaten by larger organisms

C. the feeding level of an organism in a food chain ***D. all of the interactions between living things and***

 ***their environment***

19. What is the term for the total weight of living things living in an area?

A. biotic community B. food web ***C. biomass*** D. pyramid of numbers

 E. biodiversity F. symbiosis G. biome H. yo la tengo

20 If a cougar ate a mouse that ate an insect that ate a plant, what would the cougar be?

A. a primary producer B. a primary consumer C. a secondary consumer

***D. a tertiary consumer*** E. a decomposer

21. What is a hawk an example of?

A. decomposer B. producer C. primary consumer ***D. top carnivore***

 E. herbivore F. detritivore

22. Which of the following processes returns CO2 to the atmosphere?

 A. photosynthesis ***B. cellular respiration*** C. nitrogen fixation

 D. sedimentation E. precipitation F. evaporation

23. Which of the following compounds has greatly increased in the Earth’s atmosphere in the past 4.1 billion years (since life appeared on the planet)?

 A. CO2 B. N2 C. H2 D. C6H12O6 ***E. O2***  F. He\

24. Which of the following compounds has greatly decreased in the Earth’s atmosphere in the past 4.1 billion years (since life appeared on the planet)?

 ***A. CO2***  B. N2 C. H2 D. C6H12O6 E. O2 F. He

25. Which of the following compounds makes up ~78% of the Earth’s atmosphere?

 A. CO2 ***B. N2*** C. H2 D. C6H12O6 E. O2 F. He

26. In which form is nitrogen most commonly taken up by the roots of plants from the soil?

 A. N2 ***B. NO3-*** C. NH4+ D. CO2 F. C6H12O6

27. This is the form of carbon that animals get when they eat plants:

 A. CO2 B. N2 C. H2 ***D. C6H12O6*** E. O2 F. He

 G. fossil fuel H. H2O



 Grass Grasshopper Mouse Snake Hawk

**Use the diagram above to answer questions 28-34**

28. The diagram above shows a(n):

 A. Food Web ***B. Food Chain*** C. Ecological Pyramid D. Symbiosis

 E. Carbon cycle

29. Which organism is on the third trophic level?

 A. Grass B. Grasshopper ***C. Mouse*** D. Snake E. Hawk

30. Which organisms are producers?

 ***A. Grass*** B. Grasshopper C. Mouse D. Snake E. Hawk

 F. A and B G. B,C,D and E H. C, D and E I. D and E J. B and C

31. Which organisms are consumers?

 A. Grass B. Grasshopper C. Mouse D. Snake E. Hawk

 F. A and B ***G. B,C,D and E*** H. C, D and E I. D and E J. B and C

32. Which organisms are herbivores?

 A. Grass ***B. Grasshopper*** C. Mouse D. Snake E. Hawk

 F. A and B G. B,C,D and E H. C, D and E I. D and E J. B and C

33. Which organisms are carnivores?

 A. Grass B. Grasshopper C. Mouse D. Snake E. Hawk

 F. A and B G. B,C,D and E ***H. C, D and E*** I. D and E J. B and C

34. Which organisms are top predators?

 A. Grass B. Grasshopper C. Mouse D. Snake ***E. Hawk***

 F. A and B G. B,C,D and E H. C, D and E I. D and E J. B and C

35. What would happen without decomposers and detritus feeders in an ecosystem?

A. Plants would die. B. Plants would develop nutrient deficiencies.

C. Dead material would accumulate. ***D. All of the above.***

36. Define and give an example of a KEYSTONE species. Explain clearly how it affects its ecosystem.

***Wolves. Wolves change the behavior of the deer, this then alters the vegetation as the deer move out of the open plains into the cover of the forest. Vegetation returns to the plains, then small animals, then birds. The entire ecosystem is reorganized. The vegetation increases the strength of the river banks, preventing collapse and altering the path of the rivers. (Watch the video, posted on my website under the biology tab.)***

***Starfish. Starfish eat the mussels. This controls the mussel population and allows other organisms to compete with the mussels. Without the starfish the mussels take over and the ecosystem becomes essentially a monoculture.***

***Otters. Otters eat sea urchins and control their population. This allows sea kelp to grow and become a home to many species. Without the otters the urchin population explodes until they have consumed virtually all of the kelp. No other organisms can be supported in the ecosystem. Again, essentially a monoculture develops.***

37. Explain what is meant by a *trophic cascade*.

***Like the examples above. When a disturbance at the top of an ecological pyramid (The wolves, starfish and otters in the above examples are all top predators in their ecosystems) causes a downward effect (cascade) onto the lower levels of the pyramid.***

***In general, removal of the top predator(s) causes the ecosystem to simplify considerably, often resulting in an ecosystem with only a handful of species remaining.***