**Homework #7 Chemistry 1114 Spring 2018 (Fong) due Friday 9 March 2018 8 pts (in class)**

**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_Answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Note: assume C=12 H=1 O=16 N = 14 (units in g/mol)**

**1) Compound Dick is composed of 0.5333 g C, 0.1111 g H and 0.35555 g O.**

**What is Dick’s empiric formula ? (2 pts)**

**element mass atomic wt/mol mol =n n/nmin**

**C 0.5333 g 12 0.5333/12 =0.04444 0.04444/0.0222=2**

**H 0.1111 g 1 0.1111/1=0.1111 0.1111/0.0222=5**

**O 0.3555 g 16 0.3555/16 =0.0222 0.0222/0.0222=1**

**\_C2H5O\_\_\_\_\_\_Dick’s empiric formula**

**2) Compound Jane is composed of 5.4545 g C, 1.3636 g H and 3.1818 g N.**

**Jane’s molecular weight is 220 g/mol. What is Jane’s molecular formula? (3 pts)**

**element mass atomic wt/mol mol =n n/nmin**

**C 5.4545 g 12 5.4545/12 =0.0.4545 0.4545/0.2272=2**

**H 1.3636 g 1 1.3636/1=1.3636 1.3636/0.2272=6**

**N 3.1818 g 14 3.1818/14 =0.2272 0.2272/0.2272=1**

**Empiric formula C2H6N MW=44 g/mol**

**Molecular weight actual is 220 g/mol**

**220/44=5=> C2\*5H6\*5N1\*5**

**\_\_ C10H30N5\_\_\_\_Jane’s molecular formula**

**3) The % C, H and O in vanilla are, respectively: 63.15 % 5.27 % and 31.58 %.**

**What is the empiric formula of vanilla ? (3 pts)**

**Element mass(=%) atomic wt/mol mol = n n/nmin 3\*n/nmin**

**C 63.15 12 63.15/12 = 5.26 2.67 ~8/3\* 8**

**H 5.27 1 5.27/1 = 5.27 2.67 ~8/3 8**

**O 31.58 16 31.58/16 = 1.97 1.00 3**

**\*0.666…~ 0.67 ~ 2/3 =>2.67~2 2/3 = 6/3 + 2/3 =8/3**

**\_\_\_C8H8O3\_\_\_\_\_\_\_\_\_\_\_\_ empiric formula of vanilla**