**EARTH SYSTEMS, pp. 207-226**

1. Even though electric and hybrid vehicles reduce fossil fuel consumption, they still have a significant environmental impact. Explain why, and describe some of these impacts.
2. What explains the distribution of heavy and light elements within Earth’s volume? Where are each generally located, and how did they wind up there?
3. The inside of the Earth is characterized by *vertical zonation*. Briefly describe each of Earth’s layers:

Crust –

Mantle –

Core –

1. What is the connection between the heat at the Earth’s core and the movement of its tectonic plates?
2. What evidence led Alfred Wegner to propose the theory of plate tectonics in 1912?
3. How do the properties of oceanic crust rock and continental crust rock differ?

Oceanic – Continental –

1. Suppose a single continent is breaking apart due to divergent plate boundary. One piece of the continent is moving north towards the polar regions and one piece of the continent is moving south towards the tropics. What effect do you think this process would have on biodiversity?
2. Why do the Hawaiian Islands form an “arc”, with the oldest islands at one end and the youngest islands at the other end?
3. At a convergent plate boundary where oceanic crust is meeting continental crust, what will happen?
4. What types of tectonic plate movements can cause earthquakes?
5. How much stronger is an earthquake that registers as an 8.0 on the Richter scale than an earthquake measuring 4.0?
6. Why are seismic activity and volcanic activity often located in the same places?
7. What is the relationship between minerals, elements and rocks?
8. Does the rock cycle proceed in any particular order when transformations from one type of rock to the next occur? Explain.
9. How are each of the 3 rock types formed?

1. Igneous –

2. Metamorphic –

3. Sedimentary –

1. What is the difference between physical and chemical weathering?
2. What types of processes or forces usually cause erosion?
3. Why are weathering and erosion important to the rock cycle?
4. How is soil formed both “from above” and “from below”?
5. What effect does climate have on soil formation? How would you expect this to create differences between Boreal Forests and Tropical Rain Forests?
6. What role do organisms play in soil formation and development?
7. Why do soils develop different horizons? What separates one horizon from another?
8. Soils contain different blends of sand, silt and clay. Why is a balance needed between all 3 to promote ideal plant growth? (What would be bad about a sand-heavy or clay-heavy soil?)
9. What type of soil particles would be best to line a pit that is to be filled with hazardous chemicals?
10. What occurs during *adsorption* in a soil?
11. Can soils have both high CEC and high porosity? Explain why or why not.
12. How are the CEC of a soil and its base saturation related?
13. What types of organisms dominate the biological component of soil?
14. Why is *compaction* bad for soil?

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| **TERM** | **Description** | **Illustration** | **Example** |
| Core |  |  |  |
| Mantel |  |  |  |
| Asthenosphere |  |  |  |
| Lithosphere |  |  |  |
| Crust | SKIP |  |  |
| Hot Spots |  |  |  |
| Tectonic Plates | SKIP |  |  |
| Subduction Zone |  |  |  |
| Convergent Boundary |  |  |  |
| Divergent Boundary |  |  |  |
| Fault  |  |  |  |
| Earthquake | SKIP |  |  |
| Richter Scale | SKIP |  |  |
| Mineral | SKIP |  |  |
| Igneous Rock |  |  |  |
| Sedimentary Rock |  |  |  |
| Metamorphic Rock |  |  |  |
| Physical Weathering |  |  |  |
| Chemical Weathering |  |  |  |
| Erosion |  |  |  |
| Deposition |  |  |  |
| Soil |  |  |  |
| Parent Material |  |  |  |
| O Horizaon |  |  |  |
| A Horizon |  |  |  |
| B Horizon |  |  |  |
| C Horizon |  |  |  |
| Soil Degredation |  |  |  |
| CEC of Soil | SKIP |  |  |