3. 1000 bit error 0.1 $1000 \times 0.1 = 100 = m$

$1000 \times 0.1 \times 0.9 = 90$ $\sqrt{90} = 6$

$$P(Y>125) = 1 - P(Y \le 125)$$
$$= 1 - P\left(\frac{Y - 1000\times 0.1}{\sqrt{90}} \le \frac{125-100}{\sqrt{90}}\right)$$
$$= 1 - P\left(Z \le \frac{25}{\sqrt{90}}\right)$$
$$= 1 - \phi\left(\frac{25}{3\sqrt{10}}\right) = 4.2 \times 10^{-3}$$

4. $n = 50$ $p = 0.5$ $m = 25$ $\sigma = \sqrt{\frac{25}{2}}$

$$P(Y>30) = P(Y>29.5)$$
$$= 1 - P(Y \le 29.5)$$
$$= 1 - P\left(\frac{Y-25}{\sqrt{\frac{25}{2}}}\right)$$
$$= 1 - P\left(Z \le \frac{4.5}{\frac{5}{\sqrt{2}}}\right)$$
$$\approx 1 - \phi(1.27)$$
$$\approx 0.10$$