**EAS 375**

**Lecture Questions**

**Coal Electrical Generation**

**1. Describe room and pillar mining?**

Pillars of coal are left standing to help support the roof of the mine. Mining system in which material is extracted across a horizontal plane while leaving “pillars” of untouched coal to support the roof overburden, leaving open areas, or “rooms”.

**2. Why is mine subsidence an important factor in deciding what kind of mining strategy is employed in a new area?**

Movement of the ground surface as a result of readjustments of the overburden due to collapse or failure of underground mine workings. Because it can destroy habitation and building above ground. Can cause damage to surface and water supplies.

**3. What is “mountain-top mining” and why is it so destructive?**

Mountain top removal, by cut and fill. Removes a large amount of land. Can lead to disasters for town. Destroy landscape, pollute streams.

**4. Why did coal industry decide to carry out the more expensive mountain-top mining in**

**West Virginia and eastern Kentucky?**

**5. Why are slurry dams so dangerous in western West Virginia and eastern Kentucky?**

**6. What are the major advantages to strip mining?**

When the ore to be extracted is near the surface. It is safer, cheaper and faster.

**7. What were the positive and negative roles of the coal unions played in the coal industry during the first half of the 20th century?**

* Improved salaries.
* Improved conditions.
* Overplayed their hand – destroyed the industry.

**8. Why have coal mining west of the Mississippi increased so dramatically since 1970?**

**9. Why did the number of coal miners employed in the coal mines drop so dramatically during the latter half of the 20th century?**

**10. Why is washing coal before shipping an important?**

Remove a significant amount of sulfur and other impurities. The market value is greater and lower is the transportation costs.

**11. List three ways in which is coal is ship from the mine to where it is going to be used?**

-Train

-Barges

-Truck

**12. Why do the railroads play such an important part to the price of coal generation plants pay for coal?**

Only two railroads – monopoly.

**13. Why do coal generation plants limit the amount of coal that is stockpile at the facility? . The answer has to do with the properties of coal not economics.**

Because of risk of spontaneous fire. Coal takes on fire easily.

**14. How could a terrorist disrupt coal supplies?**

Blow up a coal train that passes across Mississippi.

**15. Describe the basic fundamentals of steam powered electrical generations.**

There is a furnace, that heats up the tube, and water boils. On one side, steam go out, on the other, hot gasses go out (smokestack). In some cases, water can be in waters pipes.

**16. Why is cooling of the steam when it leaves the turbine so important to the portion of the generation plant?**

It needs to be reused in the steam generator or boiler as boiled water.

**17. What are the major problems associated with the cooling water that is used to cool steam with the generation plant?**

The water that is used to cool steam needs to be cooled down so it can be put back in the environment. It usually comes from a nearby lake.

**18. How does a gas turbine generator work?**

Operate by using natural gas or fuel oil. Fresh air goes into a compressor, then combustion leads to turbine, then exhaust gasses (work out). (drawing).

**19. What is the difference between base load and peak load?**

Base load: Satisfies minimum demand and always kept running at a constant rate.

Peak load (high load): During periods of high demand, smaller generators are brought online to meet the increased demand.

**20. Describe coal gasification.**

(Diagram) Produces gas that can be burned. The coal is blown through with oxygen and steam (water vapor) while also being heated (and in some cases pressurized).

**21. Describe what is meant by clean coal power.**

Coal that is chemically washed of minerals and impurities, sometimes gasified or burned resulting in flue gases.

Coal industry use is for technologies designed to enhance both the efficiency and environmental acceptability of coal extraction, preparation and use.

**22. What strategies are being considered by the electrical generation industry to reduce or sequester C02?**

CO2 sequestration, use CO2 in secondary recovery of oil, use CO2 for growing algae.

Government project to produce a near-zero emission coal plant. Advanced IGCC technology will capture and sequester CO2.