

Individual Assessment: What Did You Learn?
Coal Geology

Directions: Please respond on the answer sheet with the letter of the BEST answer to each of the following.

1. Which of the following mining techniques includes measures to prevent subsidence?
 - a. longwall mining
 - b. surface mining
 - c. mountain top removal
 - d. room and pillar mining

2. Which of the following would **NOT** be needed to determine the tonnage of coal beneath a property?
 - a. depth
 - b. thickness
 - c. area
 - d. density

3. Which of the following best explains the reason for the lack of dinosaur prints in WV?

4. The majority of the rocks in WV are
 - a. igneous
 - b. metamorphic
 - c. sedimentary
 - d. soil

5. WV rocks have found to be from which era?
 - a. Precambrian
 - b. Cenozoic
 - c. Mesozoic
 - d. Paleozoic

6. The oldest rocks in WV can be found
 - a. in Fairmont
 - b. in the eastern panhandle
 - c. in the northern panhandle
 - d. in the southern part of the state

7. The fact that WV rocks become more deformed as you move eastward can be explained by
 - a. glaciers
 - b. earthquakes
 - c. plate tectonics
 - d. all of the above

8. Which of the following conditions must exist for thick mats of peat to form?
 - a. location near the equator for warm wet conditions
 - b. high acidity to inhibit bacterial activity
 - c. trees in a freshwater swamp
 - d. all of the above

9. Coal ranks arranged from least altered to most altered by heat are
 - a. lignite, sub-bituminous, bituminous, anthracite
 - b. anthracite, bituminous, sub-bituminous, lignite
 - c. lignite, bituminous, sub-bituminous, anthracite
 - d. lignite, bituminous, anthracite, sub-bituminous

10. Which of the following is NOT true of coal
 - a. Coal is formed under heat and pressure
 - b. Heat and pressure applied to peat forms coal.
 - c. The “higher” the coal rank the better the coal
 - d. If enough pressure is applied coal will form diamonds.

11. What type of plants were responsible for our WV coals?
 - a. marsh grasses
 - b. pine trees
 - c. hollow lycopods and tree ferns
 - d. all of the above

12. Which of the following is TRUE in classifying coal?
 - a. coal is a mineral
 - b. coal is organic
 - c. coal has a definite chemical composition
 - d. coal has a crystal structure

13. In comparison to eastern coals, western coals are
 - a. younger in age
 - b. formed from different trees
 - c. thicker but lower grade
 - d. all of the above

14. The southern WV coals differ from northern WV coals due to
 - a. the vegetation in the coal swamps
 - b. the location of the swamp relative to the ocean
 - c. the position of the swamp relative to the water table
 - d. the influx of clastic sediments

15. Which of the following did NOT coincide with the formation of our coal swamps?
- large predators like alligators
 - the formation of Pangea
 - the Carboniferous Period (Great Britain)
 - the Pennsylvanian Period (US)
16. The rock layers you see in the plateau area of WV indicate that they formed as a result of
- volcanic eruptions
 - metamorphic processes
 - tension
 - sediments deposited under water
17. The “mountains” in this part of WV (or the western portion) are a product of
- glaciers
 - plate tectonics
 - erosion
 - deposition

Essays:

18. Describe the process of extracting coal using deep mining, surface mining, and mountain top removal. In your discussion include the importance of coal location and coal thickness and each of the extraction techniques. (10 points)
19. Why does mountain top removal mining rely on valley fill rather than traditional reclamation techniques? Why is reclamation such a concern for the mine operator? (2 pts)
20. Miners often refer to a roof cave-in as a “slate” fall. Slate is a thinly bedded metamorphic rock. How likely is it that slate is responsible for the cave in? What rock is likely the culprit? (2 pts)
21. What is wrong with the cartoon below which appeared recently in national newspapers? Provide the correct information for the mistakes. (2 pts)

Extra credit: Some coal geologist argues that coal is not a rock. Develop an argument to support this.

Coal GEOFest Scores

Name: _____

Assessment	Score	Possible Pts	Comments
Individual		50	
Group Problem Solving		30	
Group Contribution		10	
Reflection		10	