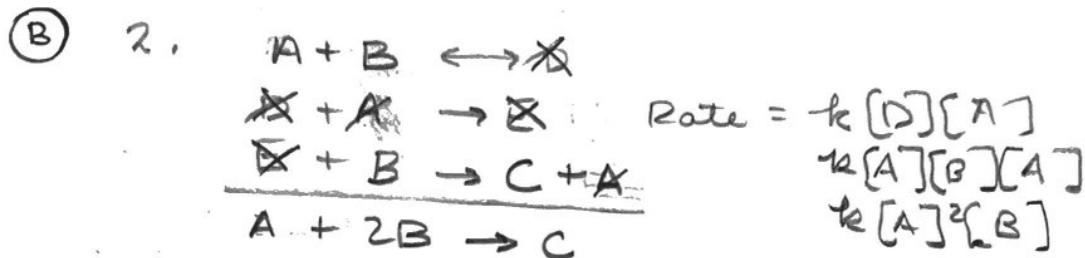


# Quiz 2

(C) 1.  $[-288.07 + 3(-92.30)] - [3(0) + 5.40]$   
 $-288.07 - 276.90 - 5.40 = \boxed{-570.37 \text{ kJ}}$



(A) 3. 2.00 g  $\text{NaC}_2\text{H}_3\text{O}_2$  in 50.0 mL  $\text{H}_2\text{O}$      $\downarrow T$  by  $3.90^\circ\text{C}$   
 $q = mc\Delta T$   
 $= (52.0 \text{ g})(4.184)(3.90^\circ\text{C})$   
 $= \boxed{849 \text{ J}}$   
 $\frac{849 \text{ J} \cdot 82.04 \text{ g} \cdot 1 \text{ kJ}}{2.00 \text{ g} \cdot 1 \text{ mol} \cdot 1000 \text{ J}} = \boxed{34.8 \text{ kJ}}$

(B) 4.  $\frac{60.0 \text{ g} \cdot 1 \text{ mol}}{110.20 \text{ g}} \cdot \frac{-125 \text{ kJ}}{2 \text{ moles}} = \boxed{-34.0 \text{ kJ}}$

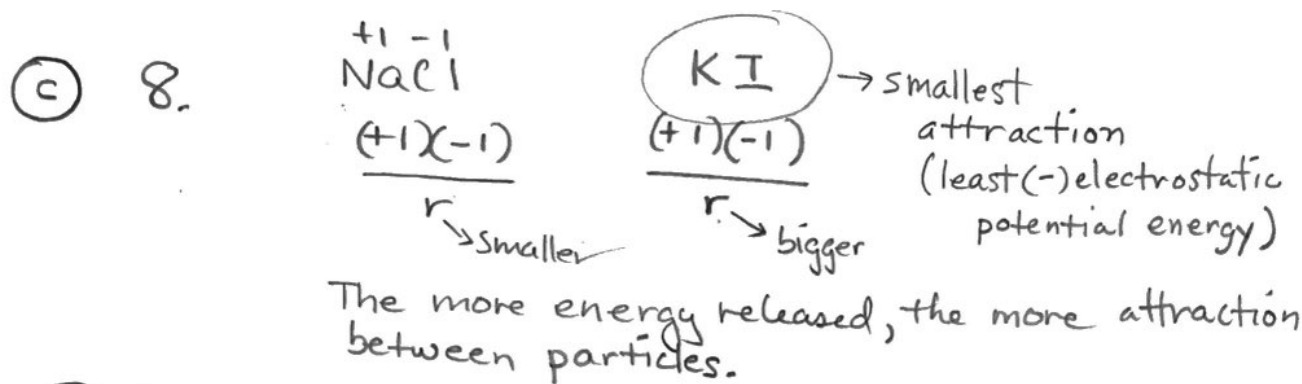
(D) 5.  $w = -P\Delta V$   
 $= -(2.9 \text{ atm})(25 \text{ L} - 107 \text{ L})$   
 $= -(-237.8) = +237.8 \text{ L} \cdot \text{atm}$   
 $\frac{240 \text{ L} \cdot \text{atm} \cdot 101.3 \text{ J}}{1 \text{ L} \cdot \text{atm}} = 2.4 \times 10^4 \text{ J} = \boxed{24 \text{ kJ}}$   
 $\frac{2204 \text{ mmHg}}{760 \text{ mm}} = 2.9 \text{ atm}$

(A) 6. Heat capacity  $\frac{J}{^{\circ}C}$   $q = C_p \Delta T = \left(\frac{J}{^{\circ}C}\right)(^{\circ}C)$

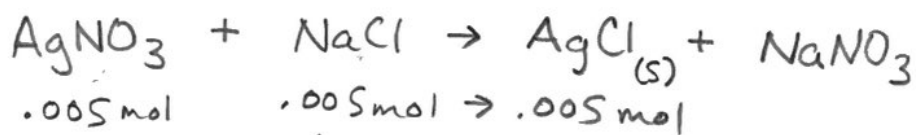
(E) 7.  $q = 8.1 \text{ kJ}$   
 $\Delta T = 28.5^{\circ}C$   
 $c = .450 \text{ J/g}^{\circ}C$

$$q = m c \Delta T$$

$$m = \frac{q}{c \Delta T} = \frac{8100 \text{ J}}{(.450 \text{ J/g}^{\circ}C)(28.5^{\circ}C)} = \boxed{630 \text{ g}}$$



(C) 9.



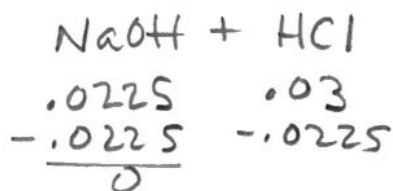
$$q = m c \Delta T$$

$$= (100.0 \text{ g})(4.184 \text{ J/g}^{\circ}C)(1.7^{\circ}C)$$

$$= 711.28 = 710 \text{ J}$$

$$\frac{710 \text{ J}}{.005 \text{ mol}} \left| \frac{1 \text{ kJ}}{1000 \text{ J}} \right. = \boxed{142 \text{ kJ/mol}}$$

(D) 10.



$$\frac{.0225 \text{ mol NaOH} \mid 110 \text{ kJ}}{1 \text{ mol NaOH}} =$$

$$\boxed{2.48 \text{ kJ}}$$

(A) 11.

$$q = m c \Delta T$$

$$\Delta T = \frac{q}{m c} = \frac{1200 \text{ J}}{(16.55 \text{ g})(4.184 \text{ J/g}^{\circ}C)} = 17^{\circ}C$$

$$20^{\circ}C - 17^{\circ}C = 3^{\circ}C$$

(C) 12.

E 13.

A 14.  $\Delta E = q + w$   
 $= -123\text{J} + (+151\text{J})$   
 $= \boxed{28\text{J}}$

A 15.  $\text{Cu}_{(s)} + \frac{1}{2}\text{O}_{2(g)} \rightarrow \text{CuO}_{(s)} \quad \Delta H_f^\circ = ?$

