$$
\begin{aligned}
R10 = R20 &= \overline{P50} \cdot P1 \cdot M \cdot \overline{C} + P50 \cdot \overline{P1} \cdot M \cdot \overline{C} + P50 \cdot P1 \cdot M \cdot \overline{C} \\
&= M \cdot \overline{C} \cdot \Big(\overline{P50} \cdot P1 + \underbrace{P50 \cdot \overline{P1} + P50 \cdot P1}_{P50} \Big) \\
&= M \cdot \overline{C} \cdot \underbrace{\Big(\overline{P50} \cdot P1 + P50 \Big)}_{P50+P1} \\
&= M \cdot \overline{C} \cdot \Big(P50 + P1 \Big)
\end{aligned}
$$

$$
\begin{aligned}
R50 &= \overline{P50} \cdot P1 \cdot \overline{M} \cdot C + \overline{P50} \cdot P1 \cdot M \cdot \overline{C} + \underbrace{P50 \cdot \overline{P1} \cdot \overline{M} \cdot \overline{C} + P50 \cdot P1 \cdot \overline{M} \cdot \overline{C}}_{P50 \cdot \overline{M} \cdot \overline{C}} \\
&\qquad + \underbrace{P50 \cdot \overline{P1} \cdot M \cdot C + P50 \cdot P1 \cdot M \cdot C}_{P50 \cdot \cdot M \cdot C} \\
&= \overline{P50} \cdot P1 \cdot \Big(\overline{M} \cdot C + M \cdot \overline{C} \Big) + P50 \cdot \overline{M} \cdot \overline{C} + P50 \cdot M \cdot C \\
&= \overline{P50} \cdot P1 \cdot \Big(\overline{M} \cdot C + M \cdot \overline{C} \Big) + P50 \cdot \Big(\overline{M} \cdot \overline{C} + M \cdot C \Big) \\
&= \overline{P50} \cdot P1 \cdot \Big(M \oplus C \Big) + P50 \cdot \Big(\overline{M \oplus C} \Big)
\end{aligned}
$$

$$
\begin{aligned}
R1 &= \overline{P50}\cdot P1\cdot\overline{M}\cdot\overline{C} + \overline{P50}\cdot P1\cdot M\cdot C + \underbrace{P50\cdot P1\cdot\overline{M}\cdot\overline{C} + P50\cdot P1\cdot\overline{M}\cdot C}_{P50\cdot P1\cdot\overline{M}} \\
&\qquad + \underbrace{P50\cdot P1\cdot M\cdot\overline{C} + P50\cdot P1\cdot M\cdot C}_{P50\cdot P1\cdot M} \\
&= \overline{P50}\cdot P1\cdot\left(\overline{M}\cdot\overline{C} + M\cdot C\right) + P50\cdot P1\cdot\overline{M} + P50\cdot P1\cdot M \\
&= \overline{P50}\cdot P1\cdot\left(\overline{M\oplus C}\right) + P50\cdot P1\cdot\left(\underbrace{\overline{M}+M}_{1}\right) \\
&= \overline{P50}\cdot P1\cdot\left(\overline{M\oplus C}\right) + P50\cdot P1 \\
&= P1\cdot\left(\overline{P50}\cdot\overline{M\oplus C} + P50\right) \\
&= P1\cdot\left(P50 + \overline{M\oplus C}\right)
\end{aligned}
$$