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ENVI.2010 - Principles of Earth & Environmental Systems I

Study Questions XIII

Mineral Resources and Energy

1. How are *renewable* resources distinguished from *nonrenewable* resource?

2. What do we mean when we say that a characteristic of mineral resources is *exhaustability*?

3. The two major categories of mineral resources are metals and nonmetals. Distinguish between the two and give several examples.

4. What factors determine the life time of a mineral resource and briefly discuss each factor.

5. In the early 1950s the estimated iron-ore reserves of the United States increased by a factor of 5. What happened that led to this large increase in the estimated amount of iron-ore reserves?

6. Discuss the formation of aluminum ore deposits. From an economic point of view, what is a major difference between the production of aluminum and the other common metals?

7. Discuss the formation of a porphyry copper deposit.

8. Why do coals tend to have large amounts of sulfur and various metals?

9. Name and discuss the three major components required for an oil reserve.

10. What is the Second law of thermodynamics and what does it have to do with the generation of energy?

11. List and discuss three types of renewable energy resources.

12. How do fission reactions differ from fusion reactions?

13. What is a breeder reactor and how does it work?

14. How does a pressurized water reactor (PWR) generate electricity?

15. Briefly discuss the nuclear fuel cycle and the potential environmental problems associated with this cycle.