Section 3B Review

Name:

1) Using the following reaction, how much heat is absorbed when 3 g of iron is added to excess carbon dioxide? 2 Fe + 3 CO_2 ---> Fe₂O₃ + 3 CO, ΔH = +26.8 kJ

2) How many grams of ammonia must be burned in order to release 305 kJ of heat according to the reaction: $4 \text{ NH}_3 + 5\text{O}_2 ---> 4 \text{ NO} + 6 \text{ H}_2\text{O}$, $\Delta \text{H} = -905.4 \text{ kJ}$.

3) Define the difference between an endothermic and exothermic reaction in terms of both the heat and the enthalpy.

4) Describe the differences in fuel, cost and emissions between gas and electric powered vehicles.

5) Describe the difference between a monomer and a polymer, and how they are related to one another.

6) How is an unsaturated hydrocarbon different from a saturated hydrocarbon? Give an example of each.

7) The basic formula for an alkane is C_nH_{2n+2} . What is the basic formula for an alkene and an alkyne?

8) Label each for the following based on its type of molecule.

A. $CH_3-CH_2-CH_2-CH_2-CH_2-CH_3$ B. $CH_3-CH_2-CH_2$ C. $CH \equiv C-CH_2-CH_3$ D. CH_3 $CH_3-CH_2-CH_2-CH_3$ E. $O=C-O-CH_3$ I $CH_2-CH_2-CH_2-CH_3$

9) Creating biodiesel from used cooking oil has both advantages and disadvantages. Give two of each.

| 10) Give a common example of each of the following. | |
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| a) carboxylic acids | b) esters |
| c)) alcohols | d) polymers |
| e) alkanes | |
| 11) Draw structures for the following compounds: | |
| a) cis-1,2 dimethyl-1-hexene | d) cycloheptane |
| b) 2,6-dibromooctane | e) 1-butyne |
| c) 1-propene | f) 2,4-heptene |
| d) 2-pentanoic acid | h) 4-decanol |
| 12) Write the names for the following compounds. | |
| a) CH_3 $CH_3 CH_3$ $ $ $ CH_3-CH- CH_2- CH_2- CH_2- CH- CH CH_2- CH_2- CH_2- CH_3$ | b) CH ₃ - CH= CH- CH= CH ₂ |
| c) $CH_3-C\equiv C-CH_2-CH_2-CH_2-CH_3$ | d) CH_{3} $ $ $CH_{3}-CH_{2}-CH_{2}-C=C-CH_{2}-CH_{2}-CH_{3}$ $ $ CH_{3} |
| e) CH_2 - CH_2 - CH_2 - CH_3 - CH_3 $O=C$ - O - CH_3 | f) CH ₃ -CH ₂ -OH |

13) Describe the process necessary to make a polymer, such as polyvinyl chloride (PVC), using an addition reaction. To help explain yourself, it may be helpful to show the changes in the structures of the molecules.

14) In all forms of electricity generation except solar panels, how is the electricity made?

15) Describe the three types of energy and give one example in which one type of energy is transformed into a different type of energy.