

Name: _____ Date: _____

Sustain Your Brain: The Hard-Core 10th Grade Triple Bottom Line Quiz

Students gain a critical lens for evaluating the complex trade-offs between global industrial growth and ecosystem resilience through high-level scenario analysis.

1. In the context of the 'Cradle-to-Cradle' design framework, which strategy best exemplifies a high-level transition to a circular economy?

- A. Downcycling industrial polymers into lower-grade plastic park benches
- B. Designing products with biological nutrients that safely return to the soil
- C. Implementing carbon capture and storage at outdated coal-fired power plants
- D. Increasing the efficiency of internal combustion engines to reduce fuel use

2. The 'Jevons Paradox' suggests that technological improvements that increase the efficiency of a resource being used will inevitably lead to a decrease in its total consumption.

- A. True
- B. False

3. When an economy grows without a corresponding increase in environmental pressure and resource consumption, it has achieved ____.

- A. Greenwashing
- B. Absolute Decoupling
- C. Relative Decoupling
- D. Carbon Neutrality

4. Which of the following describes a 'Life Cycle Assessment' (LCA) boundary error known as a 'Shifting of Burdens'?

- A. Reducing local tailpipe emissions by switching to EVs while increasing strip-mining for lithium elsewhere
- B. Calculating the carbon footprint of a product from the factory gate to the consumer
- C. Ignoring the social equity component of the Triple Bottom Line in corporate auditing
- D. Conducting a peer review of environmental impact data before public release

5. The concept of '____' refers to the maximum population size of a species that a specific environment can sustain indefinitely without degrading the underlying resource base.

- A. Ecological Footprint
- B. Trophic Level
- C. Carrying Capacity
- D. Natural Capital

6. Intergenerational equity is the principle that current generations have a moral obligation to ensure future generations have access to the same level of resources and environmental quality.

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- A. True
- B. False

7. A nation implements a 'Pigouvian Tax' to address environmental degradation. What is the primary economic mechanism at work?

- A. Subsidizing renewable energy to lower the market price for consumers
- B. Internalizing negative externalities by making the polluter pay for societal costs
- C. Banning the harvest of endangered species through strict legal regulation
- D. Redistributing wealth from urban centers to rural agricultural communities

8. To effectively combat 'The Tragedy of the Commons' in international waters, policymakers often rely on _____ to assign responsibility and limit over-extraction.

- A. Laissez-faire economics
- B. Common Pool Resource management
- C. Unilateral trade embargoes
- D. Exponential growth modeling

9. Evaluating the transition from 'Linear' to 'Regenerative' agriculture, which technique offers the most significant holistic benefit for both carbon sequestration and soil resilience?

- A. Hydroponic growth in controlled vertical indoor environments
- B. Precision application of synthetic nitrogen fertilizers
- C. Integration of livestock into multi-crop no-till systems
- D. Monocultures of genetically modified drought-resistant seeds

10. Under the 'Precautionary Principle,' 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.

- A. True
- B. False