CH 101 Fall 2018 Discussion Quiz #1 (10 minutes)
Thursday key

Show your dimensional analysis setup and give your answer **to the correct number of significant figures with appropriate units.** $N_A = 6.022140857 \times 10^{23}/\text{mol}$

1.(6 points,) The density of **Ethyl acetate** is 0.902 g/mL . The molar mass of **Ethyl acetate** is 88.11 g/mol. Assume that **Ethyl acetate** molecule occupies a cubical volume and that in liquid **Ethyl acetate** the cubes are packed together with no empty space between them. Calculate the length of the cube edge. Express your result in m, to the right number of significant figures.

$$\frac{88.11g}{1mol} \times \frac{1mol}{6.022141 \times 10^{23}molecules} \times \frac{1ml}{0.902g} \times \frac{1cm^3}{1ml} \times \frac{1m^3}{10^6cm^3} = 1.6221 \times 10^{-28}m^3$$

$$\text{L} = \sqrt[3]{1.6221 \times 10^{-28}m^3} = 5.45 \times 10^{-10}m$$

Edge length $= 5.45 \times 10^{-10}m$

2. (2 points) Write the molecular formula for calcium chlorate. $Ca(ClO_3)_2$

3.(2 points)Write the common name for MnO_4^-. : Permanganate

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Friday key

Show your dimensional analysis setup and give your answer **to the correct number of significant figures with appropriate units.**
Useful information: $N_A = 6.022140857 \times 10^{23}/\text{mol}$

1. (6 points,) The density of ethanol is 0.789 g/mL . The molar mass of ethanol is 46.06 g/mol. Assume that ethanol molecule occupies a cubical volume and that in liquid ethanol the cubes are packed together with no empty space between them. Calculate the length of the cube edge. Express your result in m, to the right number of significant figures.

$$\frac{46.06g}{1mol} \times \frac{1mol}{6.022141 \times 10^{23} molecules} \times \frac{1ml}{0.789g} \times \frac{1cm^3}{1ml} \times \frac{1m^3}{10^6 cm^3} = 9.69384 \times 10^{-29} m^3$$

$$\text{L} = \sqrt[3]{9.69384 \times 10^{-29} m^3} = 4.59 \times 10^{-10} m$$

Edge length $= 4.59 \times 10^{-10} m$

1. (2 points) Write the molecular formula for sodium cyanide. NaCN

2. (2 points)Write the common name for ClO_4^-. perchlorate