

There are five questions on this examination. The first question is compulsory, and is worth 50% of the marks for this examination. Attempt answers to two of questions 2-5, each of which is worth 25% of the marks for this examination. Present your arguments clearly and concisely.

1. This question is compulsory, and requires short answers.
 - a. Briefly define the concept of sustainable development. **[5 marks]**
 - b. Briefly discuss the concept of appropriate technology. **[5 marks]**
 - c. What are the core aspects of “Life Cycle Assessment”? **[5 marks]**
 - d. What is causing anthropogenic climate change? **[5 marks]**
 - e. What are the principal differences between the Kyoto Protocol and George Bush’s alternative plan to combat global warming? **[10 marks]**
 - f. From an environmental perspective, discuss the relative merits of coal, natural gas and nuclear power as fuels for electricity generation. **[10 marks]**
 - g. Compare gasoline and diesel powered automobiles from an environmental perspective. **[5 marks]**
 - h. Briefly discuss technologies that can reduce the energy requirements of buildings. **[5 marks]**

2. The concept of the “triple bottom line” is at the heart of sustainable industrial activity. Discuss the roles of technology, economics and government regulation in fostering a change from concern with economic growth alone to consideration of the three Es of the triple bottom line, which you should define carefully. **[25 marks]**

3. You work for a domestic chemical company that has recently been taken over by a foreign competitor that has a well-established corporate image as a “green”, environmentally friendly organization. Your first task after the takeover is to lead a team conducting a life cycle assessment comparing the environmental impact of one of your domestic factories and the original home factory overseas of your new corporate bosses. Discuss both how you might go about this assessment, and also the major areas of differing environmental impact that you might expect to identify. **[25 marks]**.

4. Discuss the following statement from CNN:

“As electricity rates soared for many Americans [in 2001], the focus has turned to alternative power sources – wind energy among them. Supported by environmentalists and included in President Bush’s energy plan, wind power is proving to be a viable option.”

Your answer should consider the environmental and economic costs associated with the various renewable and non-renewable energy sources that are, or could be, used in the United States for electricity generation. **[25 marks]**

5. What, if anything, should the United States do about global warming? **[25 marks]**