

Name: _____ Date: _____

Dissect Earth's Deep History: A 10th Grade Fossil Analysis Quiz

Sophomores evaluate faunal succession, radioactive decay, and index fossils through 10 analytical questions requiring synthesis of geological and biological evidence.

1. Which principle allows geologists to correlate sedimentary strata across vast distances based on the predictable sequence of organism appearances and disappearances?

- A. Principle of Horizontal Continuity
- B. Principle of Faunal Succession
- C. Principle of Uniformitarianism
- D. Principle of Cross-Cutting Relationships

2. The _____ of an index fossil must be geographically widespread but limited to a very short duration of geologic time to be useful for precise stratigraphic correlation.

- A. Abundance
- B. Stratigraphy
- C. Distribution
- D. Evolution

3. Carbon-14 dating is the most effective method for determining the absolute age of a fossilized Brachiosaurus femur found in Jurassic limestone layers.

- A. True
- B. False

4. If you discover fossilized Glossopteris flora across South America, Africa, and Antarctica, what is the most scientifically sound inference regarding the Permian Period?

- A. These landmasses were once connected as part of Gondwana.
- B. The plant seeds were capable of crossing thousands of miles of salt water.
- C. Identical environmental conditions triggered convergent evolution.
- D. Volcanic activity transported the fossils across ocean basins.

5. A scientist finds an unconformity where the fossil record shows a sudden lack of biodiversity; this 'break' in the rock record is often interpreted as a(n) _____.

- A. Intrusion
- B. Orogeny
- C. Erosional Gap
- D. Inclusion

6. Which of the following conditions would most likely result in the preservation of soft-body tissues, a phenomenon seen in the Burgess Shale?

- A. Slow burial in a high-oxygen environment

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- B. Exposure to scavengers in a shallow lagoon
- C. Rapid burial in an anaerobic (oxygen-poor) environment
- D. High-energy wave action on a rocky coastline

7. Coprolites and gastroliths are categorized as body fossils because they provide direct biological information about the organism's digestive system.

- A. True
- B. False

8. What does the appearance of 'Stromatolites' in the fossil record primarily signify regarding Earth's atmospheric evolution?

- A. The cooling of the Earth's crust
- B. The beginning of the 'Great Oxygenation Event'
- C. The first appearance of multicellular terrestrial life
- D. The impact of a massive asteroid

9. The transition from the Paleozoic Era to the Mesozoic Era is marked by the _____ Extinction, the largest mass extinction in Earth's history.

- A. K-Pg
- B. Ordovician
- C. Permian-Triassic
- D. Devonian

10. Phyletic gradualism suggests that the fossil record should show a constant, slow rate of evolutionary change rather than sudden bursts of diversification.

- A. True
- B. False