Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ APES

Date: \_\_\_\_\_\_\_\_\_ Mrs. Pefanis

**Free Response Question**

**Unit 4 (Chapters 8 & 9)**

Choose one out of the following two questions to answer. You may use the textbook for assistance. This assignment will be handed in and grade.

Essay chosen #: \_\_\_\_\_\_\_\_\_\_\_

**Directions:** Write your answer to each part clearly. Support your answers with relevant information and examples. Where calculations are required, show your work.

**1.** Answer the following questions about the world’s approximately 845,000 dams.

1. What are benefits that dams provide to humans? (4 points)
2. What are the cons of dams to human society? (2 points)
3. What are the negative impacts of dams on the environment? (2 points)
4. If dams have both costs and benefits, how should we decide when and where a dam should be built? (2 points)

**2.**  Mountaintop mining is the process of removing 50-200 vertical meters of mountain top to extract coal from underlying seams. Following the removal of topsoil, material overlying coal seams is removed with explosives. This process leaves behind a tremendous amount of soil, rock and coal tailings. The tailings are often pushed into adjacent valleys that contain headwater streams and floodplains. Much of the coal tailings become oxidized, and can release sulfuric acid after a rainfall. When coal extraction is complete, the mountains are not rebuilt. However, mining companies are required to contour the landscape so that rainfall and snowmelt drain from the mountain along similar paths as in the pre-mining landscape. Companies are also required to add topsoil to the mountain and seed the soil to facilitate plant growth.

1. Topsoil is often added by large tractors that compact the soil. How does soil compaction alter the flow of water down the mountain? (2 points)
2. List two ways in which soil compaction may alter plant growth on the mountain following all reclamation activities. (2 points)
3. List two environmental consequences that are likely to result from filling valleys with mountaintop tailings, and two consequences that might arise downstream of the mining site. (4 points)
4. What other coal mining practice(s) could be used to remove the coal from mountains that would have less of an environmental impact than mountaintop mining? (2 points)

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Essay # Chosen: \_\_\_\_\_\_\_\_

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**Attached additional pages as needed**