

# THEORY OF CONSUMER BEHAVIOUR



# CONSUMER

- A consumer is a person who buys goods and services for the satisfaction of his wants. His objective is to get maximum satisfaction with limited expenditure.



# UTILITY

- Want satisfying power of a commodity is called utility.
- Example: A person wants to go to Chennai. He boards a train and reaches his destination. So, train service has utility.
- A person wants to save money. A bank accepts his deposits. So, banking service has utility.



I AM HUNGRY. I WANT  
FOOD. THIS APPLE CAN  
SATISFY MY WANT

APPLE HAS THE POWER TO  
SATISFY A WANT. APPLE HAS  
UTILITY

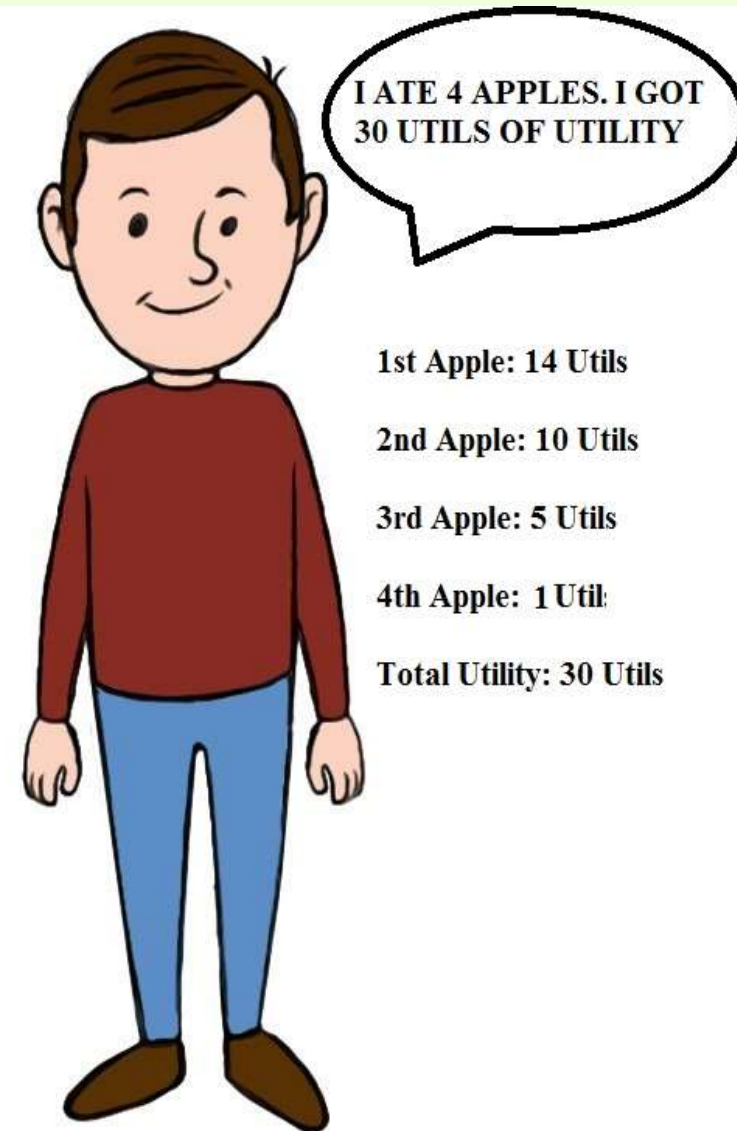
# TOTAL UTILITY

- It is the sum total of utility derived by consuming all the units of a commodity.

$$TU_n = MU_1 + MU_2 + MU_3 + \dots + MU_n$$

OR

$$TU = \sum MU$$





# MARGINAL UTILITY

- It is the addition to total utility when one more unit of a commodity is consumed. It is the utility derived from the last unit consumed.

**MARGINAL UTILITY IS 10 UTILS**

**1st Try**  
25 Utils



**2nd Try**  
20 Utils



**3rd Try**  
10 Utils



# FORMULA TO CALCULATE MARGINAL UTILITY

$$\text{Marginal Utility} = TU_n - TU_{n-1}$$

$TU_n$   $\longrightarrow$  Total Utility

$TU_{n-1}$   $\longrightarrow$  Utility from  $n-1$  units

**OR**

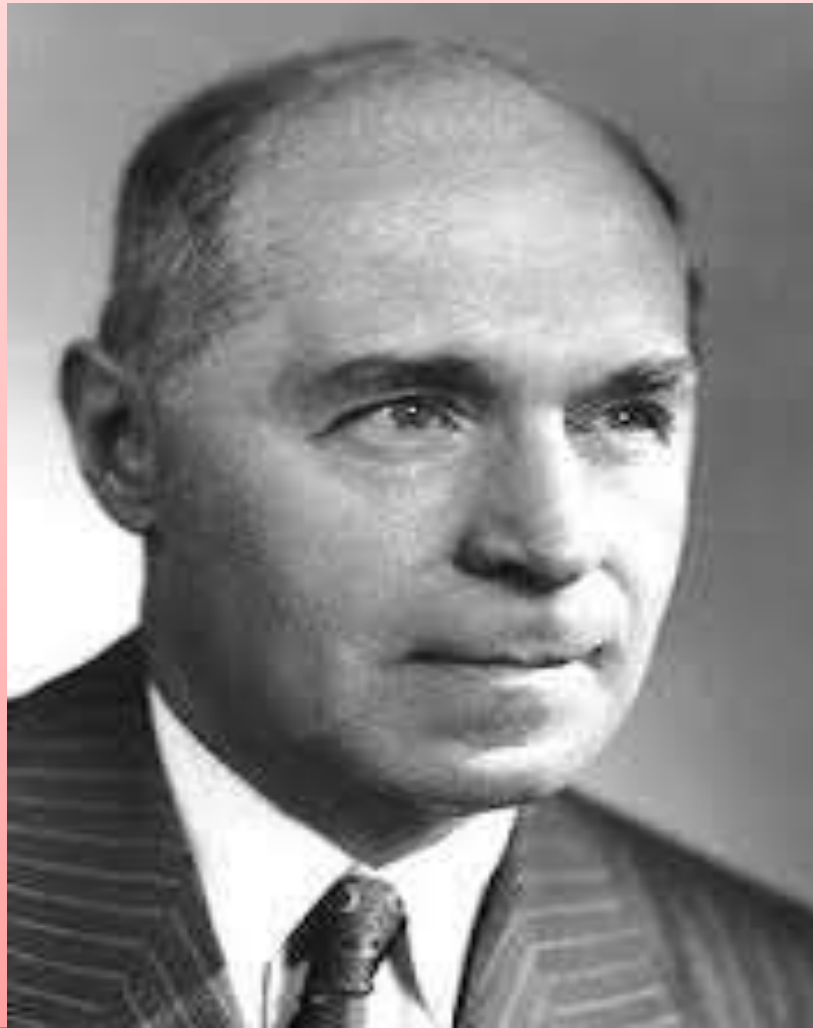
$$\text{Marginal Utility} = \frac{\Delta TU}{\Delta Q}$$

$\Delta TU$   $\longrightarrow$  Change in Total Utility

$\Delta Q$   $\longrightarrow$  Change in number of units consumed

# LAW OF DIMINISHING MARGINAL UTILITY

- It was put forward by H H Gossen.
- It is also called Gossen's First Law of Consumption





# Law of Diminishing Marginal Utility

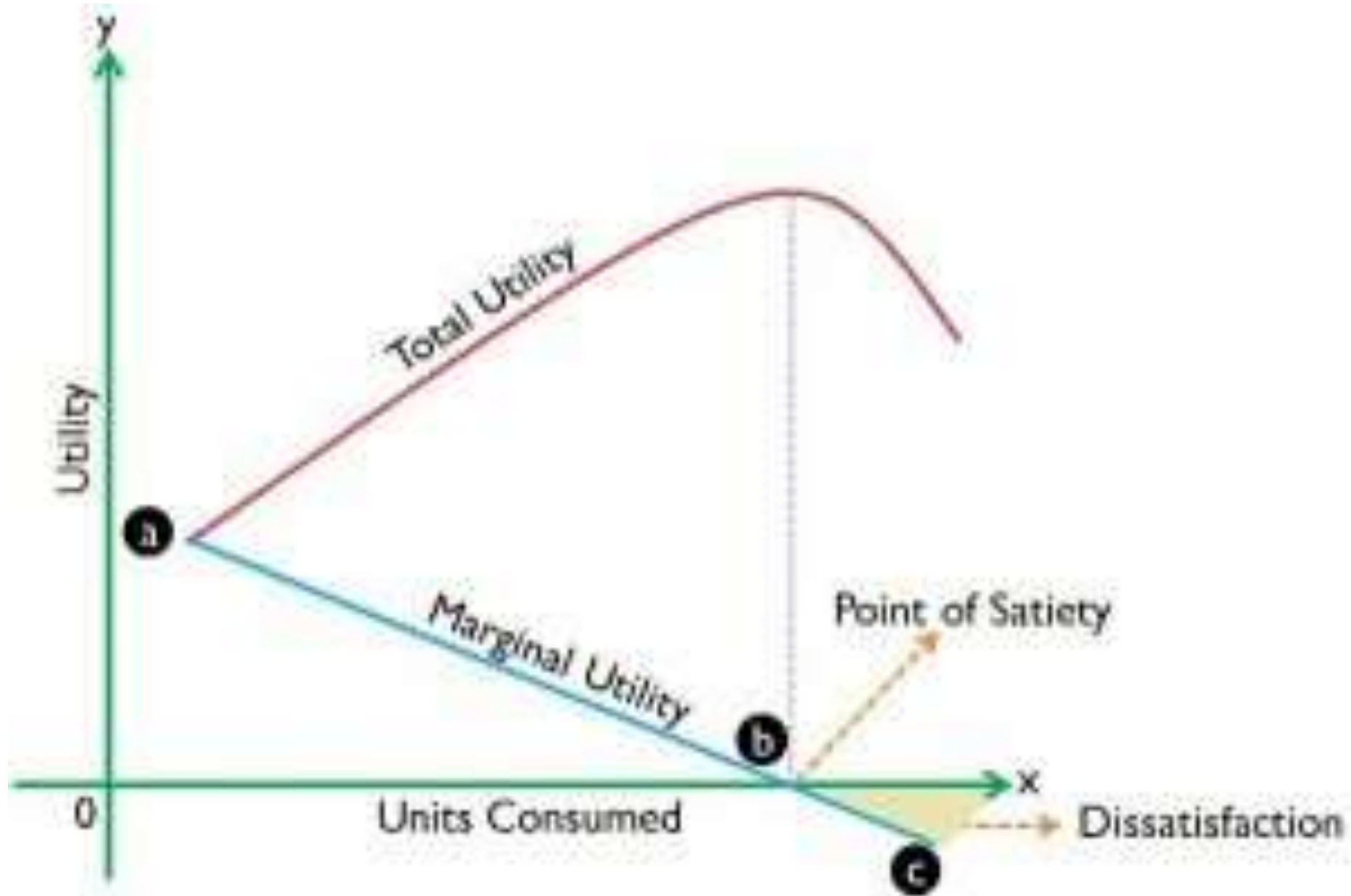
- Other things remaining the same, as we consume more and more units of a commodity, the utility derived from each successive unit (Marginal Utility) goes on decreasing.



# SCHEDULE

UNITS OF APPLE CONSUMED	MARGINAL UTILITY	TOTAL UTILITY
1	10	10
2	8	18
3	4	22
4	0	22
5	(-) 2	20

# DIAGRAM



- Marginal Utility curve slopes downward indicating fall in marginal utility as consumption increases.
- Total Utility Curve rises at a diminishing rate when marginal utility is positive.
- Total Utility remains constant when Marginal Utility is zero.
- Total utility falls when marginal utility is negative.

# ASSUMPTIONS OF LAW OF DIMINISHING MARGINAL UTILITY

- The consumer is rational. He wants to get maximum satisfaction.
- All the units of the commodity consumed are of same quality.
- All the units are consumed without any time gap.
- It is possible to measure utility in terms of numbers.
- Tastes and preferences of the consumer do not change.
- The commodity must be consumed in sizeable quantity.

## CRITICISM OF THE LAW OF DIMINISHING MARGINAL UTILITY

- Utility is a psychological experience. It cannot be measured in terms of numbers.
- Tastes and preferences of the consumer may change.
- The quality of different units of a commodity may be different.



# CONSUMER'S EQUILIBRIUM

- Equilibrium is a state of rest or position of no further change.
- A consumer is in equilibrium when he consumes that quantity which gives him maximum satisfaction.

HE NEITHER WANTS TO  
INCREASE NOR DECREASE  
THE CONSUMPTION OF  
SANDWICH.  
HE IS AT EQUILIBRIUM



I AM SATISFIED

# Cardinal Utility analysis and Ordinal Utility Analysis

## Utility Analysis

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graph TD; A[Utility Analysis] --> B[Cardinal Utility analysis]; A --> C[Ordinal Utility Analysis]
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### **Cardinal Utility analysis**

- **Alfred Marshal**

Utility can be measured in utils

- Law of Diminishing

Marginal Utility

- Quantitative

- Law of Equi-marginal

Utility

- Marshallian Analysis

### **Ordinal Utility Analysis**

- **J. R. Hicks & R.G.D.**

**Allen**

Utility cannot be measured.

Can be compared and ranked

- **Indifference Curve**

analysis

# CARDINAL UTILITY ANALYSIS

## CONSUMER'S EQUILIBRIUM - ONE COMMODITY CASE

(i) First Condition:

In the case of single commodity, consumer is in equilibrium when the marginal utility of a commodity is equal to its price.

$$MU_x = P_x$$

$MU_x$  - Marginal Utility of commodity X

$P_x$  – Price of Commodity X

- If  $MU_x > P_x$ , the consumer will increase the consumption of good X. When consumption increases Marginal Utility will fall and will become equal to Price.
- If  $MUX < P_x$ , the consumer will reduce the consumption of X. When consumption falls, marginal utility will increase. It will become equal to Price.

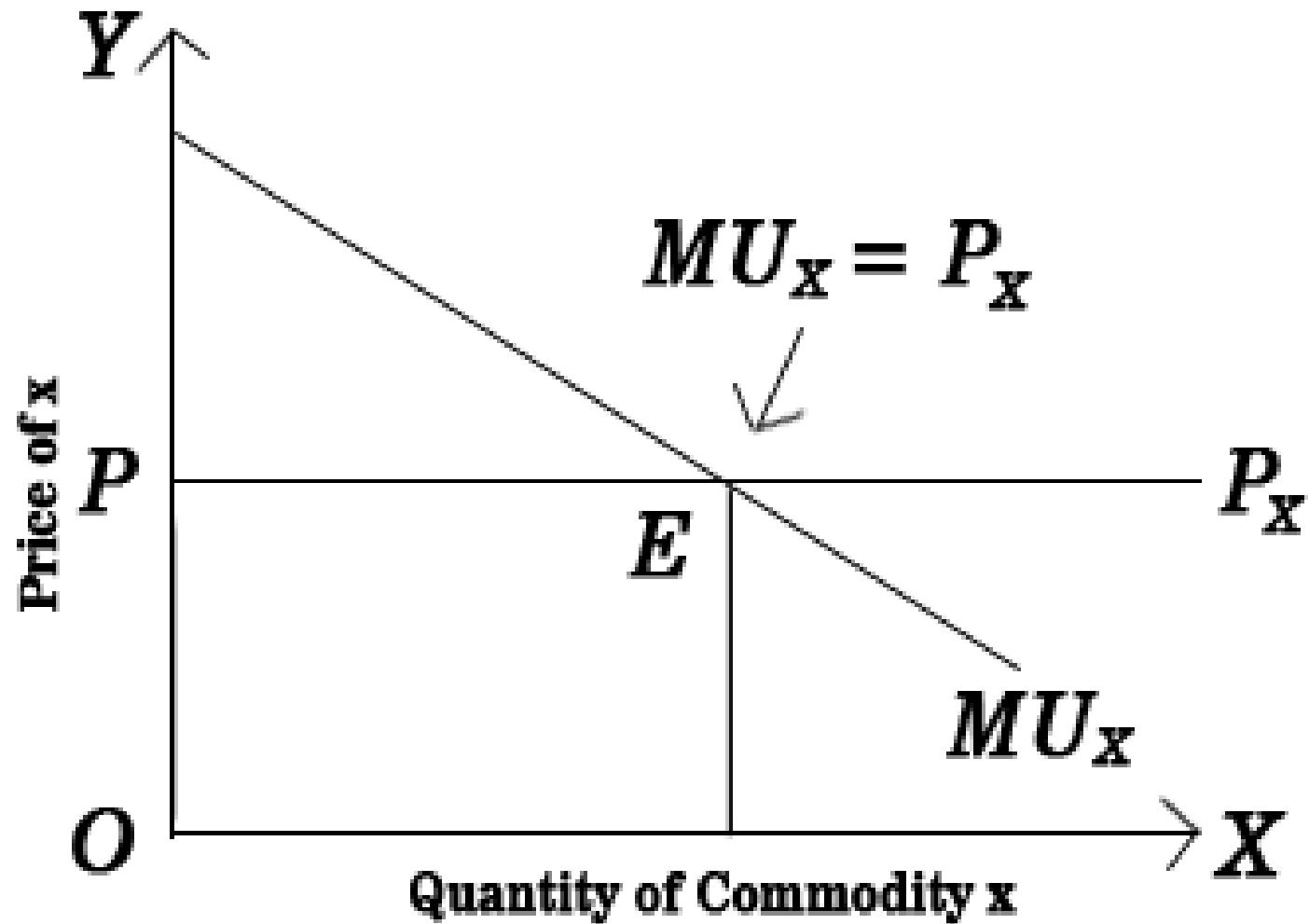
- **Schedule:**

Units of Apple	Marginal Utility	Price
1	15	5
2	13	5
3	9	5
<b>4</b>	<b>5</b>	<b>5</b>
5	3	5

The Consumer will consume 4 Apples because at that point  
Marginal Utility and Price are equal



# DIAGRAM



- (ii) Second Condition:

Marginal Utility keeps on falling as consumption increases.

It is due to the operation of the Law of Diminishing

Marginal Utility

# CONSUMER'S EQUILIBRIUM TWO COMMODITY CASE

- Consumer's equilibrium in two commodities is explained by the Law of Equi - Marginal Utility.
- This law was put forward by H H Gossen.
- It is also called Gossen's Second Law of Consumption.

- Conditions of Consumers equilibrium

(i) The ratio of marginal utility of one commodity to its price is equal to the ratio of marginal utility of the other commodity to its price.

He gets same utility from the last rupee spent on each good.

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

MU<sub>x</sub> – Marginal Utility of Commodity X

MU<sub>y</sub> – Marginal Utility of Commodity Y

P<sub>x</sub> – Price of X

P<sub>y</sub> – Price of Y

- Suppose,  $\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$ , the consumer will increase the consumption of X and reduce the consumption of Y.
- Marginal Utility of X will fall and Marginal Utility of Y will increase.
- This will go on until  $\frac{MU_x}{P_x}$  becomes equal to  $\frac{MU_y}{P_y}$

- Suppose,  $\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$ , the consumer will decrease the consumption of X and increase the consumption of Y.
- Marginal Utility of X rise and Marginal Utility of Y will fall.
- This will go on until  $\frac{MU_x}{P_x}$  becomes equal to  $\frac{MU_y}{P_y}$



- (ii) Second Condition:

Marginal Utility keeps on falling as consumption increases.

It is due to the operation of the Law of Diminishing  
Marginal Utility

- NUMERICALS

1. A consumer consumes only two goods X and Y. If marginal utility of X and Y are 4 and 5 respectively and price of X is Rs. 5 per unit and that of Y is Rs. 4 per unit, is the consumer in equilibrium. What will be the further reaction of the consumer

# SOLUTION

- The condition of consumer's equilibrium:

$$\frac{MUx}{Px} = \frac{MUy}{Py}$$

In the given problem,  $MUx = 4$ ,  $MUy = 5$

$$Px = 5 \text{ and } Py = 4$$

Substituting the values:

$$\frac{4}{5} < \frac{5}{4}$$

The Consumer is not in equilibrium because

$$\frac{MUx}{Px} < \frac{MUy}{Py}$$

He will increase the consumption of Y and reduce the consumption of X

2. A consumer consumes only two goods X and Y. If marginal utility of each is 2 and price of X is Rs. 1 per unit and that of Y is Rs. 4 per unit, is the consumer in equilibrium. What will be the further reaction of the consumer.

# SOLUTION

- The condition of consumer's equilibrium:

$$\frac{MUx}{Px} = \frac{MUy}{Py}$$

In the given problem,  $MUx = 2$ ,  $MUy = 2$

$$Px = 1 \text{ and } Py = 4$$

Substituting the values:

$$\frac{2}{1} > \frac{2}{4}$$

The Consumer is not in equilibrium because

$$\frac{MUx}{Px} > \frac{MUy}{Py}$$

He will increase the consumption of X and reduce the consumption of Y

- **INDIFFERENCE CURVE**

- An Indifference Curve is a diagram that shows different combinations of two goods that will give equal satisfaction to the consumer.
- It shows the preferences of a consumer.
- If the consumer selects one combination, he is indifferent to the other combinations.



# INDIFFERENCE SCHEDULE

- Indifference schedule is a table that shows different combinations of two goods that will give equal satisfaction to the consumer.

COMBINATIONS	UNITS OF X	UNITS OF Y	MARGINAL RATE OF SUBSTITUTION( $\frac{\Delta Y}{\Delta X}$ )
A	1	12	
B	2	8	$\frac{4}{1} = 4$
C	3	5	$\frac{3}{1} = 3$
D	4	3	$\frac{2}{1} = 2$

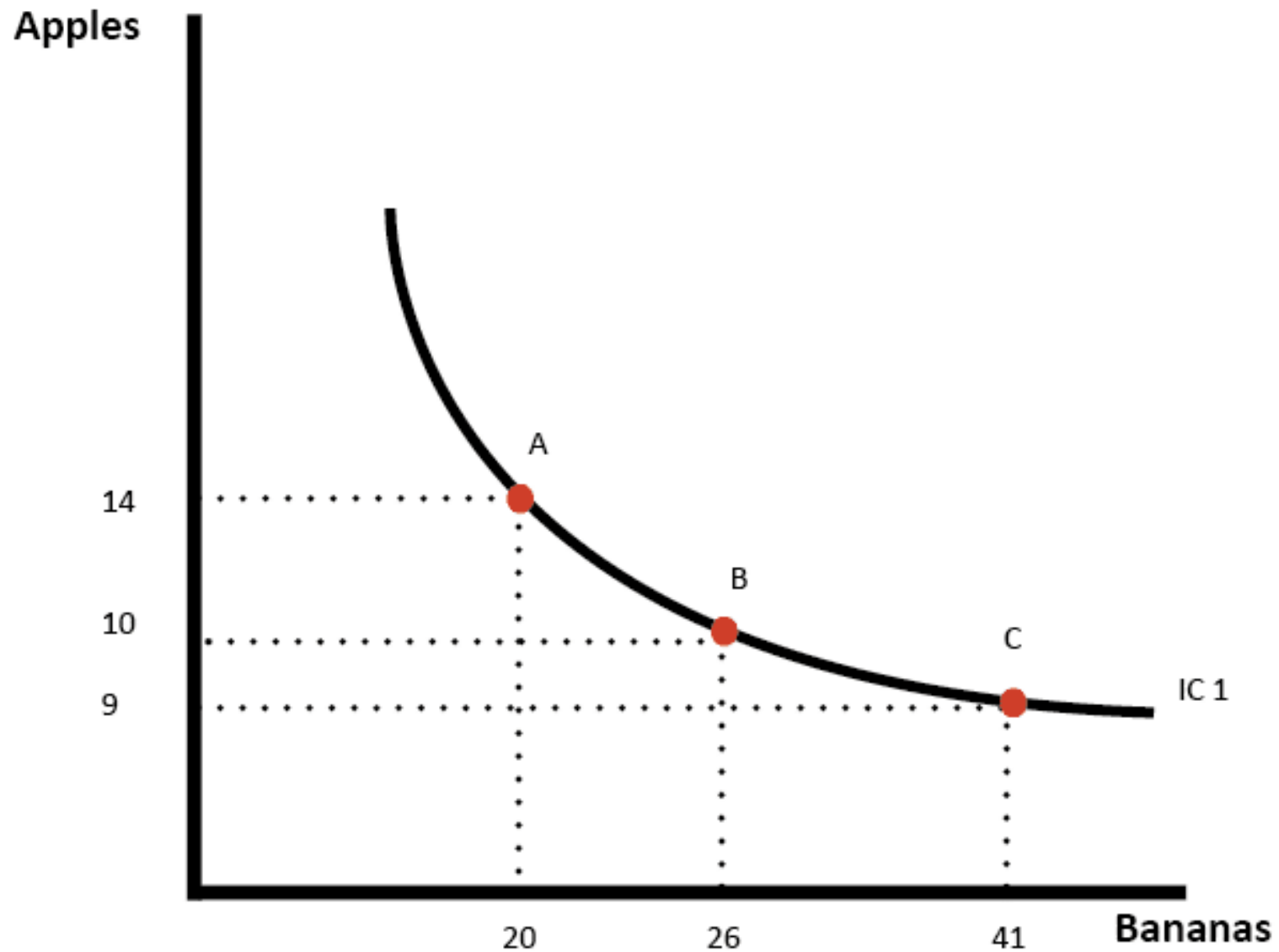
# MARGINAL RATE OF SUBSTITUTION(MRS)

- MRS is the rate at which one good is substituted by the other.
- MRS decides the slope of the Indifference Curve.
- Usually MRS keep on falling due to the operation of the Law of Diminishing Marginal Utility.
- So, indifference curve is convex to origin.
- $$\text{MRS} = \frac{\text{Units of Good Sacrificed}}{\text{More units of the other Goods consumed.}}$$

OR

$$\text{MRS}_{xy} = \frac{\Delta Y}{\Delta X}$$

# DIAGRAM



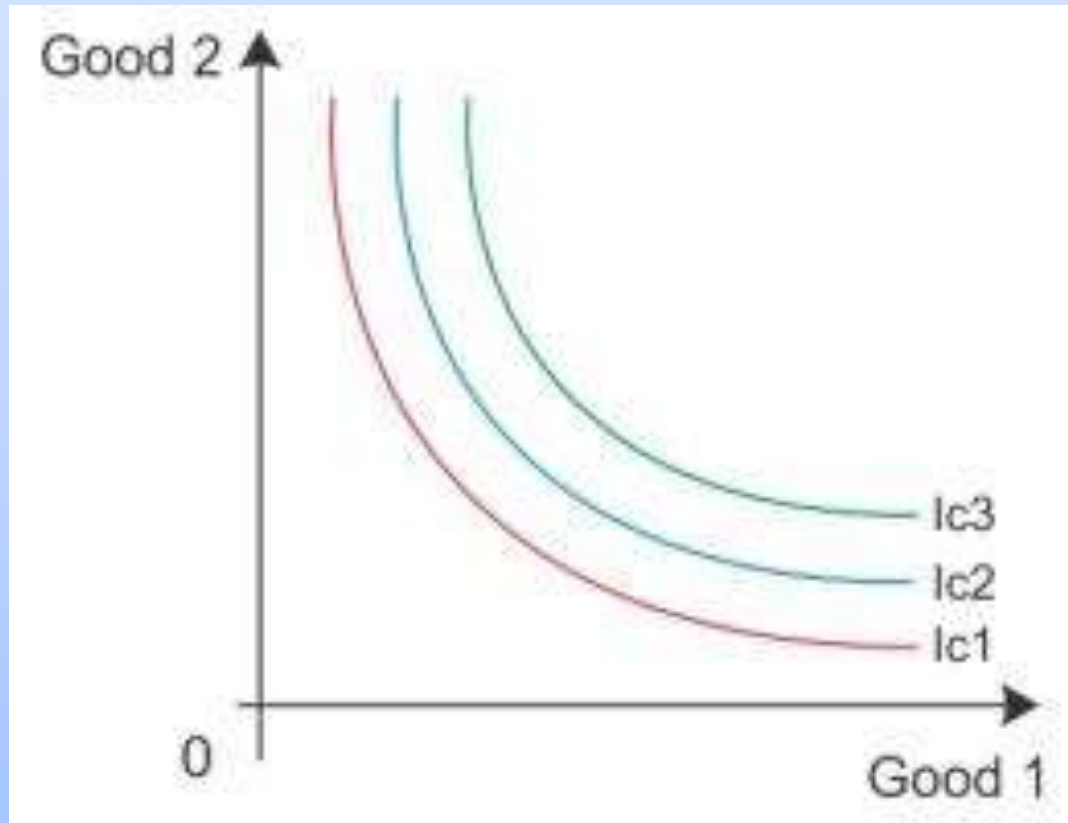
- Assumptions of Indifference Curve
- The consumer is rational. He aims at maximum satisfaction.
- The consumer spends his entire income on two commodities.
- The consumer can rank different combinations according to the satisfaction derived.

## Properties of Indifference Curve

- *It slopes downward from left to right.* It shows that the consumer can increase the consumption of one good only by reducing the consumption of the other.
- *It is convex to origin.* It is due to the decreasing the Marginal Rate of Substitution. MRS falls due to the operation of the Law of Diminishing Marginal Utility.
- *Higher Indifference shows higher level of satisfaction.* When the indifference curve shifts rightward, the consumer is able to get more of both the goods or at least more of one good without reducing the other.

# INDIFFERENCE MAP

- An Indifference Map refers to a set of Indifference Curves placed together in a diagram.
- Each curve represents a certain level of satisfaction.



# Budget Set

- It refers to different combinations of two goods that a consumer can afford to buy with his given income and prices in the market.

COMBINATIONS	GOOD X	GOOD Y
A	0	10
B	1	8
C	2	6
D	3	4
E	4	2
F	5	0

- EQUATION OF BUDGET SET

$$P_x Q_x + P_y Q_y \leq M$$

$P_x$  – Price of X

$Q_x$  – Quantity of X

$P_y$  – Price of Y

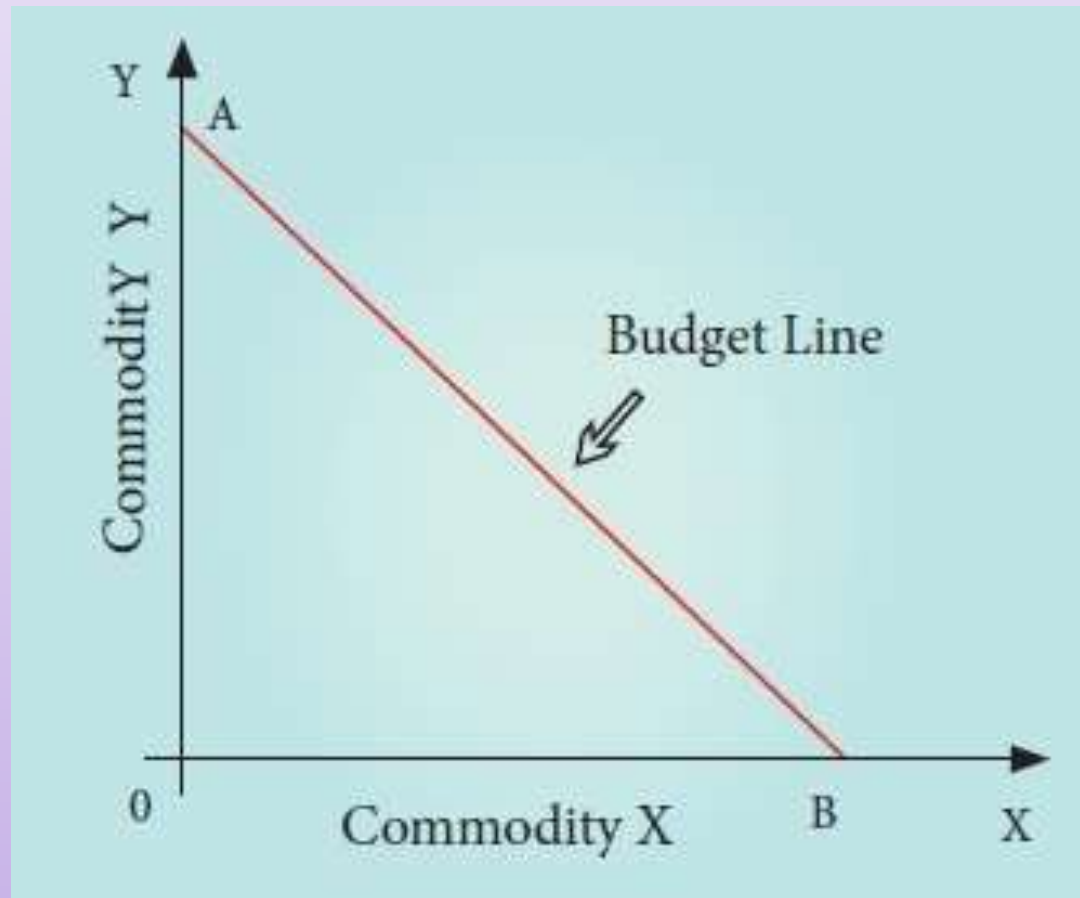
$Q_y$  – Quantity of Y

$M$  – Money Income



# BUDGET LINE

- Budget Line is a diagram which shows different combinations of two goods that a consumer can afford to buy with his given income and prices in the market.



- EQUATION OF LINE

$$P_x Q_x + P_y Q_y = M$$

$P_x$  – Price of X

$Q_x$  – Quantity of X

$P_y$  – Price of Y

$Q_y$  – Quantity of Y

$M$  – Money Income

# SLOPE OF THE BUDGET LINE

- Budget Line slopes downward from left to right.
- It shows that we can increase the consumption of one good only by reducing the consumption of the other.

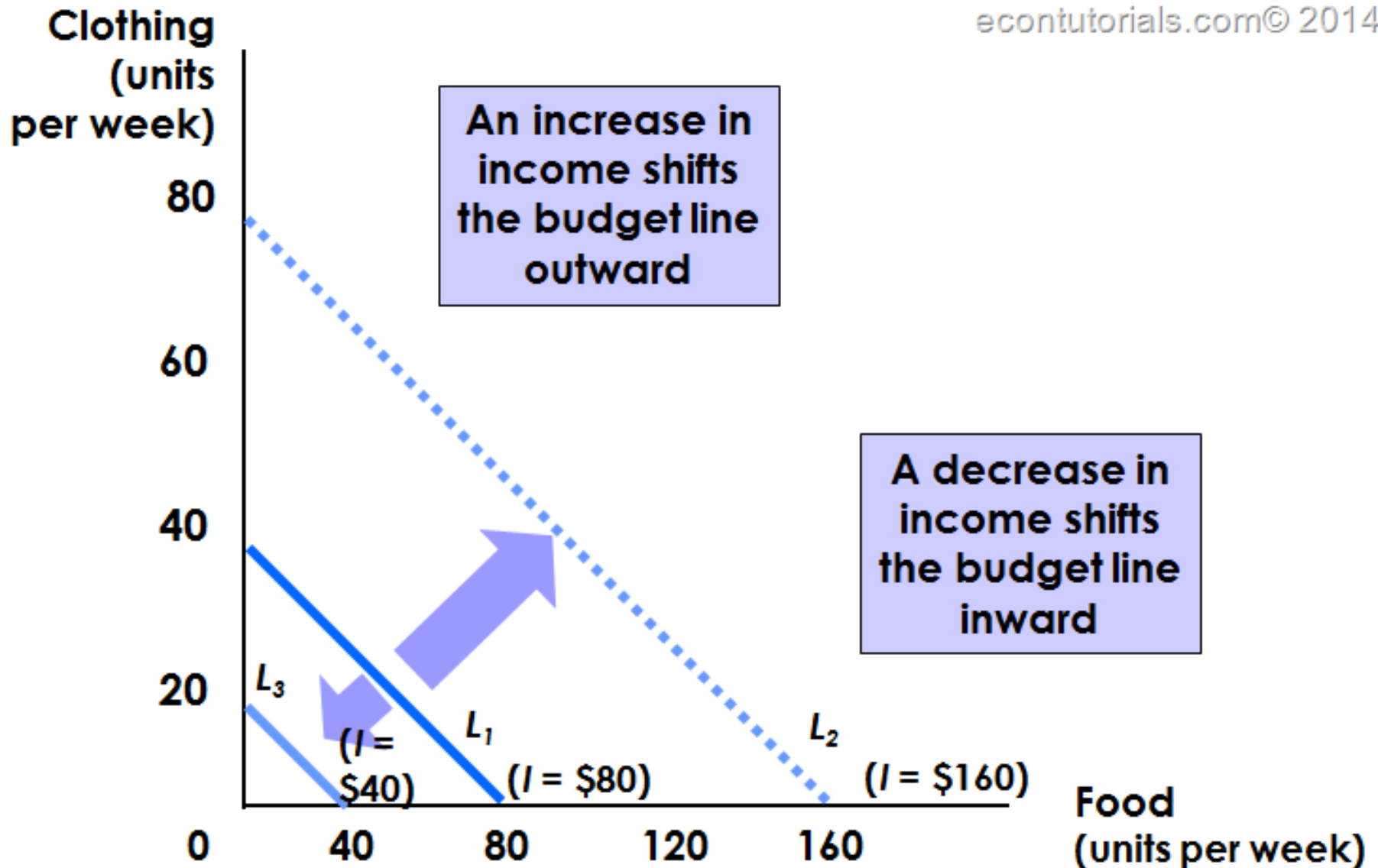
$$\text{Slope of the budget line} = \frac{P_x}{P_y}$$

$P_x$  – Price of X

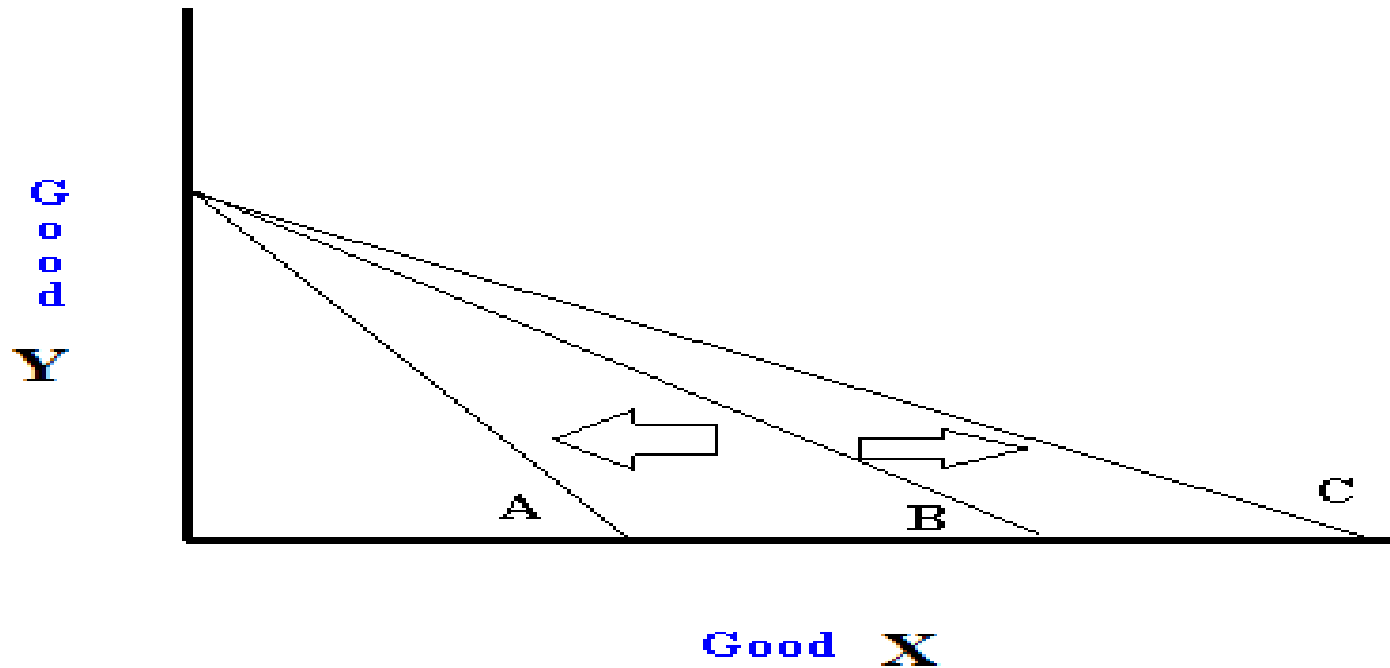
$P_y$  – Price of Y

# SHIFT IN BUDGET LINE

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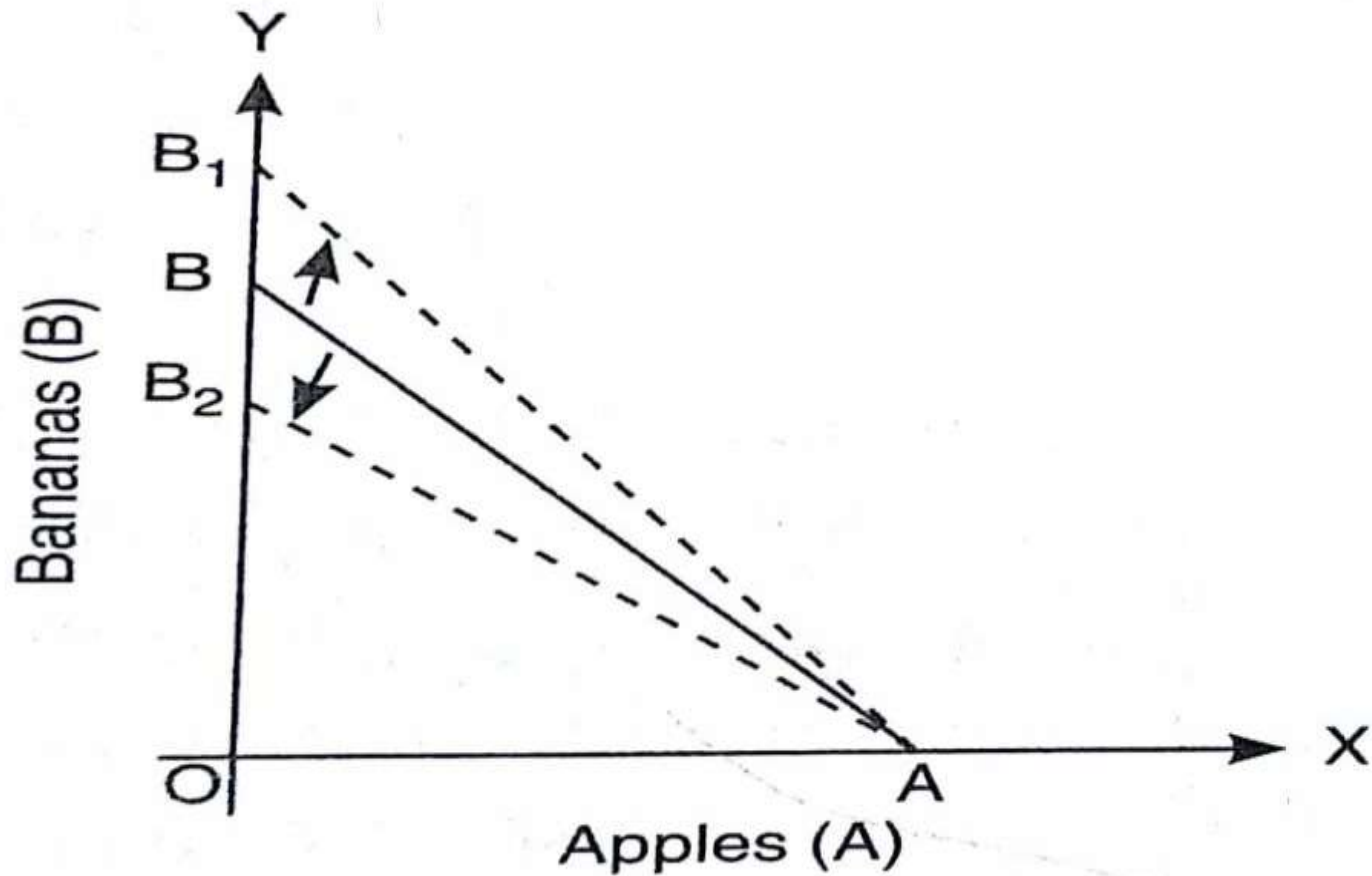


# ROTATION OF BUDGET LINE



Fall in the price of Good X leads to rightward rotation of the Budget Line along the X axis.

Rise in the price of Good X leads to leftward rotation of the Budget Line along the X axis.



Fall in the price of Good B leads to rightward rotation of the Budget Line along the Y axis.

Rise in the price of Good B leads to leftward rotation of the Budget Line along the Y axis.

# CONSUMER'S EQUILIBRIUM UNDER INDIFFERENCE CURVE ANALYSIS(ORDINAL UTILITY ANALYSIS)

- First Condition:

Indifference curve should be tangent to Budget Line.

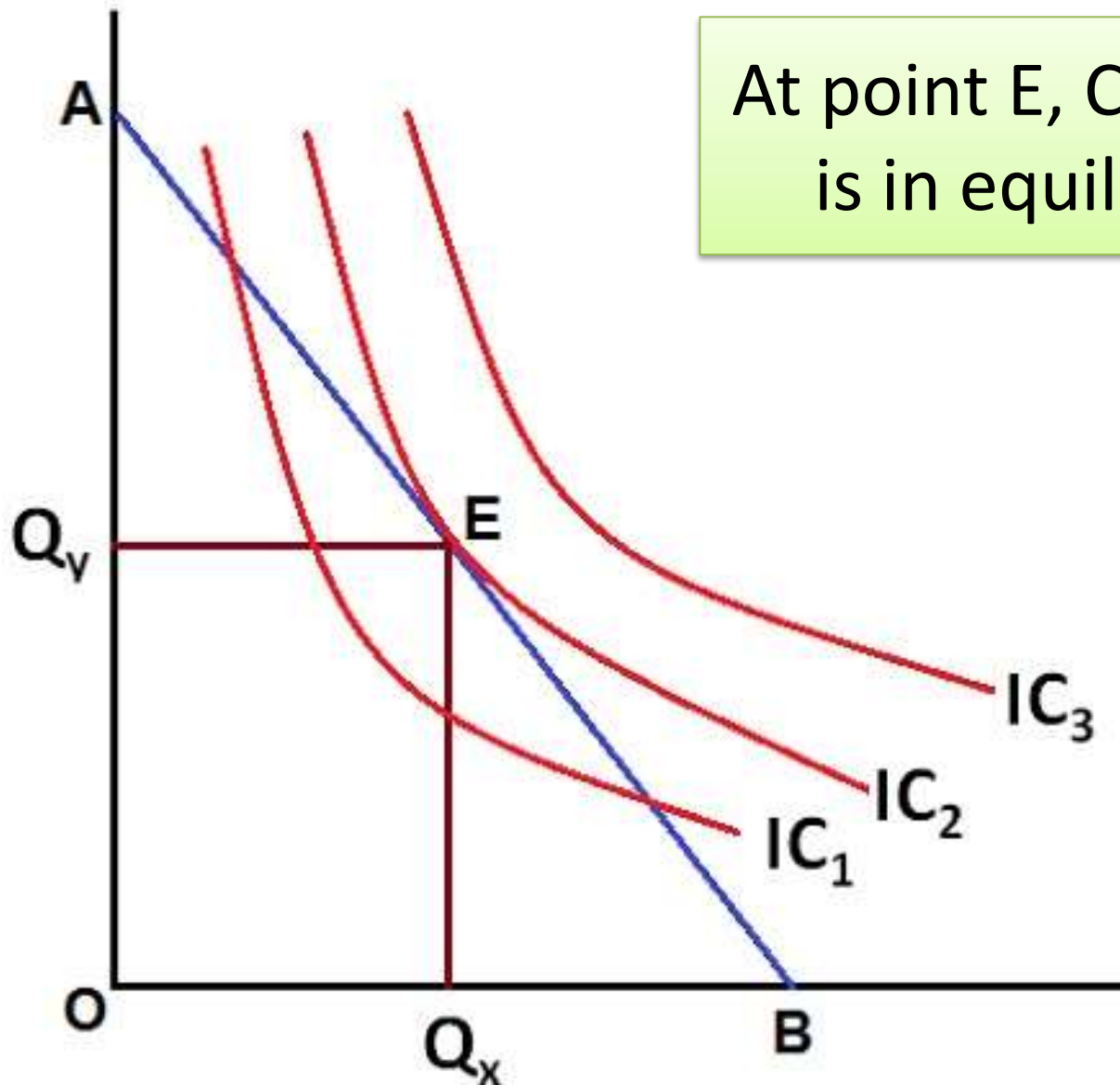
$$MRS_{xy} = \frac{P_x}{P_y}$$

$MRS_{xy}$  – Slope of the Indifference Curve.

$\frac{P_x}{P_y}$  - Slope of the Budget Line

When  $MRS_{xy}$  is equal to  $\frac{P_x}{P_y}$ , Indifference Curve will be tangent to Budget Line

# DIAGRAM



At point E, Consumer is in equilibrium



- If  $MRS_{xy} > \frac{P_x}{P_y}$ , the consumer will increase the consumption of X and reduce the consumption of Y.  $MRS_{xy}$  will fall and will become equal to  $\frac{P_x}{P_y}$
- If  $MRS_{xy} < \frac{P_x}{P_y}$ , the consumer will reduce the consumption of X and increase the consumption of Y.  $MRS_{xy}$  will increase and will become equal to  $\frac{P_x}{P_y}$

# Second Condition

- At the point of tangency Indifference curve should be convex to origin.
- It means that the MRS should be falling.
- It shows that the Law of Marginal Utility is in operation.

