b.

① $400x + 600y = 12000$ $U = x^{\frac{1}{2}} y^{\frac{1}{2}}$ $MRS_{xy} = \frac{\frac{1}{2}x^{-\frac{1}{2}}y^{\frac{1}{2}}}{\frac{1}{2}y^{-\frac{1}{2}}x^{\frac{1}{2}}} = \frac{400}{600}$

$\Rightarrow 3y = 2x \Rightarrow x = 15, y = 10.$

② $(5,t) \Rightarrow x + y = 25$.

$$\begin{cases} x + y = 25 \\ 400x + 600y = 12000 \end{cases}$$

$$\begin{cases} 4x + 4y = 92 \\ 4x + 6y = 120 \end{cases}$$

$-2y = -28$

$y = 14$

$x = 9$

$A = y = 14, x = 9.$