**Chem 1013: mini-quiz # 17: Simple Chemical Body Parts Calculations A 4 pts March 25**

Your name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Crystal meth has the chemical formula: C10H15N and a molecular weight of 149 grams/mol.

1) How many grams of crystal meth are present in a pure sample containing 10.0671 mol of H ?

(Show work !)

10.0671 mol H \* 1 mol meth/15 mol H=0.7114 mol meth

Multiply down to find mass: 0.67114 mol\*149 g/mol=100 g

\_\_100\_\_\_ grams crystal meth

(to nearest gram)

2) How many molecules of crystal meth are in a sample containing 200 grams of C (atomic weight =12

g C/mol). Assume 1 mol count =6\*1023.

Divide up to find moles C: 200 g C\*1 mol C/12 g C=16.666 mol C

Mol meth/mol C= 1/10 = x/16.6666=> x= mol meth=1.6666666

Multiply down to find molecules of meth: 1.66666 mol\*6\*1023=1\*1024

\_\_1\*1024\_\_\_\_\_\_\_\_\_molecules of meth

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Methadone has the chemical formula: C21H27NO and a molecular weight of 309 grams/mol.

1) How many grams of methadone are present in a pure sample containing 0.87378 mol of H ?

(Show work !)

0.87378 mol H \* 1 mol methadone/27 mol H = 0.03236 mol methadone

Multiply down to find mass: 0.03236 mol \*309 g/mol= 10.0 g

\_\_\_10\_\_\_\_ grams methadone

(to nearest g)

2) How many molecules of methadone are in a sample containing 84 grams of C (atomic weight =12 gC/mol). Assume 1 mol count =6\*1023.

Divide up to find mole C: 84 g C\*1 mol C/12 g C=7 mol C

Mol methadone/mol C= 1/21=x/7=> 7/21 = mol methadone =0.33333 mol methadone

Multiply down to find molecules of methadone: 0.3333\*6\*1023 =2\*1023

\_2\*1023\_\_\_\_molecules of methadone