**ES486 Key Word Search / Search Answer Exercise**

**Hydrocarbon Production and Recovery Techniques**

Read the text chapters located at the following link on the class web site

<http://www.wou.edu/las/physci/taylor/es486_petro/10_Production_Recovery.pdf>

Define the key terms and answer the review questions below. Follow instructions in parentheses.

FACTORS INFLUENCING RECOVERY FROM OIL AND GAS FIELDS

1. What is the range of percent recovery of oil and natural gas globally? Which one is higher, why the discrepancy.
2. Define the concept of “residual oil” saturation.
3. Define the concept of “ultimate recoverable oil”.
4. Define the concept of “reserve”
5. List and discuss the three subcategories of unrecovered oil.
6. Discuss the geological factors that control the degree of oil recovery.
7. True or false: fluid pressure increases as hydrocarbons are depleted from the reservoir.
8. Describe the “water drive” effect as related to oil production.
9. Draw and label a sketch showing the 5 primary types of natural reservoir drive energy.
10. What is “attic oil”?
11. Describe the “water flooding” recover technique. What is it, how effective is it?
12. What is “enhanced oil recovery” and how does it compare to “tertiary recovery”. List 5 methods which are used in EOR operations.
13. List and discuss the three primary factors as to why oil is left behind in reservoirs and production operations are shut down.
14. Describe the concept of “volumetric” gas reservoirs.
15. Describe the concept of “gas condensate”

PETROLEUM PRODUC TION

1. List the following hydrocarbon production facts presented in the reading on p. 431.

Average global oil production rate in million bbl per day \_\_\_\_\_\_\_\_\_

Percent of global daily production from Saudi Arabia \_\_\_\_\_\_\_\_\_

Percent of global daily production from United States \_\_\_\_\_\_\_\_\_

List the three top petroleum producing countries by wells \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ \_\_\_\_\_

1. How does a petroleum engineer differ from a petroleum geologist, in terms of scope of work?
2. Discuss the concept of flowing and shut-in pressure in a well.
3. Draw a sketch of the main elements of a well productivity test.
4. Describe the concept of “economic well limit” in terms of hydrocarbon production.
5. True or False: the distribution of oil and natural gas in the reservoir is very uniformly distributed.
6. Sketch, label and discuss the following enhanced production methods: “Acidizing”, “Explosive Fracturing”, “Hydraulic Fracturing”.
7. List and discuss the methods for disposal of oilfield brines and solution gas.
8. Draw and label a sketch of a pressure maintenance system.
9. Draw and label a sketch of a saltwater tank and disposal well.
10. Discuss the concept of well-depletion and surface subsidence.
11. List and discuss the four primary methods of thermal hydrocarbon recovery.
12. List and describe the factors necessary for reservoir modeling and prediction of hydrocarbon recovery.