**EAS 375**

**Fossil Fuels, Energy, and Society**

**Lecture Questions - Future of Oil in the 21st Century**

1. What is Hubbert’s Curve?

Hubbert predicted oil reserves would peak and decline to zero. Oil production would increase until a peak then decrease. Bell-shaped curve of resource depletion.

Hubbert’s peak: half of the oil is used.

2. What is significance between new discoveries and increasing demand during the last 3 decades?

Late 80’s, discoveries have peaked, consumption increased faster than we finding oil.

1. Why is it essential that the general public should know something about Hubbert’s Curve?
2. Why do some experts believe that Peak Oil is not going to happen tomorrow or in the near future?

Oil production Plateau we are in will last for a while. Consumption, new discoveries, new enhanced technologies for oil extraction

1. As an oil basin matures, why is less likely that new super giant fields will be discovered?

1. Why is there some question about when global peak oil will occur?

Because the amount of oil is uncertain.

1. What is “Abiotic Origin of oil” and why is it significance if it is true?

Abiotic oil means it is formed from magma instead of an organic origin. It means that oil is continuously created in the Earth ‘s mantle in such amounts that depletion is not to be considered, so there will never be an oil peak.

1. What are two types of EOR (enhances oil recovery)? Remember tertiary recovery is more than just injecting water and gas into a reservoir.

* Gas injection: Use of CO2. Enhance production. Store CO2 in the ground.
* Injection of high pressure steam
* Chemical injection: alkaline or caustic solutions into reservoirs. Injection of a dilute solution of a water soluble polymer
* Microbial injection

1. What is unconventional oil? Include in our answer the most common kinds of unconventional oils.

Unconventional oil has greater viscosity, lower volatility, darker color. Ie: stranded oil, heavy oil, oil shale, tar sands, synfuels.

1. What is the major obstacle to using any of the more common types of unconventional oil resources?

* Technology
* Cost (Producing country can lower price of oil).

1. How can changes in the geopolitics affect whether we begin to use our unconventional oil resources?

If price of conventional oil goes up, we may start to use more unconventional, as long as cost and price can compete.

1. What is stranded oil and how is it different from other unconventional oils?

Stranded oil is oil left in the reservoir, but it cannot be currently commercially produced.

1. What is oil shales and how is different from tar sands?

Oil shales (mixture of clay and calcium carbonate) contains kerogen that can be converted to oil.

1. What are the main environmental problems with producing unconventional oil deposits like tar sands and oil shales?

* Land disturbance
* Impact on environment
* Popcorn effect

1. What are synfuels?

Synthetic fuel: liquid fuel that can be obtained from coal.

Unrecoverable reserves - currently unrecoverable today or in the future with current technology, but may become recoverable with new technological innovations.

Conventional oil: easily produced, API > 10, readily flows, easy to refine, low to moderate sulfur content