

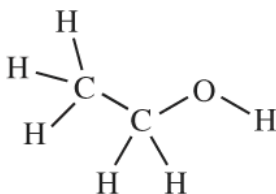
Chem / Envsty L111:
Spring 2007
Quiz 7

Name

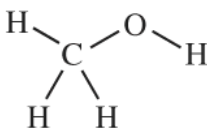
1. Which is produced in the greatest amount from a barrel of petroleum?
 - a. gasoline **47% of each barrel goes to gasoline 12/21 correct**
 - b. asphalt and road oil
 - c. home heating oil
 - d. lubricants and waxes
2. Petroleum (crude oil) is a complex mixture of thousands of substances, the majority of which are
 - a. hydrocarbons. **Petroleum is a liquid, and composed almost entirely of carbon and hydrogen 15/21 correct**
 - b. natural gases.
 - c. complex carbohydrates.
 - d. cellulose-based substances.
3. In the petroleum industry, what does a refinery do?
 - a. **It separates crude oil into fractions consisting of compounds with similar properties. Through distillation, compounds with different boiling points are separated and processed. 16/21**
 - b. It separates crude oil from the coal with which it is almost always found.
 - c. It mixes natural gas or coal with crude oil in order to remove the impurities from the crude oil.
 - d. It produces the machinery by which crude oil is removed from the ground.
4. Cracking is
 - a. **the breaking of larger molecules into smaller ones. This is the definition of cracking – larger alkanes are broken down into ones of an appropriate size for gasoline. 13/21**
 - b. the combination of fuel with oxygen.
 - c. any reaction that is accompanied by the release of heat.
 - d. the heating of a solution and condensation of its vapors.
5. Reformulated gasolines
 - a. contain increased amounts of dissolved O₂ molecules to help them burn more efficiently.
 - b. **contain additives with oxygen atoms in their structures to help the gasoline burn more cleanly. Ethanol and MTBE contain oxygen in their molecular structure, which encourages complete combustion of the fuel 14/21**

- c. burn more cleanly because they release water and oxygen rather than water and carbon dioxide.
- d. reduce pollution because they do not require oxygen from the air to burn efficiently.

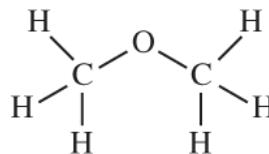
6. Consider these three compounds.



I



II



III

Which are isomers?

- a. I and II only
- b. II and III only
- c. I and III only **I and III have the same molecular formula, but different molecular structures 19/21**
- d. I, II and III

7. What percent of the Earth's water is in the oceans?

- a. 97.4% **The VAST majority of water on Earth. 19/21**
- b. 50%
- c. 2.59%
- d. 0.014%

8. What is the molarity of sodium chloride in a solution containing 0.50 mol of sodium chloride in 500 mL of water?

- a. 0.25 M
- b. 0.50 M
- c. 1.0 M **M = 0.50 moles/0.500 L = 1.0 moles/L 8/21!!**
- d. 5.0 M

9. What is an aquifer?

- a. A holding tank for disinfected water at the municipal water works.
- b. A water purification system developed by the Romans.
- c. **A large pool of water trapped in sand and gravel below the surface of the earth. This was pretty early in today's presentation, so if you arrived late you may have missed it. 15/21**
- d. A solution in which the solvent is water.

10. The recommended daily requirement of calcium is 1,000 mg. Tap water in a city in the Midwest contains approximately 150 mg/L. A person who drinks two

liters of water in one day would receive _____ percent of his/her RDA of calcium.

- a. 3%
- b. 7.5%
- c. 15%
- d. **30%** **Two liters of water would contain 300 mg of calcium. 300 mg/1000 mg = 0.30 x 100% = 30%** **10/21!**