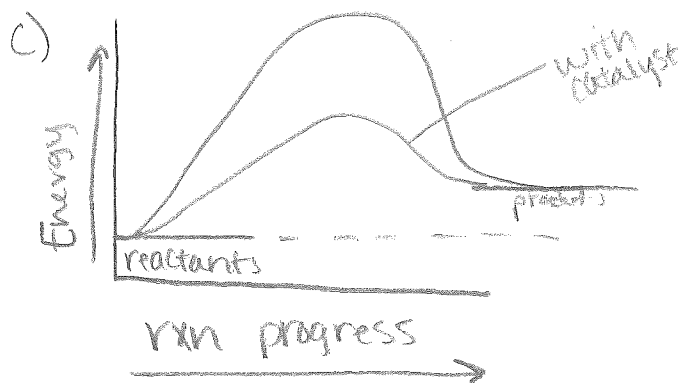
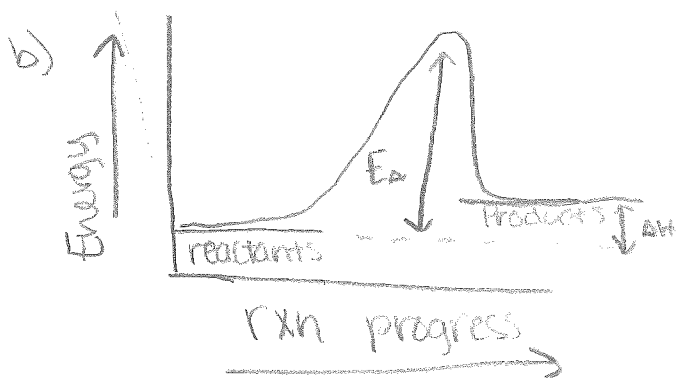


8.3

51) Chemical kinetics is the study of reaction rates, how fast reactants in a chemical reaction are converted into products

52) The reaction with a smaller activation energy,  $E_a$ , is faster

53) a) The reaction shows an endothermic reaction



54) a) decreasing the temp will slow the rxn down

b) Adding a catalyst will increase the rate of the rxn.

c) Increasing the concentration of the reactant will increase the rate of rxn.

55) A catalyst does not affect the  $\Delta H$ . A catalyst affects the value of  $E_a$  by making it smaller.

## 8.3 CONT. pg 2

56) a) False. A catalyst is used in low concentration

b) True. A catalyst speeds up a rxn.

c) True. A catalyst lowers the  $E_a$  for a rxn.

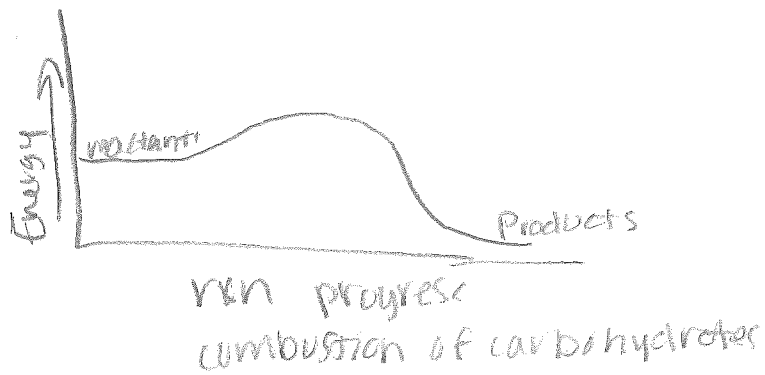
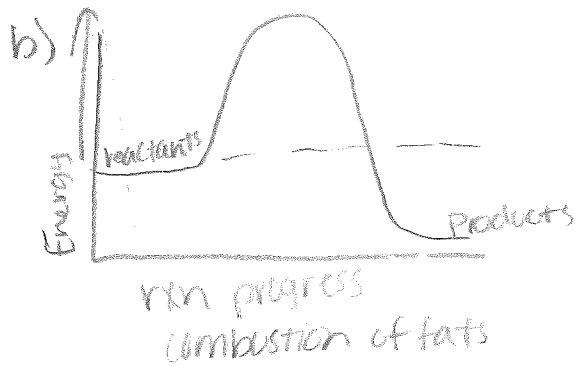
d) True. A catalyst is chemically unaltered during a chemical rxn.

e) True. Biological catalysts are known as enzymes.

57) In a cell, chemical rxns occur at normal body temperature & at a relatively constant concentration. To increase the rate of a biochemical rxn, enzymes are used. Enzymes reduce the freedom of motion available to reactants; they lower the  $E_a$  by forcing reactants into a spatial orientation conducive to rxn.

58) People with lactose intolerance are missing the enzyme lactase.

60) a) The combustion of fats and carbohydrates are exothermic rxns.



c) The combustion of fats has a higher  $E_a$  because it is a slower rxn.

61) 
$$\frac{40 \text{ Cal}}{1 \text{ mile}} \times \frac{4 \text{ miles}}{1 \text{ Day work}} \times \frac{5 \text{ Days work}}{1} = 800 \text{ Cal}$$

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$$(2) .3 \times 2000 = 600 \text{ Cal} \quad .15 \times \frac{1 \text{ g protein}}{4 \text{ Cal}} = \boxed{150 \text{ g protein}}$$

$$.4 \times 2000 = 800 \text{ Cal} \quad .2 \times \frac{1 \text{ g Carb}}{4 \text{ Cal}} = \boxed{200 \text{ g carbohydrates}}$$

$$.3 \times 2000 = 600 \text{ Cal} \times \frac{1 \text{ g fat}}{9 \text{ Cal}} = \boxed{66.7 \text{ g fat}}$$

$$(3) 2 \text{ lb fat} \times \frac{454 \text{ g}}{1 \text{ lb}} \times \frac{9 \text{ Cal}}{1 \text{ g fat}} = 8172 \times .15 = 1225$$

$$\begin{array}{r} 8172 \\ -1225 \\ \hline \end{array}$$

$$\boxed{6.95 \times 10^3}$$

(5) a) Condensation is an exothermic physical process. Heat must be removed.

b) Decomposition is an exothermic physical process. Heat must be removed.

c) The temp in the surrounding air would rise because the heat energy is removed from the molecules undergoing condensation or decomposition and transferred to the surrounding air molecules.