Name: _____ **Date:** _____

Jurassic Park: The 12th Grade Sustainability Endgame

Students cultivate systemic thinking by analyzing the complex trade-offs between ecological health, geopolitical stability, and thermodynamic limits in modern industry.

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1. The 'Rebound Effect' (Jevons Paradox) suggests that increased efficiency in resource use may lead to higher total consumption. Which scenario best illustrates this in a sustainable urban planning context?

A. Implementing a carbon tax that reduces overall industrial output.
B. Widespread LED adoption leading to increased decorative lighting and higher net energy demand.
C. Transitioning from coal-fired plants to localized micro-nuclear reactors.
D. A city-wide mandate for green roofs that lowers the urban heat island effect.

2. The 'Cradle-to-Cradle' design framework posits that all industrial outputs should be viewed as technical or biological nutrients rather than waste.

A. True
B. False

3. In the context of the 'Triple Bottom Line' framework, a company that prioritizes long-term ecological health and social equity but fails to remain profitable is neglecting the _____ pillar.

A. Environmental
B. Fiduciary
C. Economic
D. Philanthropic

4. When evaluates the 'Social License to Operate' (SLO) for a lithium mining project in the Salar de Atacama, which factor is most indicative of a high level of sustainability?

A. Securing all national government permits and environmental impact statements.
B. Achieving the lowest possible cost per ton of lithium carbonate extracted.
C. Consistent, ongoing support and collaborative decision-making with local indigenous communities.
D. The implementation of automated machinery to reduce workplace injury risks.

5. The Concept of 'Planetary Boundaries' identifies that the nitrogen and phosphorus cycles have already been pushed far beyond the 'zone of uncertainty' into a high-risk state.

A. True
B. False

6. The use of 'Life Cycle Assessment' (LCA) is a tool for evaluating the environmental impacts of a product from raw material extraction through disposal, commonly referred to as _____ analysis.

A. Cradle-to-Grave
B. Supply-and-Demand

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C. End-of-Pipe
D. Market-to-Home

7. Which of these represents a 'Decoupling' strategy in a national economy aiming for sustainable development?

A. Increasing GDP while simultaneously decreasing total domestic CO2 emissions.
B. Lowering interest rates to stimulate spending on consumer electronics.
C. Outsourcing manufacturing to nations with fewer environmental regulations.
D. Implementing a universal basic income funded by natural resource exports.

8. In 'Strong Sustainability' theory, natural capital and human-made capital are considered perfect substitutes for one another.

A. True
B. False

9. When a small change in one part of an ecological system leads to a large, abrupt, and potentially irreversible shift, the system has reached a _____.

A. Carrying Capacity
B. Tipping Point
C. Steady State
D. Negative Feedback Loop

10. How does the 'Precautionary Principle' influence policy regarding the introduction of new chemicals into the environment?

A. It requires the government to prove a chemical is harmful before it can be banned.
B. It mandates that the lowest-cost chemical option must always be prioritized.
C. It suggests that if an action has a risk of causing harm, the burden of proof that it is NOT harmful falls on those taking the action.
D. It encourages the use of chemical pesticides in areas where crop failure is imminent.