

Name: _____ Date: _____

Crush the Triple Bottom Line: Advanced Sustainability Quiz for College Scholars

Scholars calculate planetary boundaries and evaluate the efficacy of decoupling economic growth from environmental degradation through rigorous life-cycle assessment scenarios.

1. When evaluates the 'Rebound Effect' (Jevons Paradox) in industrial ecology, which outcome most accurately describes a failure in technological sustainability?

- A. Increased resource efficiency leads to lower unit costs, which paradoxically increases total consumption.
- B. Technological substitution fails because the new material has a higher embodied energy than the original.
- C. The implementation of a circular economy model results in a net loss of thermodynamic quality (entropy).
- D. Government subsidies for renewables discourage private investment in carbon capture and storage (CCS).

2. In the context of Raworth's 'Doughnut Economics' framework, the space between the social foundation and the ___ represents the safe and just space for humanity.

- A. Economic Ceiling
- B. Ecological Ceiling
- C. Biosphere Integrity
- D. Tipping Point

3. Strong sustainability models posit that natural capital and manufactured capital are perfect substitutes, allowing for the total depletion of ecosystems if economic wealth is proportionally increased.

- A. True
- B. False

4. A life-cycle assessment (LCA) reveals that a 'bio-based' plastic has a higher eutrophication potential than conventional PET. This is most likely due to:

- A. The release of methane during anaerobic degradation in landfills.
- B. The high energy requirements of the polymerization process in chemical plants.
- C. Runoff from synthetic fertilizers used in the cultivation of the feedstock crops.
- D. Combustion emissions during the long-distance transport of raw biomass.

5. The 'Extended Producer Responsibility' (EPR) policy approach shifts the environmental costs of a product's end-of-life stage from the taxpayer to the ___.

- A. Ultimate Consumer
- B. Local Municipality
- C. Original Manufacturer
- D. Regulatory Agency

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

- A. True
- B. False

7. Which transition represents a shift toward a 'Steady-State Economy' as proposed by Herman Daly?

- A. Maximizing GDP growth through aggressive carbon-tax revenue recycling.
- B. Stabilizing populations and resource throughput while focusing on qualitative development.
- C. Transitioning all fossil fuel subsidies to green hydrogen research.
- D. De-regulating the energy market to allow for localized microgrid competition.

8. When an organization engages in ____, they are misleading stakeholders regarding their environmental practices or the environmental benefits of a product.

- A. Blue-Washing
- B. Green-Washing
- C. Carbon-Offsetting
- D. Virtue-Signaling

9. Is the 'Kuznets Curve' hypothesis—which suggests that environmental degradation initially increases with economic growth but then decreases after a certain income threshold—universally validated for all pollutants?

- A. True
- B. False

10. The 'Tragedy of the Commons' is often cited as a failure of sustainability. From a game theory perspective, what is the primary structural driver of this tragedy?

- A. The lack of private property rights leads to under-investment in natural capital.
- B. The mismatch between individual benefit (rational self-interest) and collective cost.
- C. A failure of communication between stakeholders in a high-trust environment.
- D. The presence of a dominant strategy that leads to a Pareto-optimal outcome.