|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Living organisms have been on Earth for \_\_\_\_\_\_\_\_\_ of Earth's history.

|  |  |  |
| --- | --- | --- |
|   | a.  | less than 1% |
|   | b.  | about 20% |
|   | c.  | about 50% |
|   | d.  | about 80% |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. Which of the following statements about the scientific method is false?

|  |  |  |
| --- | --- | --- |
|   | a.  | A scientific theory is never considered finally proved. |
|   | b.  | Data used to generate a hypothesis may come from observations, experiments, and chance findings. |
|   | c.  | A theory that has accumulated a substantial body of experimental support is called a hypothesis. |
|   | d.  | A scientific model represents some aspect of nature based on a set of hypotheses and theories. |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. How old is the Earth?

|  |  |  |
| --- | --- | --- |
|   | a.  | approximately 4.5 thousand years old |
|   | b.  | approximately 4.5 billion years old |
|   | c.  | approximately 4.5 million years old |
|   | d.  | approximately 4.5 trillion years old |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. A \_\_\_\_\_\_\_\_\_\_\_ aims to predict the complex behavior of Earth systems.

|  |  |  |
| --- | --- | --- |
|   | a.  | scientific hypothesis |
|   | b.  | scientific observation |
|   | c.  | scientific plan |
|   | d.  | scientific model |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. A scientific hypothesis that stands repeated testing can be elevated to a scientific \_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | model |
|   | b.  | fact |
|   | c.  | theory |
|   | d.  | idea |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. Which of the following statements about the scientific method is not true?

|  |  |  |
| --- | --- | --- |
|   | a.  | A tentative explanation of a body of data is called a hypothesis. |
|   | b.  | Theories are less likely than hypotheses to be correct. |
|   | c.  | A hypothesis is strengthened if it successfully predicts the outcomes of new experiments. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. According to the principle of uniformitarianism, \_\_\_\_\_\_\_\_ .

|  |  |  |
| --- | --- | --- |
|   | a.  | geologic processes we observe today have operated in the past |
|   | b.  | animals evolved at a uniform rate |
|   | c.  | all of the planets formed from a uniform solar nebula |
|   | d.  | early Earth was covered by a uniform magma ocean |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. The \_\_\_ is the information preserved in rocks formed at various times throughout Earth history.

|  |  |  |
| --- | --- | --- |
|   | a.  | geologic data |
|   | b.  | geologic record |
|   | c.  | geodynamic information |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. Which of the following is "a tentative explanation based on observational data and experiments"?

|  |  |  |
| --- | --- | --- |
|   | a.  | scientific theory |
|   | b.  | scientific hypothesis |
|   | c.  | scientific model |
|   | d.  | scientific thesis |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. Complete the following sentence: A \_\_\_\_\_\_\_\_ is a representation of how a natural process operates or how a natural system behaves.

|  |  |  |
| --- | --- | --- |
|   | a.  | scientific theory |
|   | b.  | scientific hypothesis |
|   | c.  | scientific model |
|   | d.  | scientific thesis |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. Scientific knowledge that has been elevated to the status of a scientific theory is no longer subject to change.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. Complete the following sentence: Scientific hypotheses should always be\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | testable |
|   | b.  | correct |
|   | c.  | complex |
|   | d.  | simple |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. Change in the ground elevation of the Earth's surface is called \_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | geodesy |
|   | b.  | topography |
|   | c.  | uniformitarianism |
|   | d.  | none of the above |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14. Elevation of the ground surface is measured relative to \_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | Mt. Everest |
|   | b.  | the equator |
|   | c.  | sea level |
|   | d.  | the North Pole |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. The typical elevation of the land surface occurs within a range of \_\_\_\_\_\_\_ above sea level.

|  |  |  |
| --- | --- | --- |
|   | a.  | 0–20 km |
|   | b.  | 0–1 km |
|   | c.  | 0–10 km |
|   | d.  | 0–5 km |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16. The typical depth of ocean basins are \_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 1–2 km |
|   | b.  | 10–12 km |
|   | c.  | 4–5 km |
|   | d.  | 8–10 km |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. The highest topographic point above sea level on Earth is at \_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | Mount Himalaya |
|   | b.  | Mount Mauna Loa |
|   | c.  | Mount Marianas |
|   | d.  | Mount Everest |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18. The vertical distance above sea level is called the \_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | elevation |
|   | b.  | contour |
|   | c.  | relief |
|   | d.  | topography |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. How high is Mount Everest, the highest mountain in the world?

|  |  |  |
| --- | --- | --- |
|   | a.  | approximately 3000 meters |
|   | b.  | approximately 6000 meters |
|   | c.  | approximately 9000 meters |
|   | d.  | approximately 12,000 meters |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20. The shape of the Earth is best described as

|  |  |  |
| --- | --- | --- |
|   | a.  | a perfect sphere. |
|   | b.  | near spherical with flattening at the equator and bulging at the poles. |
|   | c.  | near spherical with bulging at the equator and flattening at the poles. |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21. Which of the following techniques are used by geologists in their research?

|  |  |  |
| --- | --- | --- |
|   | a.  | creating computer models |
|   | b.  | laboratory experiments |
|   | c.  | observing the natural environment |
|   | d.  | all of these |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. Geologic phenomena cannot be directly observed because geologic processes all operate over timescales much longer than a human lifespan.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23. Which of the following phrases was used by James Hutton to summarize the Principle of Uniformitarianism?

|  |  |  |
| --- | --- | --- |
|   | a.  | Earth processes are uniform through time. |
|   | b.  | The present is the key to the past. |
|   | c.  | The laws of nature are unchangeable. |
|   | d.  | None of these. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24. The Earth's core is made up primarily of \_\_\_\_\_\_\_\_ .

|  |  |  |
| --- | --- | --- |
|   | a.  | iron |
|   | b.  | lead |
|   | c.  | oxygen |
|   | d.  | silicon |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |
| --- |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 25. Which part of the Earth depicted in the figure above is molten?

|  |  |  |
| --- | --- | --- |
|   | a.  | crust |
|   | b.  | mantle |
|   | c.  | outer core |
|   | d.  | inner core |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 26. Which of the following makes up the bulk of the Earth?

|  |  |  |
| --- | --- | --- |
|   | a.  | crust |
|   | b.  | inner core |
|   | c.  | mantle |
|   | d.  | outer core |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 27. Ninety percent of the Earth is made up of which four elements?

|  |  |  |
| --- | --- | --- |
|   | a.  | iron, oxygen, silicon, and magnesium |
|   | b.  | oxygen, nitrogen, hydrogen, and silicon |
|   | c.  | magnesium, aluminum, silicon, and oxygen |
|   | d.  | silicon, calcium, aluminum, and iron |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 28. Approximately 50% of the Earth's crust is made up of which element?

|  |  |  |
| --- | --- | --- |
|   | a.  | aluminum |
|   | b.  | iron |
|   | c.  | oxygen |
|   | d.  | silicon |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 29. Stony meteorites are similar in composition to the Earth's \_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | mantle |
|   | b.  | crust |
|   | c.  | inner core |
|   | d.  | outer core |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 30. The group of meteorites that are similar in composition to the Earth's core are \_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | stony meteorites |
|   | b.  | high-density meteorites |
|   | c.  | iron-nickel meteorites |
|   | d.  | none of the above |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31. The Mohorovicic discontinuity coincides with the \_\_\_\_\_\_\_\_\_\_ boundary.

|  |  |  |
| --- | --- | --- |
|   | a.  | mantle-core |
|   | b.  | crust-mantle |
|   | c.  | lithosphere-mantle |
|   | d.  | inner core-outer core |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32. Continental crust is \_\_\_\_\_\_\_\_ oceanic crust.

|  |  |  |
| --- | --- | --- |
|   | a.  | less dense than |
|   | b.  | the same density as |
|   | c.  | more dense than |
|   | d.  | Geoscientists have no idea. |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 33. The Earth's major layers include (from outermost to innermost) \_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | inner core, outer core, mantle, crust |
|   | b.  | outer core, inner core, mantle, crust |
|   | c.  | crust, mantle, outer core, inner core |
|   | d.  | crust, outer core, inner core, mantle |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 34. The average density of continental crust is \_\_\_\_\_\_\_\_ g/cm3.

|  |  |  |
| --- | --- | --- |
|   | a.  | 2.8 |
|   | b.  | 3.4 |
|   | c.  | 3.0 |
|   | d.  | 4.0 |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 35. Continents float high because they are \_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | denser than the mantle |
|   | b.  | less dense than the mantle |
|   | c.  | the same density as the mantle |
|   | d.  | thicker than the mantle |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 36. The two most common elements in the Earth's crust are \_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | calcium and carbon |
|   | b.  | iron and sulfur |
|   | c.  | chlorine and sodium |
|   | d.  | oxygen and silicon |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 37. How thick is the oceanic crust?

|  |  |  |
| --- | --- | --- |
|   | a.  | approximately 7 km |
|   | b.  | approximately 70 km |
|   | c.  | approximately 35 km |
|   | d.  | approximately 240 km |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 38. Which of the following statements about the Moho (Mohovoricic discontinuity) is false?

|  |  |  |
| --- | --- | --- |
|   | a.  | The Moho marks the top of a partially molten layer. |
|   | b.  | The Moho separates denser rocks below from less dense rocks above. |
|   | c.  | The Moho separates the crust from the mantle. |
|   | d.  | The speed of seismic waves increases as they pass down through the Moho. |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 39. Why is the average elevation of the continents higher than the average elevation of the seafloor?

|  |  |  |
| --- | --- | --- |
|   | a.  | because melting of large ice caps has caused isostatic rebound of the continents |
|   | b.  | because oceanic crust is composed of denser rocks than the continental crust |
|   | c.  | because the continents are supported by upwelling mantle currents |
|   | d.  | because subduction pulls down the seafloor |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 40. The temperature at which a rock melts generally \_\_\_ with increasing pressure.

|  |  |  |
| --- | --- | --- |
|   | a.  | increases |
|   | b.  | remains the same |
|   | c.  | decreases |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 41. What are the two most abundant elements (by weight) in the whole Earth?

|  |  |  |
| --- | --- | --- |
|   | a.  | iron and oxygen |
|   | b.  | oxygen and silicon |
|   | c.  | silicon and iron |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 42. What happens when seismic waves encounter a boundary between two materials?

|  |  |  |
| --- | --- | --- |
|   | a.  | All the wave energy bounces off the boundary. |
|   | b.  | All the wave energy passes through the boundary. |
|   | c.  | Some of the wave energy bounces off the boundary and some passes through the boundary. |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 43. Beneath mountain belts, the Moho is

|  |  |  |
| --- | --- | --- |
|   | a.  | deeper than it is beneath normal continental crust. |
|   | b.  | shallower than it is beneath normal continental crust. |
|   | c.  | at the same depth as it is beneath normal continental crust. |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |
| --- |
|  |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 44. Which region of the Earth consists primarily of iron and magnesium silicates?

|  |  |  |
| --- | --- | --- |
|   | a.  | region A |
|   | b.  | region B |
|   | c.  | region C |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 45. The Earth exchanges \_\_\_\_\_\_\_\_\_\_ with the rest of the cosmos.

|  |  |  |
| --- | --- | --- |
|   | a.  | energy and mass |
|   | b.  | mass, but not energy, |
|   | c.  | energy, but not mass, |
|   | d.  | neither energy nor mass |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 46. In which of the following subsystems is the Earth's magnetic field generated?

|  |  |  |
| --- | --- | --- |
|   | a.  | climate system |
|   | b.  | hydrologic system |
|   | c.  | geodynamo system |
|   | d.  | plate tectonic system |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 47. The Earth's climate system involves interactions between the atmosphere and the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | biosphere |
|   | b.  | hydrosphere |
|   | c.  | lithosphere |
|   | d.  | biosphere, hydrosphere, and lithosphere |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48. On average, the Earth's lithosphere is approximately \_\_\_\_ km thick.

|  |  |  |
| --- | --- | --- |
|   | a.  | 4 |
|   | b.  | 20 |
|   | c.  | 100 |
|   | d.  | 500 |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 49. The asthenosphere is \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | cool and strong |
|   | b.  | cool and weak |
|   | c.  | hot and strong |
|   | d.  | hot and weak |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50. What are the "plates" of plate tectonics made up of?

|  |  |  |
| --- | --- | --- |
|   | a.  | asthenosphere |
|   | b.  | crust |
|   | c.  | lithosphere |
|   | d.  | mantle |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 51. Which of the following relationships is correct?

|  |  |  |
| --- | --- | --- |
|   | a.  | asthenosphere = crust |
|   | b.  | lithosphere = crust |
|   | c.  | asthenosphere = crust + upper mantle |
|   | d.  | lithosphere = crust + upper mantle |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 52. The motion of a flowing material where hot matter rises from the bottom and cool matter sinks from the surface is called \_\_\_\_\_\_\_\_\_\_\_\_ .

|  |  |  |
| --- | --- | --- |
|   | a.  | accretion |
|   | b.  | convection |
|   | c.  | differentiation |
|   | d.  | fusion |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 53. How old are the earliest fossil remains?

|  |  |  |
| --- | --- | --- |
|   | a.  | about 65 billion years old |
|   | b.  | about 2200 billion years old |
|   | c.  | about 540 billion years old |
|   | d.  | about 3500 billion years old |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 54. The plate tectonic system is driven by \_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | magnetism |
|   | b.  | the climate system |
|   | c.  | solar heat |
|   | d.  | internal heat |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 55. The three major global geosystems are \_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | climate system, solar system, and geodynamo system |
|   | b.  | geodynamo system, plate tectonic system, and solar system |
|   | c.  | climate system, geodynamo system, and plate tectonic system |
|   | d.  | plate tectonic system, climate system, and solar system |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 56. Solar energy energizes which of the Earth's components?

|  |  |  |
| --- | --- | --- |
|   | a.  | atmosphere |
|   | b.  | biosphere |
|   | c.  | hydrosphere |
|   | d.  | all of the above |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 57. The ability of the Earth's atmosphere to retain heat is referred to as the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | solar effect |
|   | b.  | radiation effect |
|   | c.  | biosphere effect |
|   | d.  | greenhouse effect |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. Magnetic reversals of the Earth's magnetic field are when \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | the Earth's north and south poles flip |
|   | b.  | the Earth's magnetic field decreases in intensity |
|   | c.  | the Earth's magnetic poles wander |
|   | d.  | the Earth's magnetic field increases in intensity |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 59. Which of the following powers the Earth's internal heat engine?

|  |  |  |
| --- | --- | --- |
|   | a.  | radioactivity |
|   | b.  | heat trapped during the formation of the Earth |
|   | c.  | A and B |
|   | d.  | neither A nor B |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 60. How thick is average lithosphere?

|  |  |  |
| --- | --- | --- |
|   | a.  | 25 km |
|   | b.  | 100 km |
|   | c.  | 250 km |
|   | d.  | 1000 km |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 61. Which of the following statements about the asthenosphere is false?

|  |  |  |
| --- | --- | --- |
|   | a.  | The asthenosphere lies beneath the lithosphere. |
|   | b.  | The asthenosphere is stronger than the lithosphere. |
|   | c.  | The asthenosphere rises close to the surface beneath mid-ocean ridges. |
|   | d.  | The asthenosphere is partially molten. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 62. The boundary between the mantle and the core lies at a depth of approximately \_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 300 kilometers |
|   | b.  | 1000 kilometers |
|   | c.  | 3000 kilometers |
|   | d.  | 10,000 kilometers |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 63. Which of the following regions is the source of most basaltic magma?

|  |  |  |
| --- | --- | --- |
|   | a.  | the asthenosphere |
|   | b.  | the lithosphere |
|   | c.  | the lower mantle |
|   | d.  | the outer core |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 64. What element makes up most of the Earth's core?

|  |  |  |
| --- | --- | --- |
|   | a.  | iron |
|   | b.  | oxygen |
|   | c.  | magnesium |
|   | d.  | silicon |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 65. What drives plate tectonics?

|  |  |  |
| --- | --- | --- |
|   | a.  | erosion |
|   | b.  | solar energy |
|   | c.  | thermal conduction |
|   | d.  | thermal convection |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 66. Over geologic time, most of the heat lost from the Earth's interior has been transported by \_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | conduction |
|   | b.  | convection |
|   | c.  | radioactive decay |
|   | d.  | solar radiation |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 67. Which of the following regions is hottest?

|  |  |  |
| --- | --- | --- |
|   | a.  | the crust |
|   | b.  | the inner core |
|   | c.  | the mantle |
|   | d.  | the outer core |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 68. The temperature at the center of the Earth is approximately \_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 200°C |
|   | b.  | 500°C |
|   | c.  | 2000°C |
|   | d.  | 5000°C |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 69. Above what temperature do materials lose their permanent magnetism?

|  |  |  |
| --- | --- | --- |
|   | a.  | 100°C |
|   | b.  | 500°C |
|   | c.  | 1000°C |
|   | d.  | 5000°C |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 70. Approximately how often does the Earth's magnetic field reverse itself?

|  |  |  |
| --- | --- | --- |
|   | a.  | every 50 years |
|   | b.  | every 5000 years |
|   | c.  | every 500,000 years |
|   | d.  | every 50,000,000 years |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 71. Which of the following Earth systems is powered by solar energy?

|  |  |  |
| --- | --- | --- |
|   | a.  | climate system |
|   | b.  | geodynamic system |
|   | c.  | plate tectonic system |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 72. Which of the following statements about the lithosphere is not true?

|  |  |  |
| --- | --- | --- |
|   | a.  | The lithosphere is cool and relatively brittle. |
|   | b.  | The lithosphere includes the crust and uppermost mantle. |
|   | c.  | The lithosphere is easily deformed, like a tube of toothpaste. |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 73. The Earth's lithosphere is broken into approximately \_\_\_ large, rigid plates.

|  |  |  |
| --- | --- | --- |
|   | a.  | 2 |
|   | b.  | 12 |
|   | c.  | 50 |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 74. In a convecting system, like a pot of boiling water or the Earth's mantle,

|  |  |  |
| --- | --- | --- |
|   | a.  | cool material rises. |
|   | b.  | warm material rises. |
|   | c.  | both cool and warm material rise. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 75. Which of the following statements is correct?

|  |  |  |
| --- | --- | --- |
|   | a.  | The Earth's asthenosphere is much stronger than the lithosphere. |
|   | b.  | The Earth's asthenosphere is much weaker than the lithosphere. |
|   | c.  | The Earth's asthenosphere and lithosphere are similar in strength. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 76. Which of the following statements is correct?

|  |  |  |
| --- | --- | --- |
|   | a.  | biosphere system, atmosphere system, and hydrosphere system. |
|   | b.  | lithosphere system, asthenosphere system, and deep mantle system. |
|   | c.  | climate system, plate tectonic system, and geodynamic system. |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 77. The geodynamo system is responsible for producing the Earth's

|  |  |  |
| --- | --- | --- |
|   | a.  | magnetic field. |
|   | b.  | convecting mantle. |
|   | c.  | weather. |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 78. In the plate tectonic system, the lithospheric plates ride on the hot, weak \_\_\_ layer.

|  |  |  |
| --- | --- | --- |
|   | a.  | asthenosphere |
|   | b.  | deep mantle |
|   | c.  | outer core |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 79. Which of the following rock types would be least likely to record the magnetic field at the time the rock formed?

|  |  |  |
| --- | --- | --- |
|   | a.  | basaltic lava flow |
|   | b.  | deep-sea shale |
|   | c.  | alluvial conglomerate |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 80. The Earth has had a magnetic field for the last \_\_\_ years.

|  |  |  |
| --- | --- | --- |
|   | a.  | 5 million |
|   | b.  | 1 billion |
|   | c.  | 3.5 billion |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 81. Which of the following statements is true?

|  |  |  |
| --- | --- | --- |
|   | a.  | The Earth's magnetic poles are aligned with its rotation axis. |
|   | b.  | The Earth's magnetic poles are inclined about 11° from its rotation axis. |
|   | c.  | The Earth's magnetic poles are inclined about 45° from its rotation axis. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 82. What is the lower mantle made up of?

|  |  |  |
| --- | --- | --- |
|   | a.  | dense silicate minerals |
|   | b.  | iron-nickel alloy |
|   | c.  | silicate melt |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 83. How old are the oldest rocks now found on the Earth's surface?

|  |  |  |
| --- | --- | --- |
|   | a.  | 0.5 billion years old |
|   | b.  | 4.0 billion years old |
|   | c.  | 2.5 billion years old |
|   | d.  | 4.5 billion years old |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 84. The Earth's atmosphere has been oxygen-rich for \_\_\_\_\_\_\_\_\_\_ of the Earth's history.

|  |  |  |
| --- | --- | --- |
|   | a.  | about 25% |
|   | b.  | about 50% |
|   | c.  | about 75% |
|   | d.  | about 99% |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 85. Large continental masses had formed on the Earth by \_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 0.3 billion years ago |
|   | b.  | 2.5 billion years ago |
|   | c.  | 1.0 billion years ago |
|   | d.  | 4.0 billion years ago |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 86. What caused the mass extinctions 65 million years ago that ended the Age of Dinosaurs?

|  |  |  |
| --- | --- | --- |
|   | a.  | major bolide impact |
|   | b.  | massive volcanic eruptions |
|   | c.  | global glaciation |
|   | d.  | all of the above |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 87. The first evidence of erosion by water in the rock record occurred \_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 4000 Ma |
|   | b.  | 3500 Ma |
|   | c.  | 2500 Ma |
|   | d.  | 3800 Ma |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 88. The first appearance of *Homo sapiens* on Earth occurred \_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|   | a.  | 16 Ma |
|   | b.  | 0.16 Ma |
|   | c.  | 1.6 Ma |
|   | d.  | 1600 Ma |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 89. How many major mass extinction events have occurred throughout Earth's history?

|  |  |  |
| --- | --- | --- |
|   | a.  | 5 |
|   | b.  | 10 |
|   | c.  | 2 |
|   | d.  | 1 |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 90. Which of the following statements about the age of the Earth and Moon is true?

|  |  |  |
| --- | --- | --- |
|   | a.  | The Earth is approximately 3 billion years older than the Moon. |
|   | b.  | The Earth and Moon are approximately the same age. |
|   | c.  | The Earth is approximately 1.5 billion years younger than the Moon. |
|   | d.  | The Earth is approximately 4.5 billion years younger than the Moon. |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 91. The oldest terrestrial material found on the Earth is approximately \_\_\_\_\_\_\_ old.

|  |  |  |
| --- | --- | --- |
|   | a.  | 4.4 billion years |
|   | b.  | 4400 years |
|   | c.  | 4.4 million years |
|   | d.  | 440 hundred years |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 92. Humans have been on Earth for \_\_\_ of Earth's history.

|  |  |  |
| --- | --- | --- |
|   | a.  | less than 1% |
|   | b.  | approximately 50% |
|   | c.  | more than 90% |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 93. When did our solar system form?

|  |  |  |
| --- | --- | --- |
|   | a.  | about 540 million years ago |
|   | b.  | about 2.5 billion years ago |
|   | c.  | about 4.6 billion years ago |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 94. Evidence in the rock record shows that there have been \_\_\_ major extinction events during Earth's history.

|  |  |  |
| --- | --- | --- |
|   | a.  | 10 |
|   | b.  | 5 |
|   | c.  | 2 |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 95. About when did the first animals evolve on Earth, according to current geological understanding?

|  |  |  |
| --- | --- | --- |
|   | a.  | 10 million years ago |
|   | b.  | 60 million years ago |
|   | c.  | 100 million years ago |
|   | d.  | 600 million years ago |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 96. About when are *Homo sapiens* thought to have evolved?

|  |  |  |
| --- | --- | --- |
|   | a.  | 6000 years ago |
|   | b.  | 10,000,000 years ago |
|   | c.  | 200,000 years ago |
|   | d.  | 65,000,000 years ago |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 97. How did Earth's atmosphere become oxygenated?

|  |  |  |
| --- | --- | --- |
|   | a.  | volcanic outgassing |
|   | b.  | gasses from asteroid impacts |
|   | c.  | radiation interacting with the atmosphere |
|   | d.  | oxygen-producing organisms |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 98. Geologic evidence indicates Earth's moon and core formed within about the first 100 million years of Earth history.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 99. Approximately when did the mass-extinction event that led to the demise of the dinosaurs occur?

|  |  |  |
| --- | --- | --- |
|   | a.  | 50 thousand years ago |
|   | b.  | 443 million years ago |
|   | c.  | 1.4 billion years ago |
|   | d.  | 65 million years ago |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100. Which class of animals rose to dominance after the extinction of the dinosaurs?

|  |  |  |
| --- | --- | --- |
|   | a.  | amphibians |
|   | b.  | mammals |
|   | c.  | marine invertebrates |
|   | d.  | reptiles |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 101. Earth's hydrosphere did not begin to form until at least 2 billion years ago.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 102. About what percentage of species went extinct during the largest mass extinction in Earth history?

|  |  |  |
| --- | --- | --- |
|   | a.  | 15% |
|   | b.  | 40% |
|   | c.  | 70% |
|   | d.  | 95% |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |