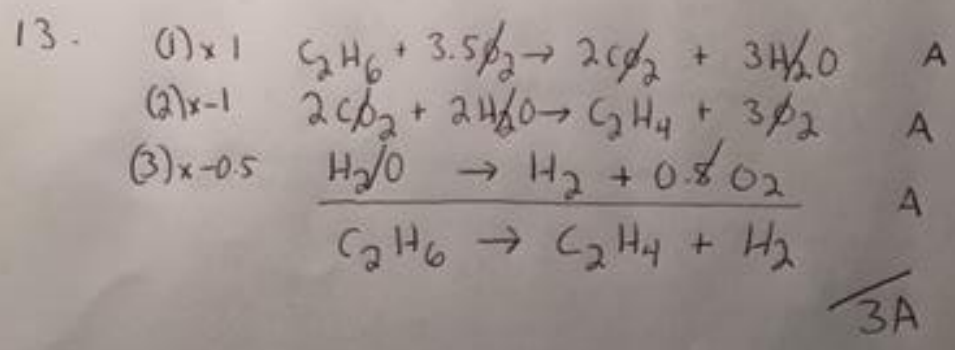
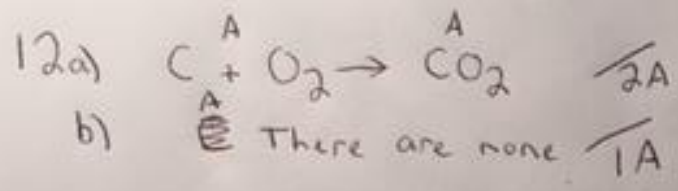


11. i) exothermic A✓  
 ii) exothermic A✓  
 iii) endothermic A✓  
 iv) endothermic A✓
- 4A

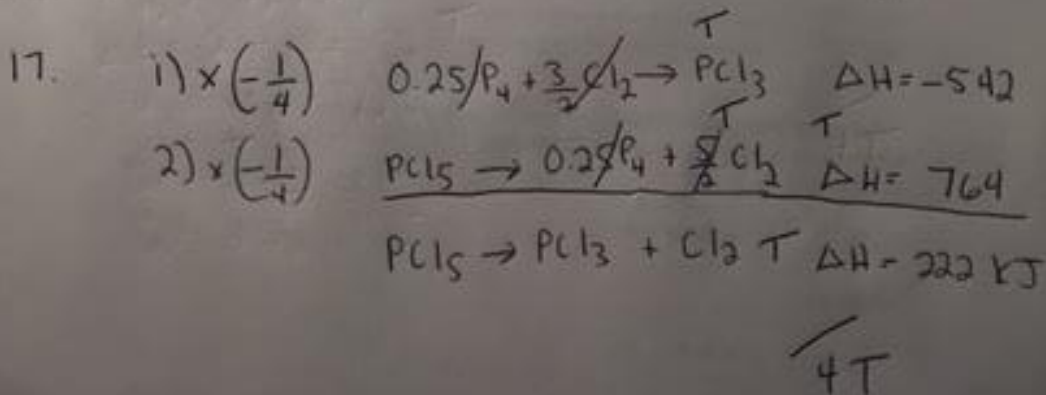
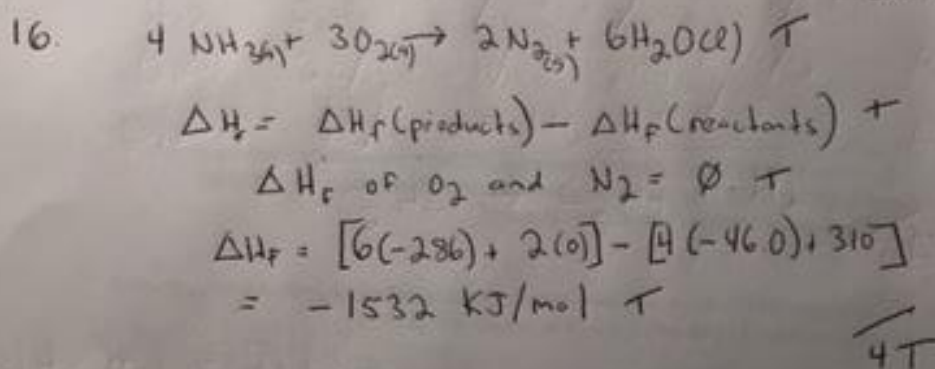


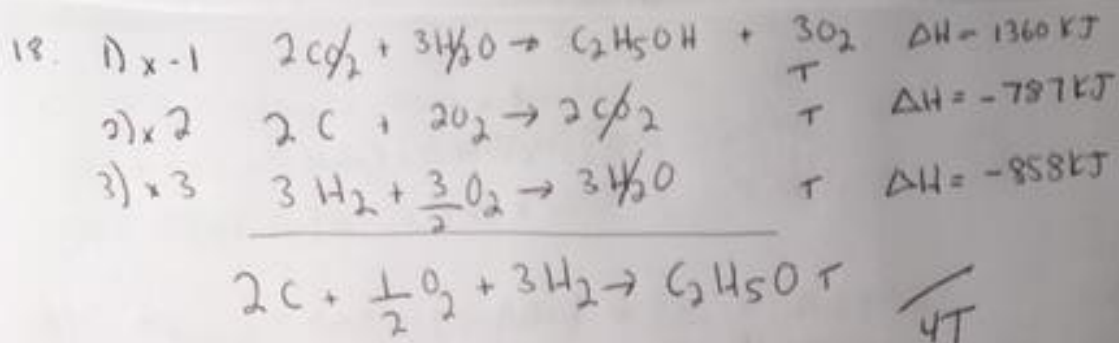
14.  $m_{H_2O} = 2 \times 10^9 \text{ g}$   
 $\Delta t = 23 - 18 = 5^\circ\text{C}$  T  
 $c_{H_2O} = 4.18 \text{ J/g}^\circ\text{C}$

$Q = mc\Delta t = (2 \times 10^9) (4.18 \text{ J/g}^\circ\text{C}) (5^\circ\text{C})$  4T  
 $Q = 4.2 \times 10^{10} \text{ J}$

15. a) Total volume = 80ml + 80ml = 160 ml = 160g  
 $Q = mc\Delta t = (160g)(4.18J/g^{\circ}C)(25.3^{\circ}C - 22.7^{\circ}C) \quad T$   
 $Q = 1743.0J = 1.743 \times 10^3 J = 1.7 \text{ kJ} \quad T \quad \underline{\underline{2T}}$

b)  $n_{\text{NaOH}} = 0.60 \frac{\text{mol}}{\text{L}} \times 80 \text{ ml} \times \frac{1 \text{ L}}{1000 \text{ ml}} = 0.048 \text{ mol}$   
 $\Delta H = n \Delta H_x \quad T$   
 $\Delta H_x = \frac{\Delta H}{n} = \frac{1.7 \text{ kJ}}{0.048 \text{ mol}} = -35.4 \text{ kJ/mol} \quad T$





19. Increase concentration of reactants  
 Increase temperature  $\frac{3}{A}$   
 Add a catalyst  $\frac{2}{C}$

20. Cellular respiration = exothermic  
 Combustion = exothermic  $\frac{3}{A}$   
 Photosynthesis = endothermic  $\frac{2}{C}$   
 Photosynthesis and cellular respiration  
 are opposites to each other

Section 1 Answer Key

A B C B D A C D C B