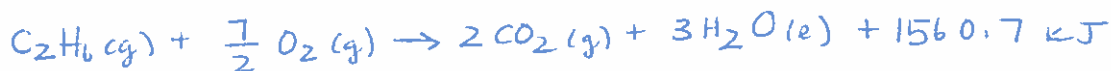pg. 295   Q #7-12

7. product for combustion since it is exothermic
      — ve value.

8. ΔH is on the right — heat is released (exothermic)
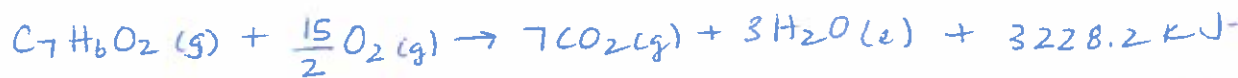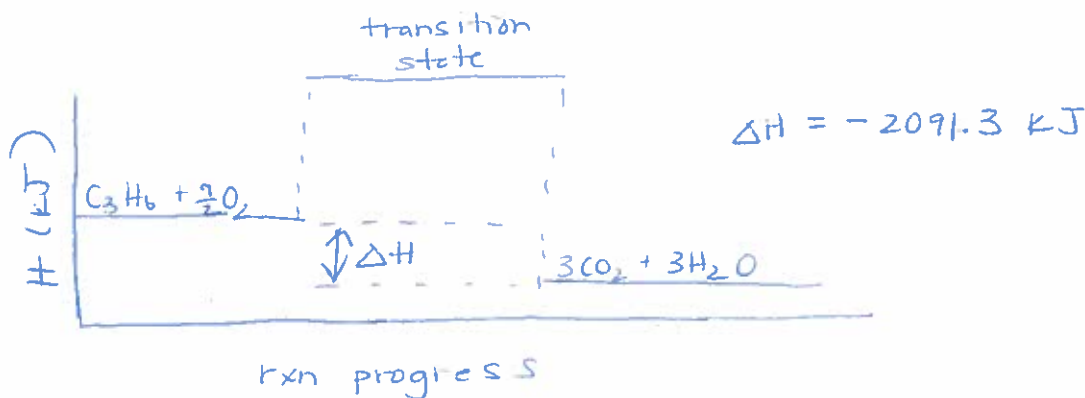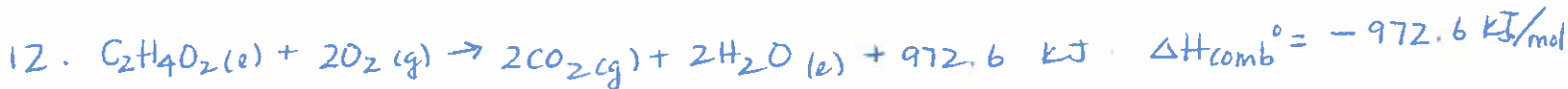   ∴ the reactants have more potential energy   E rxn progress.

9. $2 C_2H_6 (g) + 7 O_2 (g) \longrightarrow 4 CO_2 (g) + 6 H_2O (g) + 3121.4 \text{ kJ}$

   OR

   $2 C_2H_6$
   ∴ $2(-1560.7 \text{ kJ/mol})$
   $= 3121.4$

   $C_2H_6 (g) + \frac{7}{2} O_2 (g) \longrightarrow 2 CO_2 (g) + 3 H_2O (l) + 1560.7 \text{ kJ}$

10.

$\Delta H = -2091.3 \text{ kJ}$

11. $2 C_7H_6 O_2 (s) + 15 O_2 (g) \longrightarrow 14 CO_2 (g) + 6 H_2O (l) + 6456.4 \text{ kJ}$
   $\div 2$

   $C_7H_6O_2 (s) + \frac{15}{2} O_2 (g) \longrightarrow 7 CO_2 (g) + 3 H_2O (l) + 3228.2 \text{ kJ}$

   $\Delta H^\circ_{comb} = - 3228.2 \text{ kJ/mol}$

12. $C_2H_4O_2 (l) + 2 O_2 (g) \longrightarrow 2 CO_2 (g) + 2 H_2O (l) + 972.6 \text{ kJ}$ $\Delta H_{comb}^\circ = - 972.6 \text{ kJ/mol}$

   $2 C_3H_6O_2 (l) + 7 O_2 (g) \longrightarrow 6 CO_2 (g) + 6 H_2O (l) + 3184.4 \text{ kJ}$ $\div 2$
   $C_3H_6O_2 (l) + \frac{7}{2} O_2 (g) \longrightarrow 3 CO_2 (g) + 3 H_2O (l) + 1592.2 \text{ kJ}$
   ∴ methyl ethanoate $(C_3H_6O_2)$ gives off more $\Delta H_{comb}^\circ = -1592.2 \text{ kJ/mol}$