1. Actual = 24.8 g.
Theoretical = 25.0 g.

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$= \frac{24.8}{25.0} \times 100\%$$

$$= \boxed{99.2\%}$$

2. Actual = 7.2 mol
Theoretical = 8.2 mol

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$= \frac{7.2}{8.2} \times 100\%$$

$$= \boxed{87.8\%}$$

3. Actual = 161 g
Theoretical = 187 g

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$= \frac{161}{187} \times 100\%$$

$$= \boxed{86.1\%}$$

4. Theoretical = 5.27 g.
Actual = ?
% yield = 85%.

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$\frac{85}{100} = \frac{x}{5.27} \Rightarrow \boxed{x = 4.4795 \text{ g.}}$$

$100x = 85 \times 5.27$

$x = \frac{85 \times 5.27}{100}$

5. Theoretical = 16.0 g.
Actual = 9.5 g.

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$= \frac{9.5}{16.0} \times 100\%$$

$$= 59.375\%$$

$$\approx \boxed{59.4\%}$$

6. % yield = 99.9%
Theoretical = 48.7
Actual = ?

$$\% \text{ yield} = \frac{\text{Actual}}{\text{Theoretical}} \times 100\%$$

$$\frac{99.9}{100} = \frac{x}{48.7}$$

$$100x = 99.9 \times 48.7$$

$$x = \frac{99.9 \times 48.7}{100}$$

$$x = 48.6513 \text{ g}$$

$$\approx 48.65 \text{ g.}$$