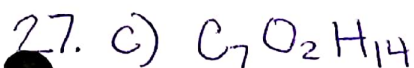
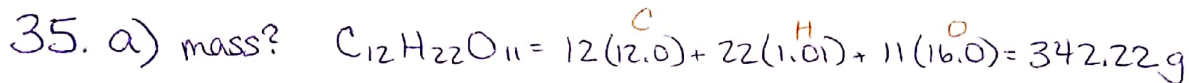


Unit 5 - extras - p. 114 #27c, 35, 37, 39, 45, 51

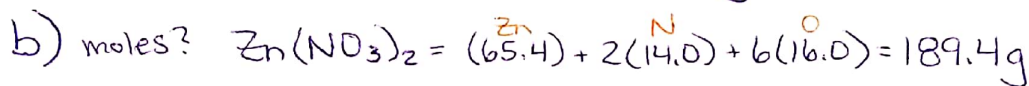


$$7(12.0) + 2(16.0) + 14(1.01) = 130.14g$$

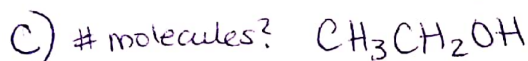
$$\frac{84g}{130.14g} \times 100 = \boxed{64.5\%}$$



$$0.105 \text{ mol} \times \frac{342.22g}{1 \text{ mol}} = \boxed{35.9 \text{ g sucrose}}$$



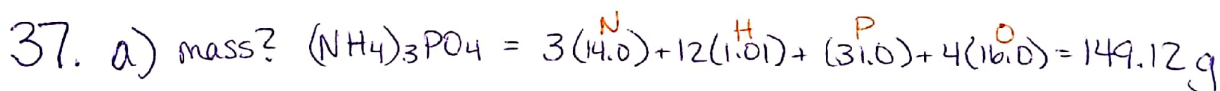
$$143.50g \times \frac{1 \text{ mol}}{189.4g} = \boxed{0.7577 \text{ mol}}$$



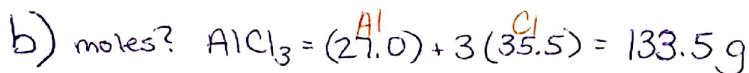
$$1.0 \times 10^{-6} \text{ mol} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} = \boxed{6.0 \times 10^{17} \text{ molecules}}$$



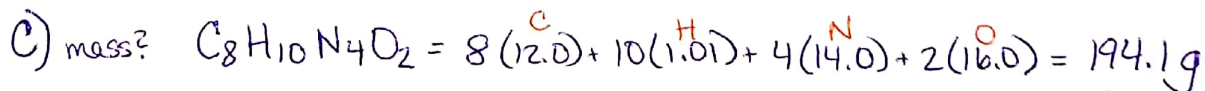
$$0.410 \text{ mol} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \times \frac{1 \text{ N atom}}{1 \text{ molecule}} = \boxed{2.47 \times 10^{23} \text{ N atoms}}$$



$$2.50 \times 10^{-3} \text{ mol} \times \frac{149.12g}{1 \text{ mol}} = \boxed{0.373g}$$



$$0.2550g \times \frac{1 \text{ mol}}{133.5g} \times \frac{3 \text{ mol } Cl^-}{1 \text{ mol } AlCl_3} = \boxed{0.005730 \text{ mol } Cl^-}$$



$$7.70 \times 10^{20} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \times \frac{194.1g}{1 \text{ mol}} = \boxed{6.59 \times 10^{-6} g}$$

d)  $\frac{0.406g}{0.00105 \text{ mol}} = \boxed{387 \text{ g/mol}}$

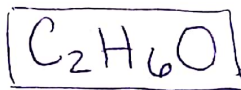
39. a)  $C_6H_{10}OS_2$   
 MM = ?  
 $6(12.0) + 10(1.01) + (16.0) + 2(32.1) = 162.3 \text{ g}$

b) moles?  
 $5.00 \text{ mg} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ mol}}{162.3 \text{ g}} = 3.08 \times 10^{-5} \text{ mol}$

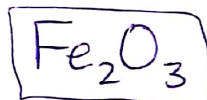
c) molecules?  
 $3.08 \times 10^{-5} \text{ mol} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} = 1.85 \times 10^{19} \text{ molecules}$

d) S atoms?  
 $1.85 \times 10^{19} \text{ molecules} \times \frac{2 \text{ S atoms}}{1 \text{ molecule}} = 3.71 \times 10^{19} \text{ S atoms}$

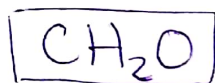
45. a)  $0.0130 \text{ mol C} \div 0.0065 = 2$   
 $0.0390 \text{ mol H} \div 0.0065 = 6$   
 $0.0065 \text{ mol O} \div 0.0065 = 1$



b)  $11.66 \text{ g Fe} \times \frac{1 \text{ mol}}{55.8 \text{ g}} = 0.2090 \text{ mol} \div 0.2090 = 1 \times 2 = 2$   
 $5.01 \text{ g O} \times \frac{1 \text{ mol}}{16.0 \text{ g}} = 0.313 \text{ mol} \div 0.2090 = 1.5 \times 2 = 3$



c)  $40.0\% = 40.0 \text{ g C} \times \frac{1 \text{ mol}}{12.0 \text{ g}} = 3.33 \text{ mol} \div 3.33 = 1$   
 $6.7\% \text{ H} = 6.7 \text{ g H} \times \frac{1 \text{ mol}}{1.01 \text{ g}} = 6.6 \text{ mol} \div 3.33 = 2$   
 $53.3\% \text{ O} = 53.3 \text{ g O} \times \frac{1 \text{ mol}}{16.0 \text{ g}} = 3.33 \text{ mol} \div 3.33 = 1$



51. a)  $CH_2 \Rightarrow (12.0) + 2(1.01) = 14.02 \text{ g}$

MM =  $84 \text{ g/mol}$   
 $\frac{84 \text{ g}}{14.02 \text{ g}} = 6 * CH_2 = C_6H_{12}$

b)  $NH_2Cl \Rightarrow (14.0) + 2(1.01) + (35.5) = 51.52 \text{ g}$

MM =  $51.5 \text{ g/mol}$

$\frac{51.5 \text{ g}}{51.52 \text{ g}} = 1 * NH_2Cl = NH_2Cl$