2) Condicional y Total:

$P(\text{Urna 1}) = \frac{2}{6} = \frac{1}{3}$

$P(\text{Urna 2}) = \frac{4}{6} = \frac{2}{3}$

$P(\text{Roja} \mid \text{Urna 1}) = \frac{3}{10}$

$P(\text{Roja} \mid \text{Urna 2}) = \frac{6}{10} = \frac{3}{5}$

$P(\text{negra} \mid \text{Urna 1}) = \frac{1}{10}$

$P(\text{negra} \mid \text{Urna 2}) = \frac{2}{10} = \frac{1}{5}$

a) $P(R) = P(U_1)P(R \mid U_1) + P(U_2)P(R \mid U_2)$

$P(R) = \frac{1}{3}\frac{3}{10} + \frac{2}{3}\frac{3}{5}$

$P(R) = \frac{1}{10} + \frac{2}{5} = \frac{1}{10} + \frac{4}{10} = \frac{5}{10}$

R/ $P(R) = \frac{1}{2}$

b) $P(N) = P(U_1)P(N \mid U_1) + P(U_2)P(N \mid U_2)$

$P(N) = \frac{1}{3}\frac{1}{10} + \frac{2}{3}\frac{1}{5}$

$P(N) = \frac{1}{30} + \frac{2}{15} = \frac{1}{30} + \frac{4}{30} = \frac{5}{30}$

R/ $P[N] = \frac{1}{6}$

c) $$P(M_1|N) = \frac{P(M_1)P(N|M_1)}{P(M_1)P(N|M_1) + P(M_2)P(N|M_2)}$$

$$P(M_1|N) = \frac{P(M_1)P(N|M_1)}{P(N)}$$

$$P(M_1|N) = \frac{1/3 \; 1/10}{1/6} : \frac{1/30}{1/6} = \frac{6}{30}$$

R/ $P(M_1|N) = 1/5$

d) $$P(M_2|N) = \frac{P(M_2)P(N|M_2)}{P(M_1)P(N|M_1) + P(M_2)P(N|M_2)}$$

$$P(M_2|N) = \frac{P(M_2)P(N|M_2)}{P(N)}$$

$$P(M_2|N) = \frac{2/3 \; 1/5}{1/6} = \frac{2/15}{1/6} = \frac{12}{15}$$

R/ $P(M_2|N) = 4/5$