Earth Science Chapter 9 Section 4 Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. According to the property of paleomagnetism, ____.
   a. iron-rich rocks show the location of the magnetic poles at the time of their formation
   b. all rocks, regardless of when they are formed, have the same polarity
   c. all rocks have a reversed polarity
   d. rocks do not possess magnetic properties

____ 2. Magnetic reversals ____.
   a. cause the movements of tectonic plates
   b. confirmed the existence of subduction zones
   c. provide strong evidence for seafloor spreading
   d. have never occurred during geologic time

____ 3. Strips of alternating magnetic polarities found in rocks in the ocean basins ____.
   a. conflict with the theory of plate tectonics
   b. provide evidence that Earth’s magnetic field has never reversed polarity
   c. indicate changes in Earth’s gravitation field
   d. provide evidence for seafloor spreading

____ 4. What do the strips of low-intensity magnetism represent on the ocean floor?
   a. areas where there is no magnetism
   b. areas where the rocks have a normal polarity
   c. areas where the rocks have a reversed polarity
   d. areas of different types of rock

____ 5. The Hawaiian Islands were formed when the Pacific Plate moved over ____.
   a. a subduction zone  c. the Aleutian Plate
   b. an ocean ridge  d. a hot spot

____ 6. The age of the rocks in the ocean basins was determined by ____.
   a. ocean drilling  
   b. the fit of continents across ocean basins
   c. the depth of earthquake foci
   d. the amount of magnetism in the rocks

____ 7. How does the age of seafloor sediments change with increasing distance from the ocean ridge?
   a. Age decreases.  c. Age increases.
   b. Age stays the same.  d. Age varies without a pattern.

____ 8. The formation of the Hawaiian Islands is associated with ____.
   a. a divergent plate boundary  c. a transform fault boundary
   b. a convergent plate boundary  d. no plate boundary of any kind
9. According to Figure 9-2, if the plate labeled H descends into Earth’s interior, what will occur between the positions labeled Y and X?
   a. The rock at X will be cooler than the rock at Y.
   b. Earthquake foci will be shallower at Y and increase in depth at X.
   c. Earthquake foci will be deeper at Y and decrease in depth at X.
   d. Rifting will begin to occur between Y and X.

Completion

Complete each statement.

10. Rocks that exhibit magnetism that is opposite to the current magnetic field are said to have ________________.

11. Plumes of molten rock originating deep within the mantle are known as ________________.

12. The age of the deepest ocean sediments ________________ with increasing distance from an ocean ridge crest.
13. Earthquakes associated with divergent boundaries have _________________ foci.

Short Answer

14. List the lines of evidence that support the theory of plate tectonics.

15. How does the pattern of earthquake foci support the theory of plate tectonics?

Essay

16. Explain the relationship between the formation of the Hawaiian Islands, the ages of the islands, hot spots, and plate movement.
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Answer Section

MULTIPLE CHOICE

1. ANS: A  PTS: 1  DIF: L1  OBJ: 9.11
2. ANS: C  PTS: 1  DIF: L1  OBJ: 9.11
3. ANS: D  PTS: 1  DIF: L1  OBJ: 9.11
4. ANS: C  PTS: 1  DIF: L2  OBJ: 9.11
5. ANS: D  PTS: 1  DIF: L1  OBJ: 9.12

COMPLETION

10. ANS: reverse polarity  PTS: 1  DIF: L1  OBJ: 9.11

SHORT ANSWER

14. ANS: Evidence that supports the theory of plate tectonics includes paleomagnetism and magnetic reversals, earthquake patterns, age and distribution of ocean sediments from ocean drilling, and evidence from hot spots.  PTS: 1  DIF: L1  OBJ: 9.11
15. ANS: Earthquake foci are shallow along divergent boundaries and, at convergent boundaries, earthquake foci are shallow near the ocean trench and become deeper closer to the mainland, mirroring the angle of the descending subducting plate.  PTS: 1  DIF: L2  OBJ: 9.12
ESSAY

16. ANS:

Hot spots are relatively stationary plumes of molten rock rising from Earth’s mantle. According to the theory of plate tectonics, as a plate moves over a hot spot, magma often penetrates the surface, generating volcanic activity. If the volcanic activity continues, an island will form. In the case of the Hawaiian Islands, as the Pacific plate moved over a hot spot, the volcanic activity formed a chain of volcanic islands. The hot spot is currently beneath the island of Hawaii, which has active volcanoes. The farther the islands are from the hot spot, the older the age of the islands. Kauai is the oldest large island of the Hawaiian chain, and it is 3.8–5.6 million years old. The volcanoes on Kauai are extinct.

PTS: 1  DIF: L2  OBJ: 9.12