

Core Concepts: A Life Cycle Assessment (LCA) evaluates the total environmental impact of a product from "cradle to grave". This includes raw material extraction, manufacturing, use, and disposal. Recycling aims to reduce waste, conserve resources, and save energy, but also has its own environmental and economic considerations.

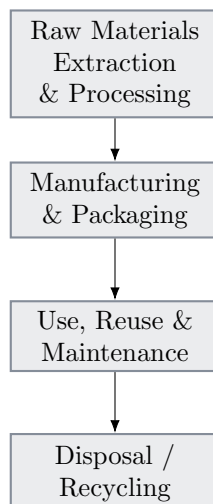


Figure 1: Stages of a Life Cycle Assessment (LCA)

Section A: Key Terms & Concepts

1. Match the following key terms to their correct definitions by writing the letter in the box provided.

Term		Definition
Life Cycle Assessment	☐	A. The process of processing waste materials for use in new products.
Raw Materials	☐	B. The stage where a product is used by the consumer, including any maintenance.
Manufacturing	☐	C. Materials extracted from the Earth, such as crude oil or metal ores.
Use Phase	☐	D. The end-of-life management of a product, often involving landfill or incineration.
Disposal	☐	E. The processes involved in making a product from processed materials, including packaging.
Recycling	☐	F. A systematic study of the environmental impacts of a product throughout its entire existence.

2. Complete the following sentences using appropriate scientific terms.

- An LCA considers the environmental impact of a product from _____.
- The _____ of raw materials often involves habitat destruction and high energy consumption.
- Recycling helps to conserve _____ resources and reduce the amount of waste sent to _____.

Section B: Core Concepts & Explanations

1. What is the primary purpose of a Life Cycle Assessment (LCA)?

2. Outline the four main stages typically considered in a Life Cycle Assessment.

3. Describe one environmental benefit and one environmental drawback associated with recycling materials.

4. Explain why it is difficult to carry out a truly objective Life Cycle Assessment.

Section C: Exam Application & Extended Writing

1. Consider two types of shopping bags: a single-use plastic bag and a reusable cotton bag. Suggest one environmental impact that might be greater for the cotton bag compared to the plastic bag, and one that might be greater for the plastic bag.

2. Discuss the economic and environmental advantages and disadvantages of recycling metals like aluminium, compared to extracting them from their ores. (6 marks)
