

Name: _____ Date: _____

Answer Key: Eco-Logic at the Goal Line: 11th Grade Sustainability Audit

Calculate life-cycle impacts, analyze cradle-to-cradle logistics, and defend resource management strategies in this advanced environmental systems simulation.

1. A multinational corporation adopts the 'Triple Bottom Line' framework. Which specific metric would best represent the 'Social' pillar in an 11th-grade ESG (Environmental, Social, and Governance) analysis?

Answer: B) Implementation of gender-neutral pay equity across global subsidiaries

The Social pillar of the Triple Bottom Line focuses on labor practices, community impact, and internal equity, making pay parity a primary social indicator.

2. The concept of _____ describes a circular economy model where products are designed for infinite recovery and revitalization, contrasting with 'Cradle-to-Grave' systems.

Answer: A) Cradle-to-Cradle

Cradle-to-Cradle (C2C) design mimics biological cycles where waste from one process becomes the nutrient for another, eliminating the concept of trash.

3. In the context of the 'Tragedy of the Commons,' sustainability can only be achieved if individual short-term interests are prioritized over collective long-term yields.

Answer: B) False

Sustainability requires the opposite; individual restraint is necessary to prevent the depletion of shared resources for collective long-term benefit.

4. Which economic concept refers to the unintended environmental costs (like mercury pollution from coal) that are not reflected in the market price of a product?

Answer: C) Negative externalities

Negative externalities are market failures where the cost of production or consumption is borne by a third party or the environment rather than the buyer or seller.

5. When a city implements 'Green Gentrification,' they are often criticized for failing the _____ pillar of sustainability by displacing lower-income residents.

Answer: C) Equity/Social

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Sustainability requires social equity; improving environmental quality (green space) at the cost of social exclusion violates the social pillar.

6. The Precautionary Principle suggests that if an action has a suspected risk of causing harm to the public or the environment, the burden of proof that it is NOT harmful falls on those taking the action.

Answer: A) True

The Precautionary Principle is a core tenet of sustainability that advocates for safety and prevention in the face of scientific uncertainty.

7. Analyze the impact of 'Jevons Paradox' on resource conservation. Which scenario best illustrates this phenomenon?

Answer: B) Higher fuel efficiency in cars leads to people driving more, offsetting any fuel savings.

Jevons Paradox occurs when technological progress increases the efficiency with which a resource is used, but the rate of consumption of that resource rises because of increasing demand.

8. The tool used by environmental scientists to quantify the total environmental impact of a product from raw material extraction to disposal is the _____.

Answer: B) Life Cycle Assessment (LCA)

Life Cycle Assessment (LCA) is a systematic analysis of environmental impact throughout every stage of a product's life.

9. Biomimicry is a sustainable design approach that focuses solely on using organic materials like wood and hemp in construction.

Answer: B) False

Biomimicry is the practice of emulating nature's patterns and strategies (like a bird's wing shape for high-speed trains) to solve human challenges, not just using organic materials.

10. In a 'Steady-State Economy,' which variable is intentionally kept stable to remain within the Earth's carrying capacity?

Answer: C) Throughput of matter and energy

A steady-state economy aims for constant stocks of people and artifacts maintained at the lowest feasible flows of matter and energy (throughput).