

$$(1) \quad 25 \text{ g } H_2O \left(\frac{1 \text{ mol } H_2O}{18 \text{ g } H_2O} \right) = \boxed{1.4 \text{ mol } H_2O}$$

$$(2) \quad 4.5 \text{ mol } Li_2O \left(\frac{29.9 \text{ g } Li_2O}{1 \text{ mol } Li_2O} \right) = \boxed{134.6 \text{ g } Li_2O \approx 130 \text{ g } Li_2O}$$

$$(3) \quad \cancel{23 \text{ mol } O_2} \left(\frac{\cancel{32 \text{ g } O_2}}{\cancel{1 \text{ mol } O_2}} \right) = 23 \text{ mol } O_2 \left(\frac{6.02 \times 10^{23} \text{ molecules } O_2}{1 \text{ mol } O_2} \right) = \boxed{1.4 \times 10^{25} \text{ molecules } O_2}$$

$$(4) \quad 3.4 \times 10^{23} \text{ molecules } H_2SO_4 \left(\frac{1 \text{ mol } H_2SO_4}{6.02 \times 10^{23} \text{ molecules } H_2SO_4} \right) = \boxed{0.56 \text{ mol } H_2SO_4}$$

$$(5) \quad 25 \text{ g } NH_3 \left(\frac{1 \text{ mol } NH_3}{17 \text{ g } NH_3} \right) \left(\frac{6.02 \times 10^{23} \text{ molecules } NH_3}{1 \text{ mol } NH_3} \right) = \boxed{8.9 \times 10^{23} \text{ molecules } NH_3}$$

$$(6) \quad 8.2 \times 10^{22} \text{ molecules } N_2I_6 \left(\frac{1 \text{ mol } N_2I_6}{6.02 \times 10^{23} \text{ molecules } N_2I_6} \right) \left(\frac{789.4 \text{ g } N_2I_6}{1 \text{ mol } N_2I_6} \right) = \boxed{110 \text{ g } N_2I_6}$$