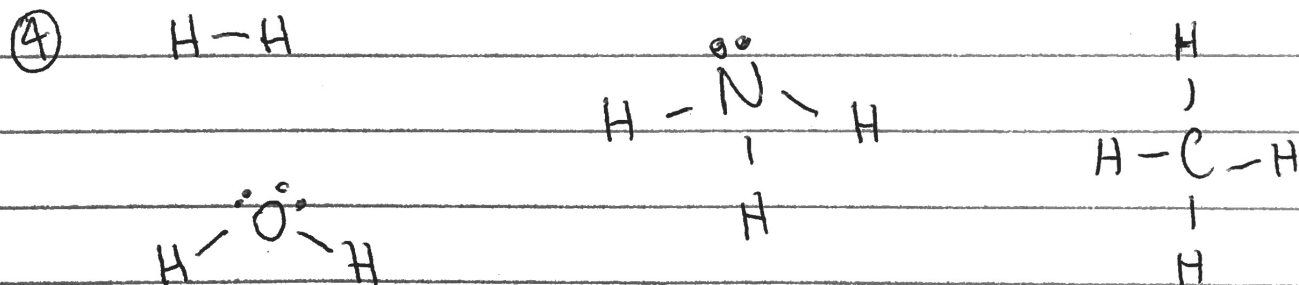
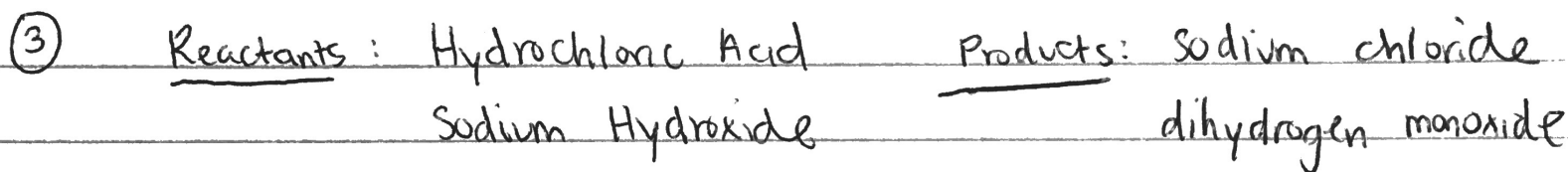
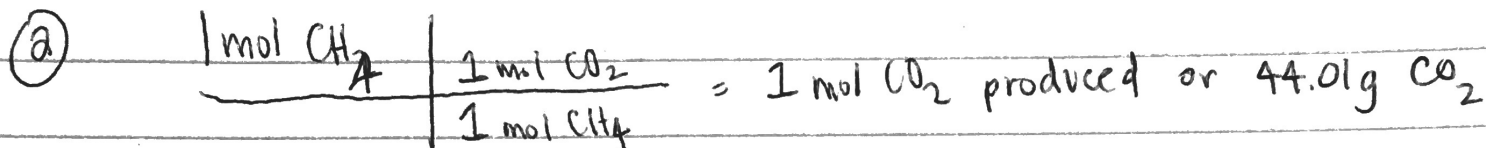
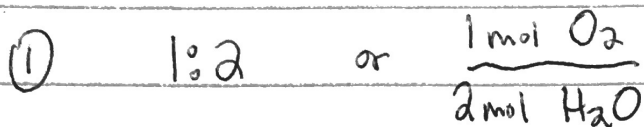
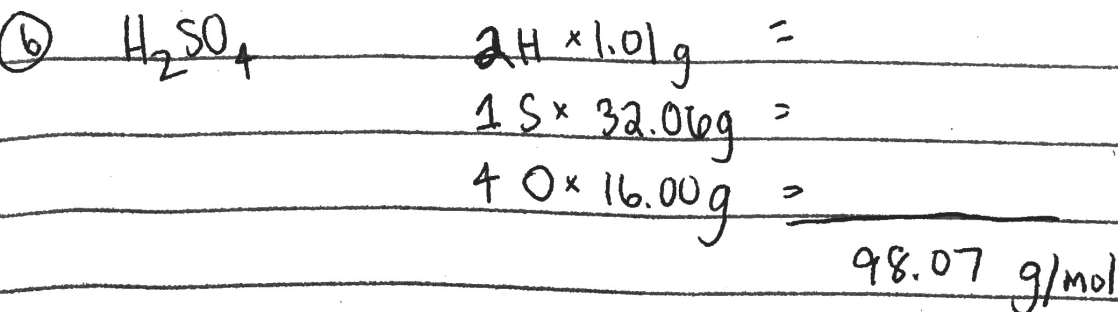


# 2016-2017 Final Review key

1



⑤ energy is released



① 1 L of Ne gas will contain the same # of particles of 1 L of  $O_2(g)$  under similar conditions.

⑧ KMT Postulates.

Summary: molecules are in constant random motion  
The energy/speed of the molecules is directly related to temperature.

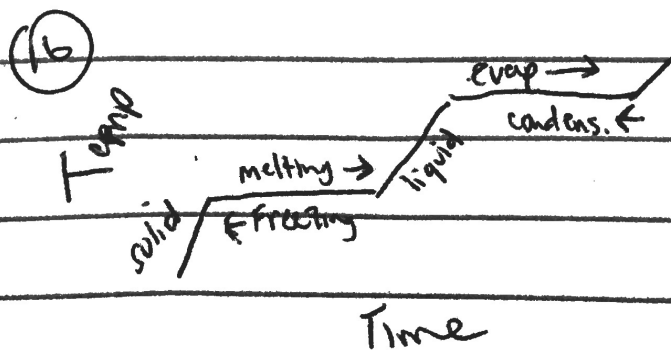
⑨  $CO_2(g)$  @ STP (the only gas in the choices)

⑩ Due to increased # of collisions

⑪ True

⑫ Mg(s) the only solid in the choices

⑬-⑮ Not Questions



Solid + liquid are at equilibrium b/w points B+C



$$\textcircled{21} \quad P_1 V_1 T_2 = P_2 V_2 T_1$$

$$V_1 = 50 \text{ mL} \quad @ \text{ STP} \quad P_1 = 1 \text{ atm} \quad T_1 = 273 \text{ K}$$

$$V_2 = ? \quad P_2 = 2.4 \text{ atm} \quad T_2 = 240 \text{ K}$$

$$(1 \text{ atm})(50 \text{ mL})(240 \text{ K}) = (2.4 \text{ atm})(V_2)(273 \text{ K})$$

$$18.3 \text{ mL} = V_2$$

$$\textcircled{22}$$

$$V_1 = 25 \text{ L} \quad P_1 = 1.2 \text{ atm}$$

$$V_2 = ?$$

$$P_2 = 0.80 \text{ atm}$$

$$P_1 V_1 = P_2 V_2$$

$$(1.2 \text{ atm})(25 \text{ L}) = (0.80 \text{ atm}) V_2$$

$$37.5 \text{ L} = V_2$$

$$\textcircled{23}$$

$$P_1 = 220 \text{ kPa} \quad T_1 = 373 \text{ K}$$

$$P_2 = ?$$

$$T_2 = 273 \text{ K}$$

$$P_1 T_2 = P_2 T_1$$

$$(220 \text{ kPa})(273 \text{ K}) = (P_2)(373 \text{ K})$$

$$161.0 \text{ kPa} = P_2$$

(24)

$$V_1 = 15 \text{ mL} \quad T_1 = 0^\circ \text{C} = 273 \text{ K}$$

$$V_2 = ? \quad T_2 = 50^\circ \text{C} = 323 \text{ K}$$

$$V_1 T_2 = V_2 T_1$$

$$(15 \text{ mL})(323 \text{ K}) = (V_2)(273 \text{ K})$$

$$17.75 \text{ mL} = V_2$$

(25)

He bc it is the lightest

(27)

Molar Volume  $\rightarrow$  @ STP  $1 \text{ mol} = 22.4 \text{ L}$ 

(28)

$$pV = nRT$$

$$p = 0.999 \text{ atm}$$

$$V = ?$$

$$n = 36.0 \text{ g H}_2\text{O} \times \frac{1 \text{ mol}}{18.02 \text{ g}} = 1.99 \text{ mol H}_2\text{O}$$

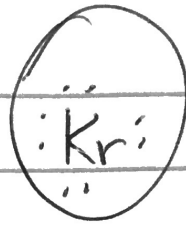
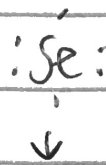
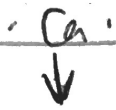
$$R = 0.0821 \text{ L}\cdot\text{atm}/\text{mol}\cdot\text{K}$$

$$T = 125^\circ \text{C} = 398 \text{ K}$$

$$V = \frac{nRT}{p} = \frac{(1.99 \text{ mol})(0.0821 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}})(398 \text{ K})}{0.999 \text{ atm}}$$

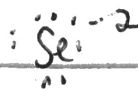
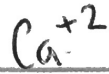
$$V = 65.09 \text{ L}$$

29



group 8 has the most

30



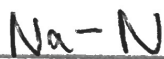
calcium ion  
would have zero  
valence e<sup>-</sup> left

↑  
gained  
2

31

H-H identical → nonpolar

Find values from electronegativity table

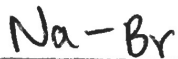


$|0.9 - 3.0| = 2.1$



$|2.1 - 3.0| = 0.9$

← polar covalent  
bond

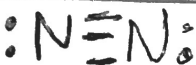
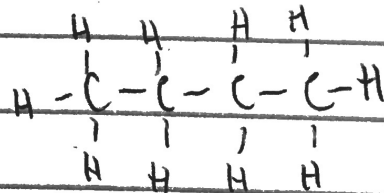
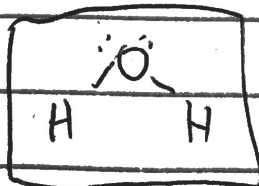
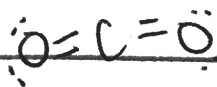


$|0.9 - 2.8| = 1.9$

33

Na-Br would be the ionic bond

34



asymmetrical = polar

35

H-F strongest

37 air = mixture/solution

38 solute: NaCl

solvent: water

solution: NaCl (aq) (salt water)

39 pentance is nonpolar and water is polar

40

41 least soluble at high temp and low pressure

$$42 \quad M = \frac{\text{mol}}{L} = \frac{2.0 \text{ mol NaCl}}{0.5 L} = 4M$$

$$43 \quad m = \frac{\text{moles}}{\text{kg}} \quad \frac{10g \text{ C}_6\text{H}_{12}\text{O}_6}{180.16g} \times \frac{1 \text{ mol}}{180.16g} = 0.055 \text{ mol}$$

$$= \frac{0.055 \text{ mol}}{0.040 \text{ kg}}$$

$$40g \text{ H}_2\text{O} = 0.040 \text{ kg}$$

$$= 1.38 m$$

$$(44) \quad M_1 V_1 = M_2 V_2$$

$$M_1 = 250 \text{ mL} \quad M_1 = 1.0 \text{ M}$$

$$V_2 = ? \quad M_2 = 6.0 \text{ M}$$

$$(1.0 \text{ M})(250 \text{ mL}) = (6.0 \text{ M})(V_2)$$

$$41.67 \text{ mL} = V_2$$

(45) 6.0 M HCl  $\rightarrow$  highest conc  $\rightarrow$  fastest reaction

(46)  $\text{C}_2\text{H}_5\text{OH}$  is an alcohol, not a base/electrolyte

~~(47)~~

(50)

