key

○ - answer

mm - molar mass

9) How many molecules are there in 2.3 grams of NH_4SO_2?

$2.3\,g\ NH_4SO_2 \times \frac{1\ mol\ NH_4SO_2}{82.11\,g\ NH_4SO_2} \times \frac{6.022\times10^{23}\ molc.\ NH_4SO_2}{1\ mol\ NH_4SO_2}$

$= 1.7\times10^{22}$ molecules NH_4SO_2

10) How many grams are there in 3.3×10^{23} molecules of N_2I_6?

$3.3\times10^{23}\ molc.\ N_2I_6 \times \frac{1\ mol\ N_2I_6}{6.022\times10^{23}\ molc\ N_2I_6} \times \frac{787.42\,g}{1\ mol\ N_2I_6} = 432.6\,g\ N_2I_6$

11) How many molecules are there in 200. grams of CCl_4?

$200\,g\ CCl_4 \times \frac{1\ mol\ CCl_4}{153.81\,g\ CCl_4} \times \frac{6.022\times10^{23}\ molc.\ CCl_4}{1\ mol\ CCl_4}$

$= 7.83\times10^{23}\ molc.\ CCl_4$

12) How many grams are there in 1×10^{24} molecules of BCl_3?

$1\times10^{24}\ molc.\ BCl_3 \times \frac{1\ mol\ BCl_3}{6.022\times10^{23}\ molc.\ BCl_3} \times \frac{117.16\,g}{1\ mol\ BCl_3} = 194.55\,g\ BCl_3$

13) How many grams are there in 4.5×10^{22} molecules of $Ba(NO_2)_2$?

$4.5\times10^{22}\ molc\ Ba(NO_2)_2 \times \frac{1\ mol\ Ba(NO_2)_2}{6.022\times10^{23}\ molc\ Ba(NO_2)_2} \times \frac{229.4\,g\ Ba(NO_2)_2}{1\ mol\ Ba(NO_2)_2}$

$= 17.14\,g\ Ba(NO_2)_2$

14) How many molecules are there in 9.34 grams of LiCl?

$9.34\,g\ LiCl \times \frac{1\ mol\ LiCl}{42.39\,g\ LiCl} \times \frac{6.022\times10^{23}\ molc.\ LiCl}{1\ mol\ LiCl}$

$= 1.33\times10^{23}\ molc.\ LiCl$

15) How many grams do 4.3×10^{21} molecules of UF_6 weigh?

$4.3\times10^{21}\ molc. \times \frac{1\ mol\ UF_6}{6.022\times10^{23}\ molc\ UF_6} \times \frac{352.0\,g\ UF_6}{1\ mol\ UF_6} = 2.513\,g$

16) How many molecules are there in 230. grams of NH_4OH?

$230\,g\ NH_4OH \times \frac{1\ mol\ NH_4OH}{35.05\,g\ NH_4OH} \times \frac{6.022\times10^{23}\ molc.\ NH_4OH}{1\ mol\ NH_4OH}$

$= 3.95\times10^{24}\ molc.\ NH_4OH$