

SCIE300 Reading Assignment 2 (RA2)

110 points

Question 1 (10 points)

Consider the claim that extracting energy from tides is not sustainable because it slows the rotation of the earth, thus permanently altering our environment. Is this a legitimate objection? Why or why not?

Question 2 (10 points)

Suppose a house occupies 300 m² of land and is situated on a typical piece of land. In one day, how much geothermal energy is transmitted into the house from the ground? Explain your answer.

Question 3 (30 points)

Study the stack charts in chapter 18. Write a reflection of about 250 words about these charts, summarizing their main points and mentioning any results that you find particularly striking or interesting.

Question 4 (10 points)

Which is more energy-efficient, buses or trains? Explain your answer.

Question 5 (10 points)

Consider two cars that are identical in terms of their energy consumption per mile. The only difference is that one uses gasoline and the other is electric. Which is more sustainable? Explain your answer.

Question 6 (10 points)

Why is a heat pump more efficient than conventional heating, in terms of energy consumption?

Question 7 (10 points)

What does “clean coal” really mean?

Question 8 (10 points)

How much nuclear waste is produced per person in the UK annually? Of this, how much is high-level waste?

Question 9 (10 points)

The book states that the radioactivity of this high-level waste is reduced by a factor of 1000 after 40 years. Therefore, by what factor is it reduced after 20 years? By what factor after 80 years?