

Lecture Questions: Energy and Fossil Fuels

These questions are largely taken from chapter 4 of the textbook.

- What is energy?
 - What units is energy measured in?
 - Describe the nature of (i) chemical and (ii) thermal energy.
- What are the first two Laws of Thermodynamics?
 - How do these Laws ultimately determine the theoretical maximum efficiency of thermoelectric power plants?
 - What *are* typical power plant efficiencies?
- Define *exothermic* and *endothermic* chemical reactions.
- Explain why some chemical reactions require energy to proceed while others produce it.
- What are the top five energy sources in the US? List them in descending order of use.
- What is coal?
 - What are the advantages and disadvantages of coal as an energy source?
- What is oil?
 - What are the advantages and disadvantages of oil as an energy source?
 - How is oil refined?
 - How is it used?
- What is the difference between *oxygenated* and *reformulated* gasoline?
- External research.* There have been a wide range of predictions about how much petroleum there remains to be found and extracted. Investigate this topic.
 - What is meant by the term *peak oil*? What is its significance?
 - When is peak oil predicted to occur? Give a range of values (low and high), along with the person or organization who makes the prediction and briefly explain how they justify their claims.