## Homework – Chapter 10  due Thursday, November 15

Part 1  Review problems 10.1-10.16 and 10.19-22 incorporated in the text
If more than two parts, answer odd letters (a, c, e, g ...)

Part 2  End of chapter (pp. 461-463)_

Exercises  23
25
27-28

plus the following:

1. The bond dissociation energies for the relevant bonds are given below each of the species involved in the following reaction. Calculate the overall $\Delta H°$ for the reaction.

$(CH_3)_3C\text{-}H + Cl\text{-}Cl \longrightarrow (CH_3)_3C\text{-}Cl + H\text{-}Cl$

$\Delta H^o$=400 kJ/mol  $\Delta H^o$=243 kJ/mol  $\Delta H^o$=349 kJ/mol  $\Delta H^o$=432 kJ/mol

+243 kJ / mol
-138 kJ / mol
+138 kJ / mol
-781 kJ / mol
+781 kJ / mol

2.. Which of the reactions listed below would have a value of $\Delta H°$ equal to zero?

A) $H–H \longrightarrow 2H\cdot$
B) $H\cdot + CH_3–H \longrightarrow CH_3–H + H\cdot$
C) $CH_3\cdot + CH_3\cdot \longrightarrow CH_3–CH_3$
D) $CH_3\cdot + CH_3–H \longrightarrow CH_3–H + CH_3\cdot$
E) Reactions (B) and (D)

3. Which of the reactions listed below would be exothermic?

A) $CH_3–CH_3 \longrightarrow 2CH_3\cdot$
B) $CH_3\cdot + CH_4 \longrightarrow CH_4 + CH_3\cdot$
C) $2(CH_3)_2CH\cdot \longrightarrow (CH_3)_2CH–CH(CH_3)_2$
D) $H\cdot + (CH_3)_3CH \longrightarrow (CH_3)_3CH + H\cdot$
E) None of the above

4. Which of the following reactions would have an activation energy equal to zero?

A) $H–H \longrightarrow 2H\cdot$
B) $H\cdot + CH_3–H \longrightarrow CH_3–H + H\cdot$
C) $CH_3\cdot + CH_3\cdot \longrightarrow CH_3–CH_3$
D) $CH_3\cdot + CH_3–H \longrightarrow CH_3–H + CH_3\cdot$
E) All of the above