

$$3. (A) \begin{cases} MRS_{xy} = \frac{p_x}{p_y} \\ p_x X + p_y Y = M \end{cases} \Rightarrow \begin{cases} Y/X = \frac{1}{2} \\ 10X + 20Y = 1000 \end{cases} \Rightarrow \begin{cases} X = 50 \\ Y = 25 \\ U_0 = 1250 \end{cases}$$

$$(B) \begin{cases} MRS_{xy} = (p_x + t)/p_y \\ (p_x + t)X + p_y Y = M \end{cases} \Rightarrow \begin{cases} Y/X = 1 \\ 20X + 20Y = 1000 \end{cases} \Rightarrow \begin{cases} X_1 = Y_1 = 25 \\ U_1 = 625 < U_0 \end{cases}$$

(C) 政府收稅 $T = 10 \times 25 = 250$

$$(D) \begin{cases} MRS_{xy} = p_x/p_y \\ p_x X + p_y Y = M - T \end{cases} \Rightarrow \begin{cases} Y/X = \frac{1}{2} \\ 10X + 20Y = 750 \end{cases} \Rightarrow \begin{cases} X_2 = 37.5 \\ Y_2 = 18.75 \\ U_2 = 903.125 < U_0 \end{cases}$$

(E) $\because X_1 < X_2 \therefore$ 消費稅較能抑制消費

(F) 但 $U_2 > U_1$ 故小李家可接受定額稅

$$(G) \begin{cases} MRS_{xy} = (p_x + t)/p_y \\ (p_x + t)X + p_y Y = M + T \end{cases} \Rightarrow \begin{cases} Y/X = 1 \\ 10X + 20Y = 1250 \end{cases} \Rightarrow \begin{cases} X = 31.25 \\ Y = 31.25 \\ U_3 = 976.5625 > U_0 \end{cases}$$