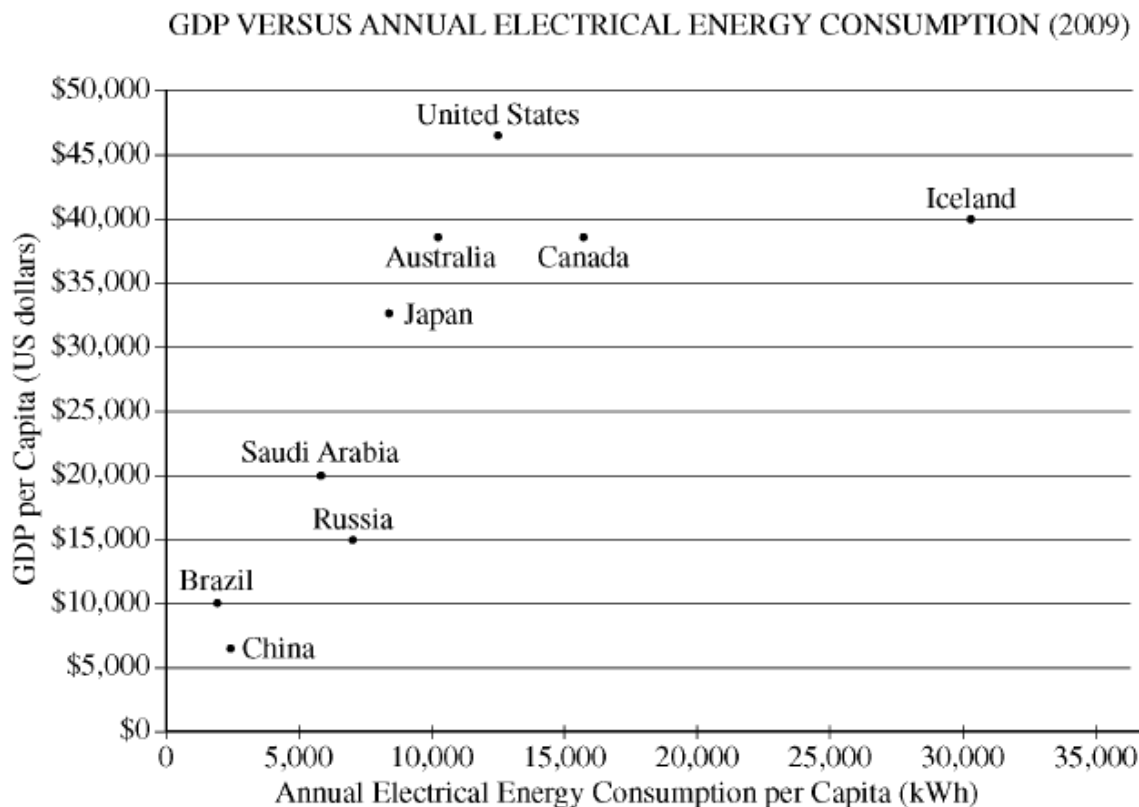


**UNIT 9- ALTERNATIVE ENERGY**  
**EXAM DATE A-DAY: 4/16 B-DAY: 4/17**

**CHAPTER 20: DUE A-DAY: 3/28 B-DAY: 4/7**

1. How much of our global energy supply to nuclear power, biomass energy, and hydroelectric power contribute?
2. How much of our global electricity do these three conventional energy alternatives generate?
3. Describe how nuclear fission works.
4. How do nuclear plant engineers control fission and prevent a runaway chain reaction?
5. In terms of greenhouse gas emissions, how does nuclear power compare to coal, oil, and natural gas?
6. How do hydropower and biomass energy compare?
7. What happened at Three Mile Island?
8. What happened at Chernobyl?
9. In what ways did the incident at Three Mile Island differ from that at Chernobyl?
10. What consequences resulted from each of these incidents?
11. What has been done so far about disposing of radioactive waste?
12. Do you think the United States should expand its nuclear power program? WHY or WHY not?
13. List 5 sources of biomass energy.
14. What is the world's most-used source of biomass energy?
15. How does biomass energy use differ between developed and developing nations?
16. Describe two biofuels, where each comes from and how each is used.
17. Evaluate two potential benefits and two potential drawbacks of biomass energy.
18. Contrast two major approaches to generating hydroelectric power.
19. Assess two benefits and of hydroelectric power.
20. What are two negative environmental impacts of hydroelectric power?

**FRQ 1: DUE A-DAY: 4/8 B-DAY: 4/9**



Shown above is a graph of the gross domestic product (GDP) per capita versus the annual electrical energy consumption per capita for nine countries in 2009. (QUESTIONS ARE ON THE OTHER SIDE)

- (a) Iceland's position on the graph is due in part to its access to geothermal energy sources. Describe how electricity is generated from a geothermal source.
- (b) Despite its low GDP per capita and low annual electrical energy consumption per capita, China has become the world's largest emitter of carbon dioxide. Explain this apparent contradiction.
- (c) In addition to contributing to increased atmospheric carbon dioxide concentrations, China is facing other air pollution issues related to the generation of electricity. Identify one such issue and describe the impact it has on human health.
- (d) Two countries shown on the graph have developed domestic energy sources: sugarcane in Brazil and tar sands in western Canada.
  - (i) Choose EITHER sugarcane or tar sands, then briefly describe the process of fuel production from that energy source.
  - (ii) Describe TWO disadvantages of using the energy source you chose in part (d)(i).
  - (iii) Which of the two energy sources is more sustainable? Justify your answer with an explanation.

#### **CHAPTER 21: DUE A-DAY: 4/10 B-DAY: 4/11**

1. About how much of our energy now come from renewable energy sources?
2. What is the most prevalent form of renewable energy we use?
3. What form of renewable energy is most used to generate electricity?
4. What factors and concerns are causing renewable energy sectors to expand?
5. Which renewable energy source is experiencing the most rapid growth?
6. Contrast passive and active solar heating. Describe how each works, and give examples of each.
7. Define the photoelectric effect.
8. Explain how photovoltaic (PV) cells function and are used.
9. What are the environmental and economic advantages of solar power?
10. What are the disadvantages of solar power?
11. How do modern wind turbines generate electricity?
12. How does wind speed affect the process?
13. What factors affect where wind turbines are placed?
14. What are the environmental and economic benefits of wind power?
15. What are the drawbacks of wind power?
16. Define geothermal energy, explain how it is obtained and used.
17. In what ways is geothermal energy renewable, and in what ways is it nonrenewable.
18. List and describe four approaches to obtaining energy from ocean water.
19. How is hydrogen fuel produced? Is it a clean process?
20. What factors determine the amount of pollutants hydrogen production will emit?