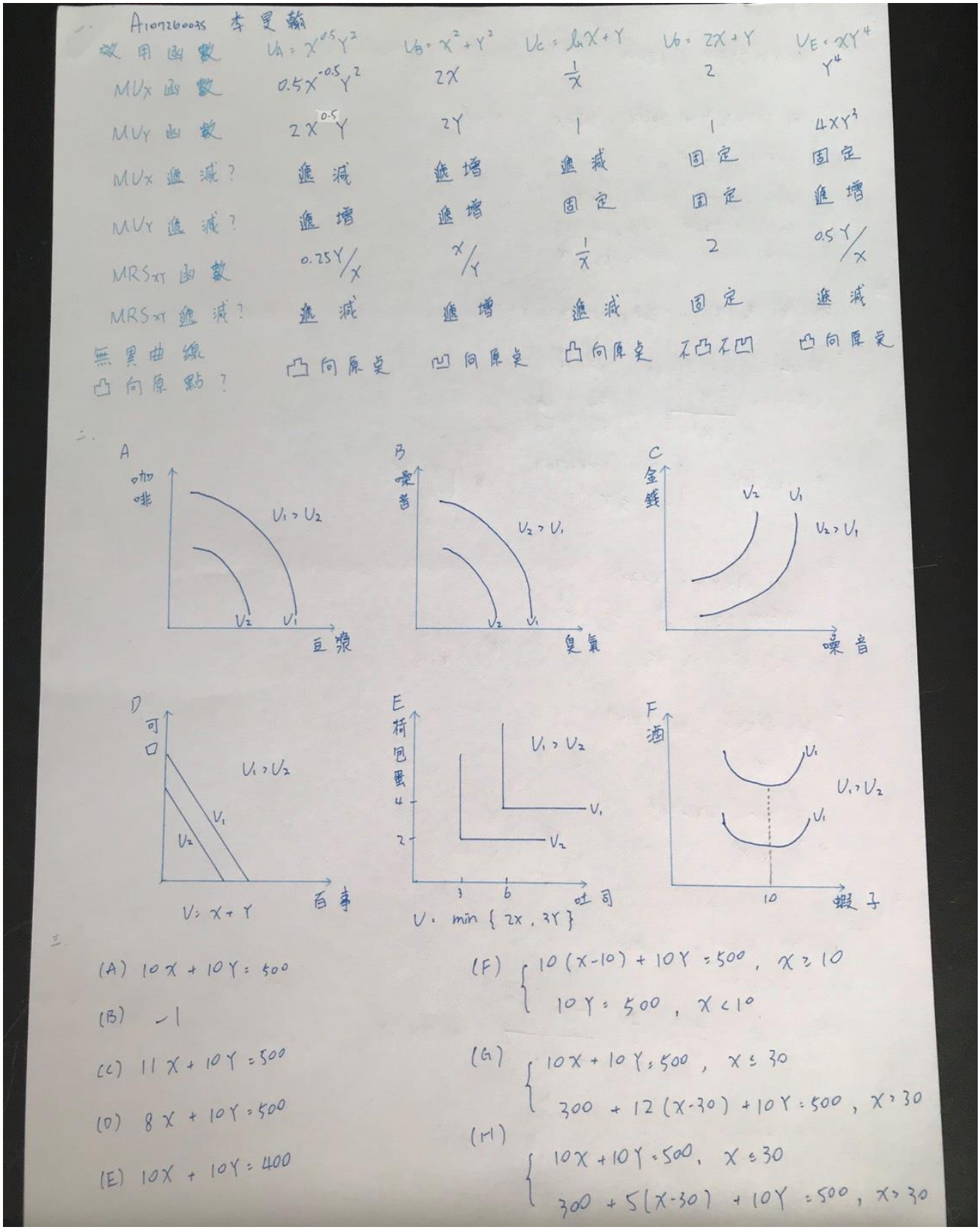
A107260035 李旻翰 作業檢討&複習全



四

(A) $60X + 200Y = 6200$

(B) $\begin{cases} 80(X-5) + 200Y = 6200, & X > 5 \\ 200Y = 6200, & X \le 5 \end{cases}$

(C) $\begin{cases} 80X + 200Y = 6400, & X \le 50 \\ 200Y = 2400, & 50 < X \le 55 \\ 80X + 200Y = 6800, & 55 < X \end{cases}$

五

預算限制：$300 = 10X + 20Y$

I

偏好：$U = f(X,Y) = X^{\frac{2}{3}} Y^{\frac{1}{3}}$

$MRS_{XY} = \dfrac{\frac{2}{3} X^{-\frac{1}{3}} Y^{\frac{1}{3}}}{\frac{1}{3} X^{\frac{2}{3}} Y^{-\frac{2}{3}}}$，$\dfrac{P_X}{P_Y} = \dfrac{10}{20}$

$\Rightarrow X = 4Y$ $\begin{cases} 300 = 10X + 20Y \\ Y = \frac{1}{4}X \end{cases}$ 得 $\begin{cases} X = 20 \\ Y = 5 \end{cases}$

II

$U = f(X,Y) = X + 3Y$

$MRS_{XY} = \frac{1}{3} < \dfrac{P_X}{P_Y} = \dfrac{10}{20} = \dfrac{1}{2}$

$\Rightarrow X = 0, Y = 15$ 得 $\begin{cases} X = 0 \\ X = 15 \end{cases}$

III

$U = f(X,Y) = \min(X,Y)$

$Y = X$

$\Rightarrow \begin{cases} 300 = 10X + 20Y \\ Y = X \end{cases}$ 得 $\begin{cases} X = 10 \\ Y = 10 \end{cases}$

六

① $400X + 600Y = 12000$

$U = X^{\frac{1}{2}} Y^{\frac{1}{2}}$

$MRS_{XY} = \dfrac{P_X}{P_Y} = \dfrac{400}{600} = \dfrac{2}{3} = \dfrac{\frac{1}{2} X^{-\frac{1}{2}} Y^{\frac{1}{2}}}{\frac{1}{2} X^{\frac{1}{2}} Y^{-\frac{1}{2}}}$ $\Rightarrow 2X = 3Y$ $\begin{cases} 2X = 3Y \\ 2X + 3Y = 60 \end{cases}$ 得 $\begin{cases} X = 15 \\ Y = 10 \end{cases}$

② $\begin{cases} X + Y = 23 \\ X + Y = 23 \\ 3Y = 2X \end{cases} \rightarrow \begin{cases} X = 13.8 & (\text{英}) \\ Y = 9.2 & (\text{电}) \end{cases}$