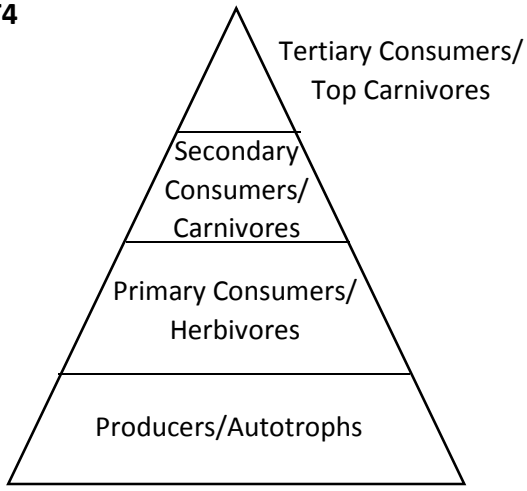
Green Generation Answer Key

2014 Rustin Invitational

1. b
2. c
3. a
4. d
5. d
6. d
7. b
8. a
9. Food energy; 10
10. Brackish; 3-5 [accept any value in this range]
11. Savannah
12. Prey
13. **T4**



14. At least two of the following, or enough to demonstrate understanding: Disrupts food web, lowers productivity of an ecosystem, more difficult to fill the niches within an ecosystem, lowers resilience to outside changes to the ecosystem
15. d
16. d
17. c
18. b
19. Water vapor
20. Landfill leachate ("leachate" also acceptable)
21. Dissolved oxygen; Ocean Dead Zone
22. Acid rain; less than
23. Lowers population of overfished species, Increases the prevalence of species that the fish prey on, which affects the food web; untargeted species can also be killed; can impact economies of countries that depend on fishing; discards from fishing boats can pollute water; average trophic level decreases

24. sulfur dioxide and nitrous oxides, eastern United States
25. Has the potential to change the ecosystem to a completely new type of ecosystem, which affects other species (precautionary principle); possible creation of harmful algal blooms (red tides); can stimulate unintended growth of other species
26. **T5** Mechanical containment (e.g. skimmers) to recover spilled oil on surface, dispersing/gelling agents to prevent spread of spill and to make cleanup easier, biological agents/biodegradation to degrade the oil into safer compounds, pressure washing to speed up natural chemical processes, raking to speed up natural chemical processes, scare tactics to keep away animals
27. A riparian buffer is an area of vegetation next to a waterway. It is used to protect the water from pollution and erosion, and to provide a habitat for organisms next to water
28. High amounts of erosion, increased flooding, large amounts of sediment which diverted the courses of some rivers
29. **T3** 224 million metric tons [56*5 = 280 ←GWP of nitrous oxide, 800,000*280=224,000,000 metric tons of CO_2 equivalent]
30. d
31. c
32. b
33. e
34. a
35. Vermicomposting; vermicast ("castings" also acceptable)
36. Survival speed
37. Ex situ
38. Seven; #1 / PETE (polyethylene terephthalate)
39. Its main purpose is to reduce emissions from developed countries by requiring participating countries to meet "binding targets" of lower emissions.
40. **T2** Bioremediation is the use of biological organisms to help decontaminate polluted areas. Example scenarios include an oil spill, a fuel leak, leaching from landfills, sewage effluent that is improperly disposed of, pesticides and fertilizers used in farming, chlorinated cleaning solvents used in degreasing that contaminate surrounding areas
41. *Pseudomonas putida* is not infectious (*P. syringae* can affect plants and *P. aeruginosa* can infect humans)
42. A green roof (a roof covered in vegetation) is used mainly to reduce runoff, help to lower the influence of the urban heat island effect, and can filter pollutants from stormwater
43. **T1** Answers may vary. The following rubric will be used:

4: Realistic goal that directly improves sustainability, clear and logical step-by-step process
3: Realistic goal that improves sustainability, but less than a 4, step-by-step mostly clear
2: Goal improves sustainability but is somewhat unrealistic, step-by-step is somewhat confusing and unclear
1: Goal is unclear, unrealistic, or has little impact on sustainability, step-by-step is unclear or implausible
0: No response or the goal has no impact on sustainability/does not apply to the question