Eco Tut 5

Q1] Let good X → Coffee
Y → Sandwich

For Consumer Equilibrium in 2 Commodity Case

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$$

Here $\frac{MU_y}{MU_x} = 2$ [given]

Also, $P_x = 5$ & $P_y = 3$

So, $\frac{P_x}{P_y} \neq \frac{MU_x}{MU_y}$; $\frac{3}{5} \neq \frac{1}{2}$

Consumer is not at eqlb.

▷ To be at eqlb $\frac{MU_x}{MU_y}$ should increase, this will only happen when MU_y falls, MU_y will fall if consumer consumes more of good Y (sandwich) due to law of DMU (Diminishing Marginal Utility)

So, consumer should consume more of sandwiches

Q2] Let good X → rice
Y → wheat

given $P_Y = 12$

$MU_X = 2.5\, MU_Y$

At eqlb : $\frac{MU_X}{MU_Y} = \frac{P_X}{P_Y}$

So, $P_X = \frac{MU_X}{MU_Y} \times P_Y$

$= 2.5 \times 12$

$\boxed{P_X = 30}$

Q3] $I = 5000$ $\quad U = \sqrt{q_1 q_2}$

& $p_1 = 50$ $\quad p_2 = 20$

If consumer spends his entire income

$I = p_1 q_1 + p_2 q_2$

$5000 = 50 q_1 + 20 q_2 \Rightarrow 500 = 5q_1 + 2q_2$ — (i)

To maximise utility function we take $\frac{dU}{dq_1} = 0$ derivative test

$U = \sqrt{q_1 q_2} = \sqrt{q_1 \left(\frac{500 - 5q_1}{2}\right)}$

U^2 will be max when U will be max

$$U^2 = q_1\left(\frac{500 - 5q_1}{2}\right)$$

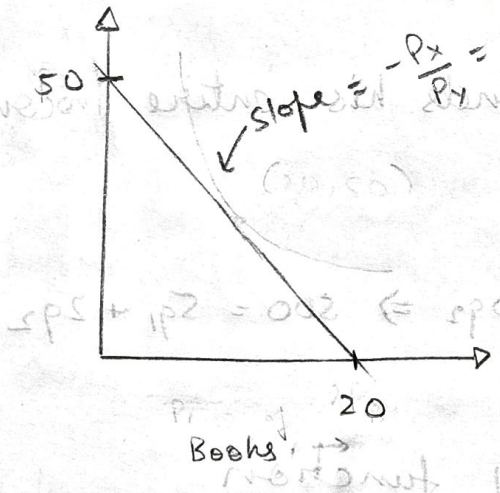
$$0 = \frac{d(U^2)}{dq_1} = \frac{1}{2}[500 - 10q_1]$$

$$\boxed{q_1 = \frac{500}{10} = 50}$$

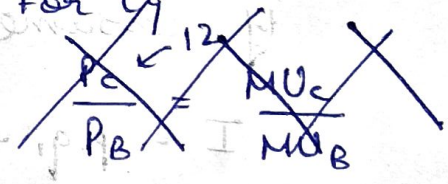
Using eq^n (1) $\quad q_2 = \frac{500 - 5Q_1}{2}$

$$\boxed{q_2 = 125}$$

Q4] Drawing graph Using given Information



For Eq



$P_B = ?$ $\quad P_C = 12$

$Q_B = 20$ $\quad Q_C = 50$

→ Income remains const

$$P_B Q_B = P_C Q_C$$

$$P_B = \frac{12 \times 50}{20} = 30$$

So, Income $= P_B Q_B + P_C Q_C = 600$

$$\text{Slope} = -\frac{P_B}{P_C} = -30/12$$

Q5]

$$P_x = \begin{cases} 2 & Q_x \leq 200 \\ 0.5 & Q_x > 200 \end{cases}$$

$P_y = 1$

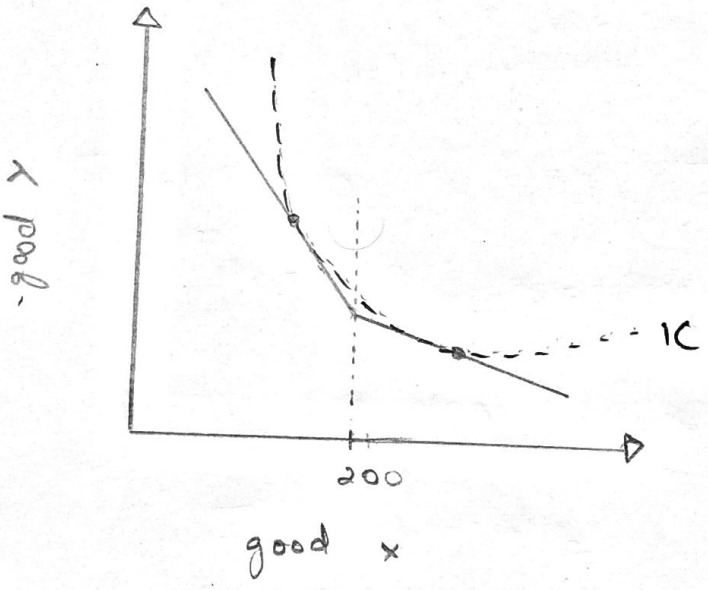
Income $= I = 500$

Slope of Budget line $= -\frac{P_x}{P_y}$

$$S = \begin{cases} -2/1 & Q_x \leq 200 \\ -0.5/1 & Q_x > 200 \end{cases}$$

$\tan^{-1}(-2) = -63°$

$\tan^{-1}(-0.5) = -26°$



Yes, It is possible to have multiple Eq. Points.