②

$\boxed{U_1} = \frac{1}{3}$, $\boxed{U_2} = \frac{2}{3}$

$\downarrow$

$r = \frac{3}{10}$ $\qquad$ $r = \frac{2}{10}$

$m = \frac{1}{10}$ $\qquad$ $n = \frac{2}{10}$

$v = \frac{6}{10}$ $\qquad$ $v = \frac{6}{10}$

ahora

(a) Sea roja $P(r) = 1/2$

$\Rightarrow$ Para $U_1 = \frac{1}{3} \cdot \frac{3}{10} = \frac{1}{10} = P_1(r)$

Para $U_2 = \frac{2}{3} \cdot \frac{6}{10} = \frac{2}{5} = P_2(r)$

entonces $P_r = P_1(r) + P_2(r) = \frac{1}{10} + \frac{2}{5} = \boxed{\frac{1}{2}}$

(b) Sea negra $P(n) = 1/6$

$\Rightarrow$ Para $U_1 = \frac{1}{3} \cdot \frac{1}{10} = \frac{1}{30} \Rightarrow P_1(n)$

Para $U_2 = \frac{2}{3} \cdot \frac{2}{10} = \frac{2}{15} \rightarrow P_2(n)$

entonces $P(n) = P_1(n) + P_2(n) = \frac{1}{30} + \frac{2}{15} = \boxed{\frac{1}{6}}$

© Sea de la urna 1 si se ha obtenido una bola negra

$$P(1/n) = \frac{1}{5} \quad\Rightarrow\quad \frac{P(1) \cdot P(n)}{P(n)} = \frac{P_1(n)}{P(n)} = \frac{\frac{1}{30}}{\frac{1}{6}} = \boxed{\frac{1}{5}}$$

ⓓ Sea de la urna 2 si se ha obtenido una bola negra

$$P(2/n) = \frac{4}{5} \quad\Rightarrow\quad \frac{P(2) \cdot P(n)}{P(n)} = \frac{P_2(n)}{P(n)} = \frac{\frac{2}{15}}{\frac{1}{6}} = \boxed{\frac{4}{5}}$$