

Name: _____

Student ID Number: _____

Last

First

Total number of points is 100.

1. Total annual energy consumption of France is approximately 12 Quads. Assuming that 1 Quad is approximately 10^{18} J, calculate how many watts does an average Frenchman use? NOTE: to answer this question, you will need to know the approximate population of France; error of $\pm 25\%$ will be tolerated.

25 points

2. What are some of the most common problems associated with the production of corn-based ethanol fuel in the US? Where applicable, contrast this situation with Brazilian sugarcane-based ethanol.

15 points

3. Rank the following power sources by their typical installed capacities:
coal-fired power plant geothermal power plant hydroelectric power plant
5 points

4. Succinctly define, in your own words, the following concepts:
5×5 points = 25 points

Particulate Pollution

Biodiesel

Cellulosic Ethanol

NIMBY

Geothermal power

5. If a compact fluorescent lightbulb uses 20 W of energy, how many days does it need to run continuously to use up 1 kWh of energy?
10 points

6. Hydroelectric energy is renewable, clean, and cheap—once the large initial investment is paid off. However, even this renewable source of energy is not entirely innocent from an environmental point of view. Give four environmental concerns associated with the use of hydroelectric power plants.

4×5 points = 20 points