Unit 4 Version 2 SCH 4U Answer Key

Section 1

1 A 2 E 3 C 4. A 5. D 6. D 7 B 8 C 9 D 10 C TOK

Section 2

11 a) $\frac{1}{(Pb^{2+})(CO_4^{2-})}$ A

i. A

ii. Right

b) $\frac{(CO_2)^2}{(CO)^2(O_2)^2}$ A

i. A

ii. Right

TOA

c) $\frac{[NO]^4}{[O_2]^5}$ A

i. A

ii. Left

d) $\frac{[NO_2]^2}{[N_2O_4]}$ A

i. A

ii. Left

e) $[H_3PO_4]$ A

i. A

ii. Right

Section 3

12 $\frac{[SO_2Cl_2]}{[SO_2][Cl_2]} = \frac{1.20}{(1.78)(0.90)} = \frac{120}{160} = 0.75$ A A /3T

13 $CO_{(g)} + H_2O_{(g)} \rightleftharpoons CO_{2(g)} + H_{2(g)}$

4	4	4	4
$-x$	$-x$	$+x$	$+x$ ΔT
$4-x$	$4-x$	$4+x$	$4+x$

$K = \frac{[CO_2][H_2]}{[CO][H_2O]}$

4.2 $K = \frac{(4+x)(4+x)}{(4-x)(4-x)}$ ΔT

$\sqrt{4.2} = \sqrt{\frac{(4+x)^2}{(4-x)^2}}$

$4 + x = \sqrt{4.2} \times (4-x)$

$4 + x = (2.050)(4-x)$

$4 + x = 8.2 - 2050x$

$3.050x = 4.2$

$x = \frac{4.2}{3.050}$

$x = 1.377$ ΔT

$[H_2] = 4 + x = 4 + 1.3777 = 5.377$ mol/L I I

m.2

14. $[H^+] = 10^{-pH} = 10^{-5.30} = 4.79 \times 10^{-6}$ mol/L T ~~TT~~

15. $pH = 14 - pOH = 14 - 8.50 = 5.50$ T /1T

16. $pH = -\log[H^+] = -\log(0.045) = 1.35$ /4T

$pOH = 14 - 1.35 = 12.65$

17. $0.2 \frac{mol}{L} \times 0.05\,L \times \frac{1}{1} \times \frac{1}{0.02L} = \frac{0.01\,mol}{0.02L} = 0.5$ mol/L

$HNO_3 + NaOH \rightarrow H_2O + NaNO_3$ /3T

18. $2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2H_2O$

$0.1 \frac{mol}{L} \times 0.01552\,L \times \frac{1\,Ba(OH)_2}{2\,HCl} \times \frac{1}{0.025L} = \frac{0.001552\,mol}{0.05}$

$= 0.031$ mol/L /3T

Section 4

19 a) More HbO_2 seperates into Hb and O_2 Not as much O_2 is carried to the tissues, the climber feels fatigued. Equilibrium shifts right.

b) More Hb causes equation to shift left, producing more HbO_2, more oxygen is carried to tissues.

3A 2C

20 a) A strong acid against a strong base would be most efficient because proportionally they would contribute the same amount of ~~hydro~~ ~~acid~~ dissociated acid and base to the reaction.

b) titration, pH meter

3A 2C