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Jurassic Park Noir: 8th Grade Deep Crust Forensic Quiz

Evaluate isotopic signatures and faunal succession to reconstruct tectonostratigraphic history. Analysis centers on correlating disconformities with mass extinctions.

1. A geologist identifies a layer of bentonite (volcanic ash) sandwiched between two limestone strata containing different species of brachiopods. What is the most rigorous way to determine the absolute age of these fossils?

- A. Apply the Law of Superposition to the sedimentary layers
- B. Calculate the ratio of Parent to Daughter isotopes in the ash layer's zircon crystals
- C. Compare the brachiopod morphology to existing index fossil catalogs
- D. Measure the thickness of the ash layer to estimate the duration of the eruption

2. The 'Lazarus effect' in the fossil record refers to a taxon that disappears during a mass extinction event only to reappear much later in higher strata.

- A. True
- B. False

3. If you discover a 'Biozone' overlap of Globigerinoides and Discoaster organisms in a deep-sea core, you are using the principle of ___ to narrow the geologic window.

- A. Faunal Succession
- B. Uniformitarianism
- C. Lateral Continuity
- D. Cross-cutting Relationships

4. Analyzing stable oxygen isotopes ($^{18}\text{O}/^{16}\text{O}$) within the calcium carbonate shells of Foraminifera fossils allows scientists to reconstruct which specific variable?

- A. The exact date of the magnetic pole reversal
- B. The diet of ancient marine mammals
- C. Paleo-ocean temperatures and glacial ice volume
- D. The depth of the ocean floor at the time of deposition

5. An 'Angular Unconformity' represents a continuous, uninterrupted depositional environment without any tectonic disturbance.

- A. True
- B. False

6. The 'Burgess Shale' is a famous Lagerstätte because it contains exceptionally preserved fossils of soft-bodied organisms from the ___ Period.

- A. Devonian
- B. Cambrian

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- C. Permian
- D. Silurian

7. Which scenario best describes a 'Disconformity' in the stratigraphic record?

- A. Igneous rock intrudes into layers of sedimentary rock
- B. Sedimentary layers are deposited directly on top of metamorphic basement rock
- C. Parallel sedimentary layers are separated by an erosional surface signifying a time gap
- D. A fault line shifts rock units vertically against each other

8. Carbon-14 dating is the most effective method for determining the age of a T-Rex femur found in Mesozoic strata.

- A. True
- B. False

9. The transition from the Paleozoic Era to the Mesozoic Era was marked by the ___ extinction, the most severe in Earth's history.

- A. K-Pg (Cretaceous-Paleogene)
- B. Late Devonian
- C. Permian-Triassic
- D. Ordovician-Silurian

10. How does the discovery of Glossopteris flora across South America, Africa, India, and Antarctica provide evidence for plate tectonics?

- A. It proves that these plants could survive long-distance salt-water voyages
- B. It indicates that all these continents shared a tropical climate simultaneously
- C. The seeds were carried by migratory birds across the modern southern oceans
- D. The heavy, non-buoyant seeds imply these landmasses were once a contiguous supercontinent