AP Unit 2 Test Review Kahoot (class version)

#1.) $NH_4OH\,(aq) + Sn(NO_3)_2\,(aq) \rightarrow NH_4NO_3\,(aq) + Sn(OH)_2$

(Sn^{2+} on the reactant side; still Sn^{2+} on the product side)

Both aqueous! ⇒ must be precipitate!

#2.) $2HCl + H_2C_2O_4 + MnO_2 \rightarrow 2CO_2 + MnCl_2 + 2H_2O$

(+1,-1 / +1,+3,-2 / +4,-2 / +4,-2 / +2,-1 / +1,-2)

+3 → +4 oxidized!

#3.) $2Fe_2O_3\,(s) \rightleftharpoons Fe\,(s) + 3O_2\,(g)$ $\quad K = \frac{[pr]}{[re]} = [O_2]^3$

solids not included!

#4.)

I. $BaCl_2\,(aq) + 2KIO_3\,(aq) \rightarrow Ba(IO_3)_2\,(s) + 2KCl\,(aq)$ precipitation

II. $Fe_3O_4\,(s) + 4H_2\,(g) \rightarrow 3Fe\,(s) + 4H_2O\,(\ell)$ SR = redox!

(+8/3, -2 / 0 / 0 / +1, -2)

III. $3H_2SO_4\,(aq) + 2Al(OH)_3\,(aq) \rightarrow 6H_2O\,(\ell) + Al_2(SO_4)_3\,(aq)$

acid / base

#5.) $2A \rightleftharpoons B + 2C$ $\quad K = \frac{[B][C]^2}{[A]^2} = \frac{(\frac{4}{3})(1)^2}{(\frac{1}{3})^2} = \frac{4/3}{1/9} = \boxed{12}$

$[A] = \frac{1\,mol}{3L} = \frac{1}{3}\,M$

$[B] = \frac{4\,mol}{3L} = \frac{4}{3}\,M$

$[C] = \frac{3\,mol}{3L} = 1\,M$

#6.) $12.709 - 0.598 = 12.111\ g\ AgBr$

$$12.111\ g\ AgBr \times \frac{1\ mol\ AgBr}{187.77\ g\ AgBr} \times \frac{1\ mol\ Br^-}{1\ mol\ AgBr} \times \frac{1\ x\ Br_3}{3\ Br^-} = 0.0215\ mol\ x\ Br_3$$

$$\text{Molar Mass} = \frac{g}{mol} = \frac{5.748\ g}{0.0215\ mol} = \boxed{267\ g/mol} \Rightarrow \boxed{AlBr_3}$$

#8.) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)\quad K_c = 60.$

$$Q = \frac{[HI]^2}{[H_2][I_2]} = \frac{3^2}{(0.3)^2} = 100$$

$K \leftarrow Q$

$60 < 100$

Rxn shifts left (too many products, needs more reactants)

#9.) $N_2 + 3H_2 \rightarrow 2NH_3$

$$6.05\ g\ H_2 \times \frac{1\ mol\ H_2}{2.016\ g\ H_2} \times \frac{2\ mol\ NH_3}{3\ mol\ H_2} \times \frac{6.022E23\ molec.\ NH_3}{1\ mol\ NH_3} = \boxed{1.20 \times 10^{24}\ molec.\ NH_3}$$

#10.) $0.585\ g\ BaSO_4 \times \frac{1\ mol\ BaSO_4}{233.39\ g\ BaSO_4} \times \frac{1\ mol\ SO_4^{2-}}{1\ mol\ BaSO_4} \times \frac{96.06\ g\ SO_4^{2-}}{1\ mol\ SO_4^{2-}} = 0.241\ g\ SO_4^{2-}$

$$\%\ SO_4^{2-} = \frac{0.241\ g\ SO_4^{2-}}{0.5045\ g\ sample} \times 100 = \boxed{47.8\%}$$