

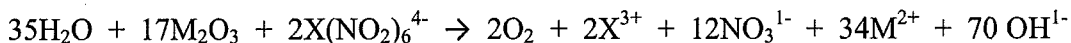
CHEM 1210

Quiz 1

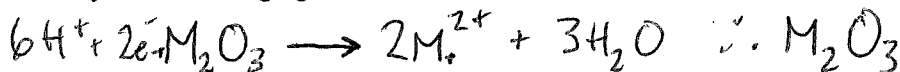
January 23rd, 2014

Name: ANSWERS

1) For the following balanced oxidation-reduction reaction:



a) Identify the oxidizing agent:



b) How many electrons are transferred in the overall reaction?

$$17 \times 2 = 34$$

c) If the molar mass of M_2O_3 is Z, what is the equivalent mass (in terms of Z)

$$\frac{Z \text{ g}}{\text{mol}} \times \frac{1 \text{ mol}}{2 \text{ equiv}} = \frac{Z}{2} \frac{\text{g}}{\text{equiv}}$$

2) Choose the correct statement about a container in which the following equilibrium is established:



A - a decrease in amount of O_2 will decrease the amount of SO_2 present

B - a decrease in volume will decrease the amount of SO_2 present

C - a decrease in temperature will increase the amount of SO_2 present

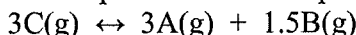
D - a decrease in the amount of SO_3 present will increase the amount of SO_2 present

E - an increase in the amount of O_2 will increase the amount of SO_2 present

B

3) Consider the following equilibrium reaction: $2\text{A}(\text{g}) + \text{B}(\text{g}) \leftrightarrow 2\text{C}(\text{g}) \quad K_c = 20$

Determine K_c at the same temperature for the equilibrium:



A - 30

B - 0.075

C - 0.050

D - 0.033

E - 0.011

$$\left(\frac{1}{20}\right)^{1.5} \approx 0.011$$

E

4) Consider the reaction: $2\text{NO}_2(\text{g}) \leftrightarrow 2\text{NO}(\text{g}) + \text{O}_2(\text{g})$, a sample of pure NO_2 is placed in a sealed container and allowed to reach equilibrium. The partial pressure of O_2 at equilibrium is found to be 0.3500 atm and the total pressure to be 1.0866 atm. Determine K_p for the reaction.

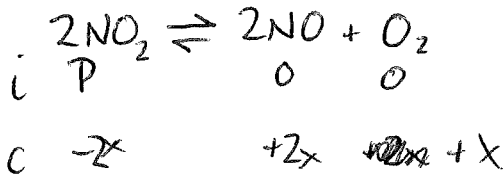
A - 2.86

B - 66.9

C - 128

D - 182

E - none of these



C

$$P - 2x + 2x + x = 1.0866$$

$$P + 0.35 = 1.0866$$

$$P = 0.7366$$

$$P - 2x = 0.0366$$

$$2x \quad x \\ \uparrow \quad \uparrow \\ 0.7 \text{ atm} \quad 0.35 \text{ atm}$$

$$\frac{(0.7)^2(0.35)}{(0.0366)^2} = \sim 128$$