**Environmental Science Final Study Guide**

Part 1: Intro and Human Population

1. Describe each of the following:
   1. Hunter-gatherer age
   2. Agricultural revolution
   3. Industrial revolution
   4. Medical revolution
   5. Technology revolution
2. Define sustainability
3. Explain what the “Tragedy of the Commons” addresses in terms of the environment and earth’s resources.
4. What factors increase a country’s population?
5. What factors caused the recent human population’s exponential growth?
6. Describe what a population pyramid looks like for:
   1. Developed countries
   2. Transitioning countries
   3. Developing countries
7. What factors cause a country’s birth rate to slowly decrease?
8. List and describe each of the 4 stages of demographic transition.
9. What is an ecological footprint?

Part 2: Food chains and earth’s resources

1. Describe each of the following levels of organization:
   1. Ecosystem
   2. Community
   3. Population
   4. Biome
   5. Organism
2. What are abiotic factors? (definition)
3. Give some examples of abiotic factors for a freshwater fish.
4. What are biotic factors?
5. Would dead leaves be considered biotic or abiotic? Why?
6. At which level of ecosystem organization do the abiotic factors begin to play a role?
7. What is the difference between a food chain and a food web?
8. If a food chain has 4 levels, what are each of the organisms at each level called? (hint: consider type of consumer and producer)
9. How much energy is used up in each trophic level?
10. How much energy passes up to the next trophic level?
11. Draw and label the stages of the carbon cycle.
12. What roles do plants play in the carbon cycle?
13. Draw and label the stages of the nitrogen cycle.
14. What roles do bacteria play in the nitrogen cycle?
15. What is ecological succession?
16. How are primary and secondary succession different?
17. List and describe the biomes of the world.
18. Which biome contains most of Earth’s land animals?
19. What are some positive environmental effects of wetlands?

Part 3: Animal Populations

1. Draw and describe each of the 3 types of population dispersals (clumped, uniform, random)
2. What 3 factors cause an organism to have a high reproductive potential?
3. What are density-dependent factors in a population? Give some examples.
4. What are density-independent factors in a population? Give some examples.
5. Describe and give examples of :
   1. Mutualism
   2. Competition
   3. Parasitism
   4. Commensalism
   5. Predation
6. What is carrying capacity?
7. Why does an organism’s population drop shortly after it exceeds its carrying capacity?
8. Where are the main biodiversity hotspots?
9. What is the main worldwide cause of extinction?
10. List 4 reasons why we should preserve biodiversity.
11. Why is it difficult sometimes to save a particular endangered species?
12. What is the endangered species act?

Part 4: Water and Air

1. What percentage of Earth’s total water is groundwater?
2. What percentage of Earth’s total water is saltwater?
3. What is eutrophication of a lake? How does it affect aquatic organisms?
4. Define and describe point-source pollution.
5. Define and describe nonpoint-source pollution
6. List the ways humans can increase the amount of available freshwater, and the associated costs.
7. What is the difference between a primary and secondary air pollutant?
8. What are the main indoor air pollutants?
9. What are the main outdoor air pollutants?
10. How do the Earth’s oceans affect our climate? (list at least 3 ways)
11. What does the ozone layer do for the Earth?
12. What is the Kyoto Protocol?
13. What would happen if Earth’s temperature increased by several degrees? (list at least 3 effects)

Part 5: Cities and farmland

1. Describe urban planning.
2. What is urban sprawl?
3. What are marginal lands? (give several examples)
4. How can humans help to preserve rangelands?
5. Why do many people suffer from malnutrition, despite their being enough food worldwide for our current population?
6. List at least 3 benefits that farmland provides to people or the environment
7. What is needed to have good topsoil for farming?
8. Which types of crops/animals require the least amount of work and energy to raise?
9. Topsoil is vulnerable to erosion when….
10. Why is the amount of arable land (farmland) on Earth decreasing? (list at least 3 reasons)

Part 6:

1. List and describe all of the types of non-renewable energy.
2. List and describe all of the types of renewable energy.
3. What are the environmental effects of using each type of energy listed in 64 and 65?
4. What types of trash/garbage do humans produce in the modern age?
5. What does biodegradable mean?
6. Which types of trash/garbage are biodegradable?
7. List and describe the methods humans use to manage the garbage/trash we produce.
8. What are the environmental effects of each type of waste management?