CHM 151 Quiz 1a 25 Pts Spring 2020 Name: Key

Show All Work To Receive Credit! Conversion factors and prefixes:

$G = 10^9$, $M = 10^6$, $k = 10^3$, $c = 10^{-2}$, $m = 10^{-3}$, $\mu = 10^{-6}$, $n = 10^{-9}$ $p = 10^{-12}$, 2.54 cm = 1 in, 12 in = 1 ft, 5280 ft = 1 mile, 3 feet = 1 yd, 60 sec = 1 min, 1 hr = 60 min, 4 quarts = 1 gal, 2 pints = 1 quart

1. (6 Pts) Perform each of the following conversions. You must show the complete setup.

a. Convert 88 mg to pg. $\frac{88\ \text{mg}}{1} \left|\frac{10^{-3}}{\text{mg}}\right| \frac{\text{p}}{10^{-12}} = 88\times10^{9}$ or 8.8×10^{10} pg

b. Convert 85 µL to nL. $\frac{85\ \mu\text{L}}{1} \left|\frac{10^{-6}}{\mu}\right| \frac{\text{n}}{10^{-9}} = 85\times10^{3}$ or 8.5×10^{4} nL

2. (6 Pts) Assume each of following numbers are measurements. Perform the indicated operations and then report the answer with the proper number of significant figures.

a. 12.145 cm + 15.1265 cm + 25.2 cm = 52.47 or 52.5 cm (To this place ↓)

b. 10.25 cm x 12.10 cm x 10.145 cm = 1258 cm^3 (4 sig figs)

c, $(25.2+103)\div(12x1.03) =$ 10.4 or 10 (assume these all measurements) (1st to this place gives 128.2 2 sig figs ↖ then 2 sig figs)

3. (4 Pts) A poster measures 22 cm by 44 cm. Determine its area in square inches (inches^2) (you may ignore significant figures).

$\frac{22\ \text{cm}}{1} \left|\frac{1\ \text{in}}{2.54\ \text{cm}}\right| \times \frac{44\ \text{cm}}{1} \left|\frac{1\ \text{in}}{2.54\ \text{cm}}\right| \cong 150\ \text{in}^2$

4. (4 Pts) How many milli-inches are in 7 kilo-feet (You may ignore significant figures)?

$\frac{7\times10^{3}\ \text{ft}}{1} \left|\frac{12\ \text{in}}{1\ \text{ft}}\right| \frac{\text{m}}{10^{-3}} = 84{,}000{,}000$ or 8.4×10^{7} m in

5. (5 Pts) A sample of silver ore was found to contain 0.55 % silver by mass. How many **mg** of silver can be recovered 900.0 kg of ore?

$\frac{900\ \text{kg ore}}{1} \left|\frac{10^{3}}{\text{k}}\right| \frac{\text{m}}{10^{-3}} \left|\frac{0.55\ \text{Ag}}{100\ \text{ore}}\right| = 4{,}950{,}000$ or 4.95×10^{6} mg Ag

CHM 151 Quiz 1b 25 Pts Spring 2020 Name: Key (purple)

Show All Work To Receive Credit! Conversion factors and prefixes:

G = 10^9, M = 10^6, k = 10^3, c = 10^{-2}, m = 10^{-3}, μ = 10^{-6}, n = 10^{-9}, p = 10^{-12}, 2.54 cm = 1 in, 12 in = 1 ft, 5280 ft = 1 mile, 3 feet = 1 yd, 60 sec = 1 min, 1 hr = 60 min, 4 quarts = 1 gal, 2 pints = 1 quart

1. (6 Pts) Perform each of the following conversions. You must show the complete setup.

a. Convert 327 pL to mL. $327\ \text{pL} \left|\frac{10^{-12}}{\text{p}}\right|\frac{\text{m}}{10^{-3}} = 327 \times 10^{-9}$ or 3.27×10^{-7} pL

b. Convert 805 μg to cg. $805\ \mu\text{g} \left|\frac{10^{-6}}{\mu}\right|\frac{\text{c}}{10^{-2}} = 805 \times 10^{-4}$ or 8.05×10^{-2} cg

2. (6 Pts) Assume each of following numbers are measurements. Perform the indicated operations and then report the answer with the proper number of significant figures.

a. 13.1 cm + 12.526 cm + 0.052 cm = 25.678 or 25.7 cm (To this place)

b. 1.212 cm x 6.12 cm x 12.145 cm = 90.0848 or 90.1 cm^3 (3 sig figs.)

c. $(55.2+103)\div(13\times1.03)$ = 11.8 or 12 (assume these all measurements) (1st to this place gives 158.2; Then 2 sig figs)

3. (4 Pts) A poster measures 33 cm by 45 cm. Determine its area in square inches (inches^2). (You may ignore significant figures)

$33\ \text{cm} \left|\frac{1\ \text{in}}{2.54\ \text{cm}}\right. \times 45\ \text{cm} \left|\frac{1\ \text{in}}{2.54\ \text{cm}}\right. = 230\ \text{in}^2$

4. (4 Pts) How many milli-inches are in 0.5 kilo-feet (You may ignore significant figures)?

$0.5\ \text{kFt} \left|\frac{10^3}{\text{k}}\right|\frac{12\ \text{in}}{1\ \text{Ft}}\left|\frac{\text{m}}{10^{-3}}\right. = 6{,}000{,}000$ or 6×10^6 m in

5. (5 Pts) A sample of silver ore was found to contain 0.75 % silver by mass. How many mg of silver can be recovered 500.0 Mg of ore?

$500.0\ \text{Mg ore} \left|\frac{10^6}{\text{M}}\right|\frac{0.75\ \text{Ag}}{100\ \text{ore}}\left|\frac{\text{m}}{10^{-3}}\right. = 3{,}750{,}000{,}000$ or 3.7×10^9 m Ag