Geochemistry Name _____
NDSU Geology 428 / 628
Homework 1

1. Convert the following to exponents of 10:

a. 4.47×10^{9} = ___$10^{9.65}$___

b. 6.022×10^{23} = _____

c. 0.21 atm = _____

2. Convert the following to scientific notation:

a. $10^{4.4}$ = _____ b. $10^{3.14159}$ = _____

c. $10^{-10.4}$ = _____ d. $10^{-1.6}$ = _____

3. Provide the results of these operations in both exponents of 10 and scientific notation:

a. $\left(10^{-8.4} \times 10^{-6.4}\right)^{\frac{1}{2}}$ = _____ = _____

b. $\dfrac{10^{-1.2} \times 10^{-11.6}}{10^{-2.4}}$ = _____ = _____

c. $\dfrac{\left(4.67 \times 10^{-4}\right)\left(1.6 \times 10^{-9}\right)}{3.85 \times 10^{-12}}$ = _____ = _____

4. Balance the equations and write expressions for equilibrium constants:

a. $\_\_ SiO_{2(s)} + \_\_ H_2O_{(aq)} \leftrightarrow \_\_ H_4SiO_{4(aq)}$ K =

b. $\_\_ Fe\_O_{4(s)} + \_\_ O_{2(g)} \leftrightarrow \_\_ Fe_2O_{3(s)}$ K =

c. $\_\_ Ca_3(PO_4)_{2(s)} + \_\_ H^+_{(aq)} \leftrightarrow \_\_ Ca^{2+}_{(aq)} + \_\_ H_2PO^-_{4\,(aq)}$

K =

d. $\_\_ FeS_{2(s)} + \_\_ O_{2(g)} + \_\_ H_2O_{(aq)} \leftrightarrow \_\_ Fe_2O_{3(s)} + \_\_ SO^{2-}_{4(aq)} + \_\_ H^+_{(aq)}$

K =