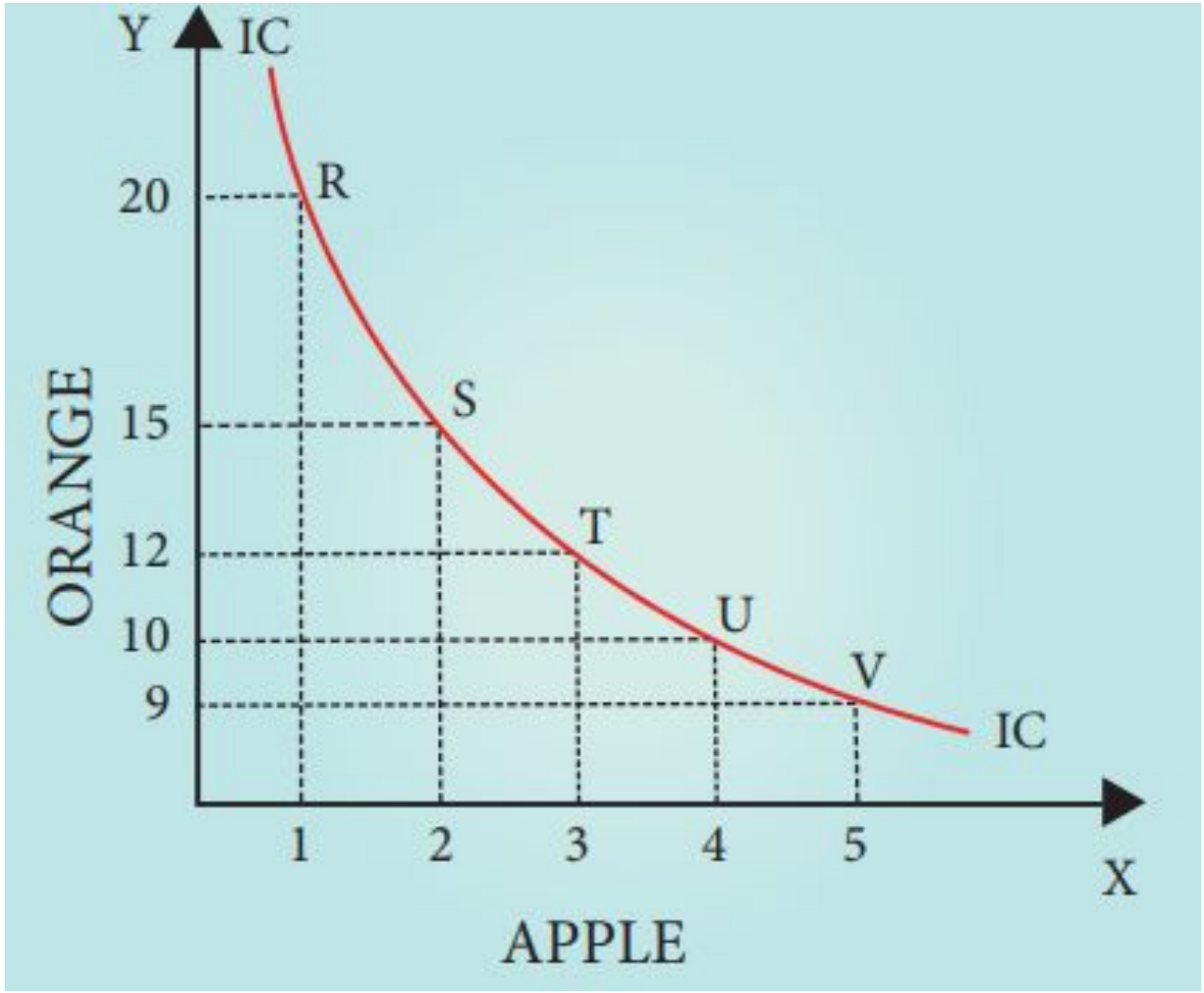
Ordinal Utility

What is Ordinal utility?

- It is not possible for the consumers to measure the utility derived from consumption of good numerically.
- Being a psychological phenomena, consumers can rank their preferences (utility can be ordered).
- In other words, utility is a subjective thing. This is also known as indifference curve analysis.
- Indifference curve is used to explain the consumer behaviour.

What is an Indifference Curve

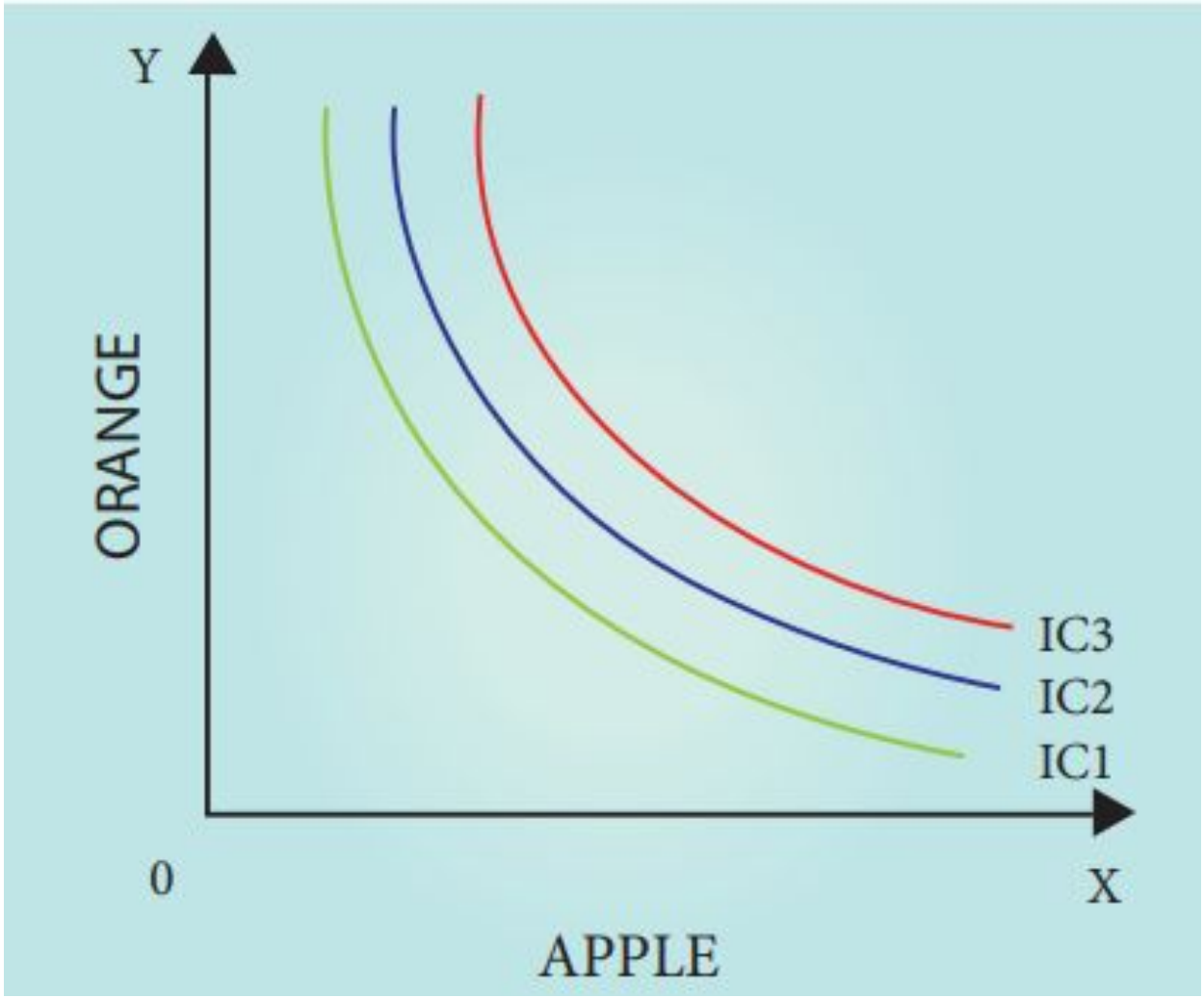


- An indifference curve is a graph that shows different combinations of two goods or services that provide an individual with an equal level of satisfaction or utility.
- Indifference curves are essential in understanding consumer preferences, especially in microeconomics.

Indifference Set/ Schedule

Apples	Oranges
1	20
2	15
3	12
4	10
5	9

An Indifference Map



Assumptions

1.Utility is ordinal

Utility being a psychological feeling is not quantifiable.

2. The consumer is rational

A consumer aims at satisfaction given his income and prices of goods and services.

3. Raking of Bundles

The consumer is only able to tell the order of his preference for other basket of goods.

4.Preferences of indifferences of a consumer are Transitive

Consumers preference over bundles of goods is consistent; able to rank all available goods in a consistent manner

If consumer prefers X to Y and Y to Z; then he will also prefer X to Z.

5. More is better

Ceteris paribus, more of a commodity is better than less of it.

6. Completeness

The consumer is capable of ranking alternative bundles of good.

7. Divisibility

An indifference curve is smooth and continuous which means that the two goods are highly divisible and those levels of satisfaction also change in a continuous manner.

8. Diminishing marginal rate of substitution

It is assumed that as more and more of X are substituted for Y, the consumer will be willing to give up fewer and fewer unit of X or vice-versa.

What is Marginal Rate of Substitution

- The marginal rate of substitution (MRS) is the rate at which a consumer would be willing to forgo a specific quantity of one good for more units of another good at the same utility level.

- The marginal rate of substitution is represented as a slope on the indifference curve, and each point along the curve shows the number of units of each good that would be substitutable for another.

Combination	*Good X*	*Good Y*	MRS_{xy}
A	1	12	4
B	2	8	3
C	3	5	2
D	4	3	1
E	5	2	

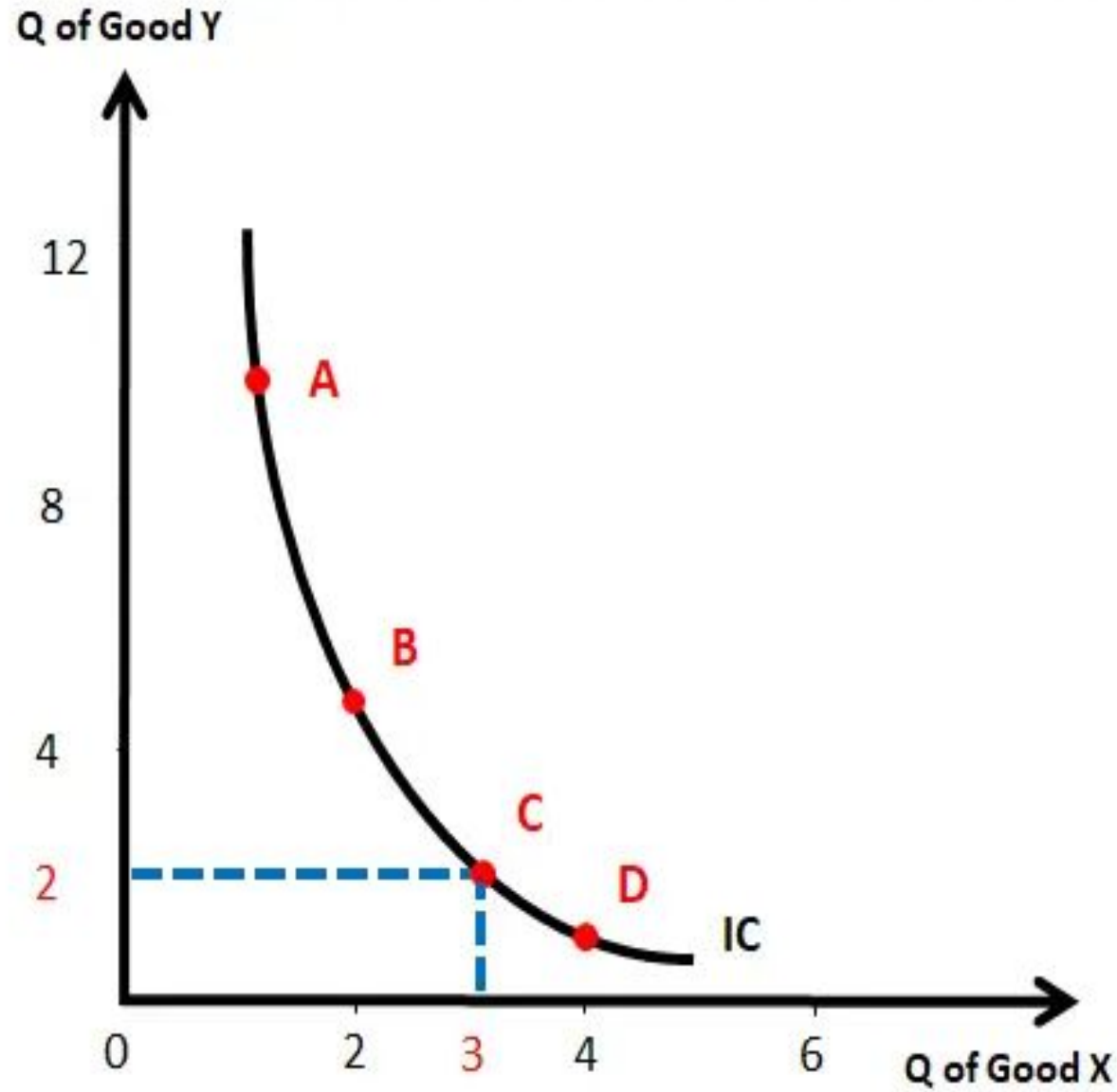
Diminishing Marginal Rate of Substitution (MRS)

The law states that as consumers get more and more units of a commodity, he will be willing to give up less and less units of another commodity, so that the level of satisfaction of the consumer remains the same.

Reasons:

1. The want for a particular good is satiable.
2. The goods are imperfect substitutes of each other.

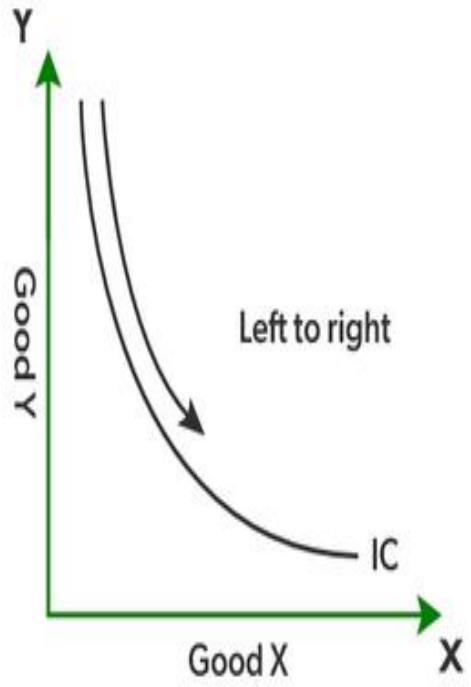
Combinations	X	Y	MRS=ΔY/ΔX
A	1	10	-
B	2	5	5/1=5
C	3	2	3/1=3
D	4	1	1/1=1



Properties of Indifference Curve (IC)

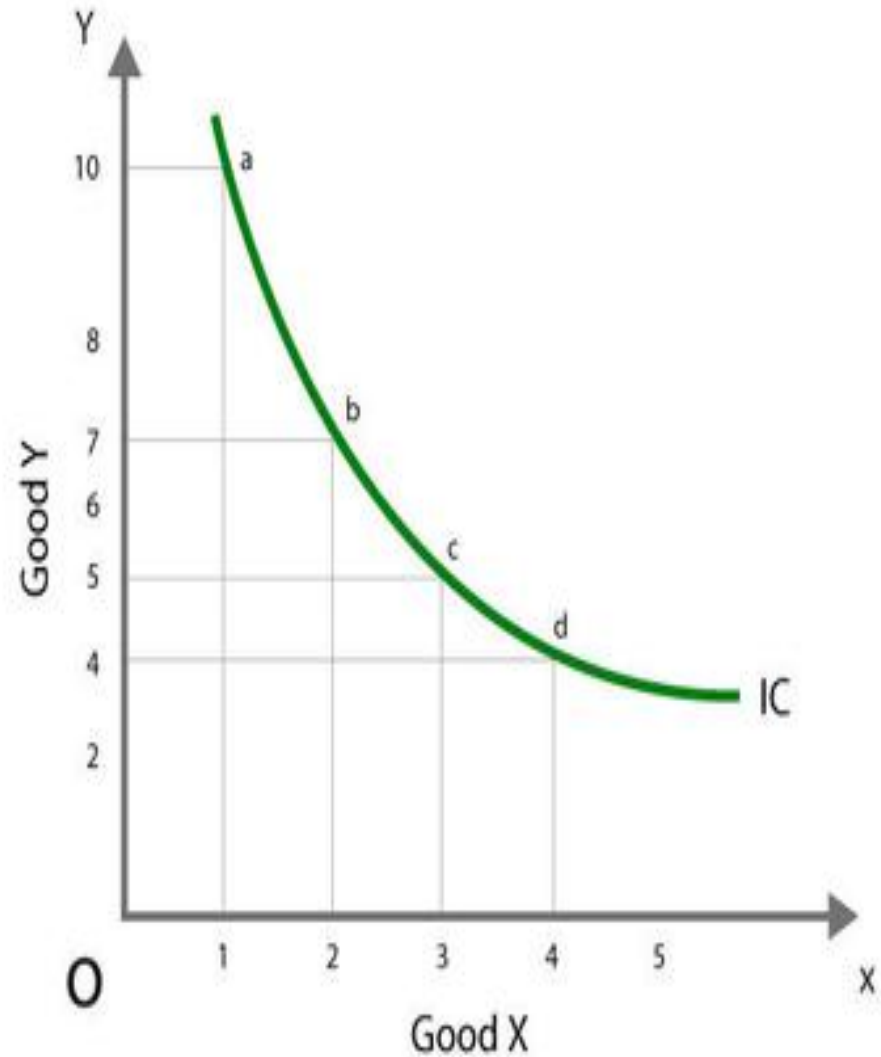
1. Indifference Curve slopes downward to the right.

- An Indifference Curve has a negative slope.
- This property follows the “More is good than less” assumption.
- It implies that if the quantity of one good is reduced then the quantity of the other good is increased. It is only then that the satisfaction level would remain constant at different points of the IC.



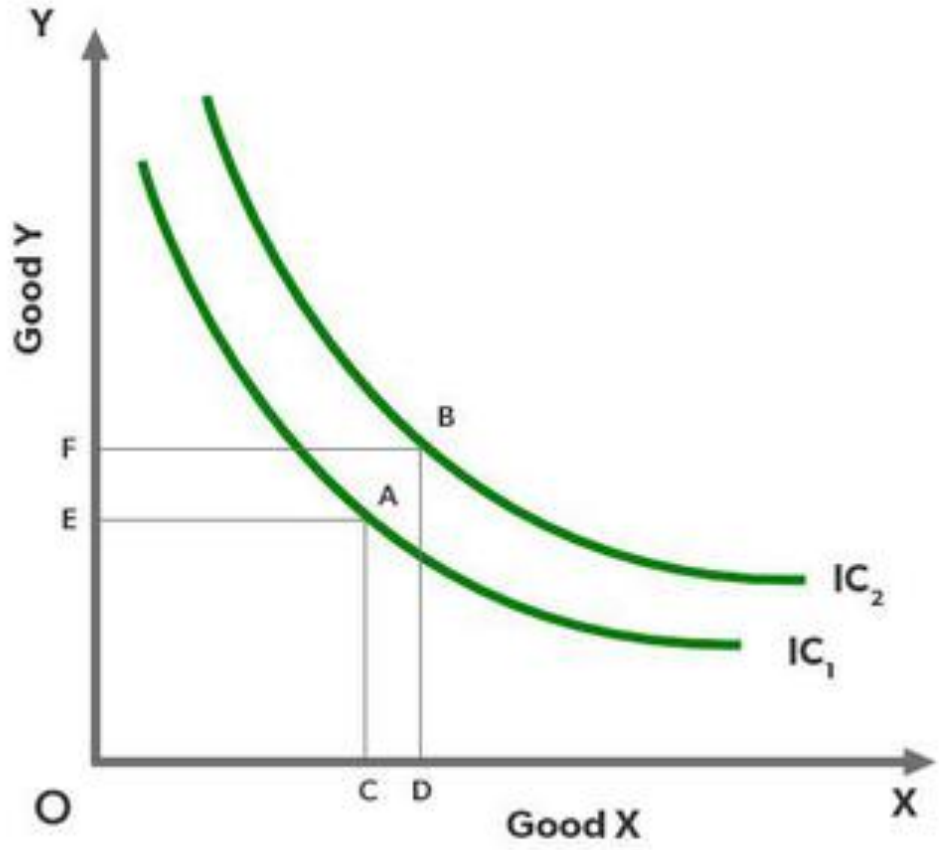
2. Indifference curve are always convex to origin.

- Indifference Curve are usually convex to origin.
- This property of IC follows the “diminishing marginal rate of substitution” assumption.
- It states that as consumer gets more and more unit of commodity X, he will be willing to give up less and fewer units of Y, so that the level of satisfaction of the consumer remains same.


Y
10
8
7
6
5
4
2
Good Y
a
b
c
d
IC
O
1
2
3
4
5
X
Good X

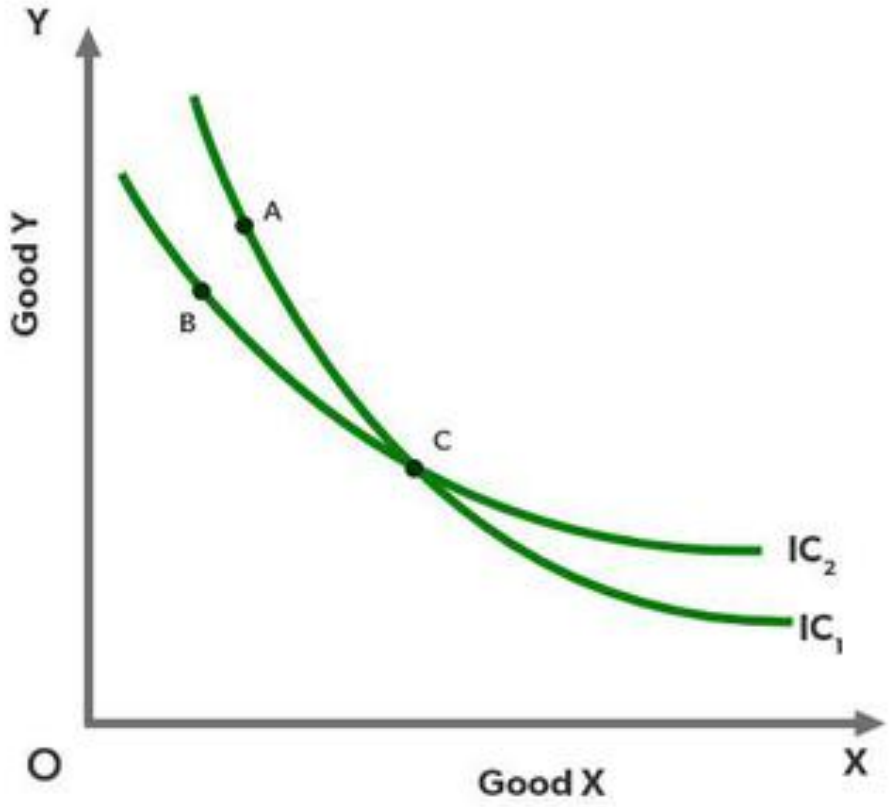
3. Higher indifference curve represents higher level of satisfaction.

- Higher the indifference curve, higher is the satisfaction.



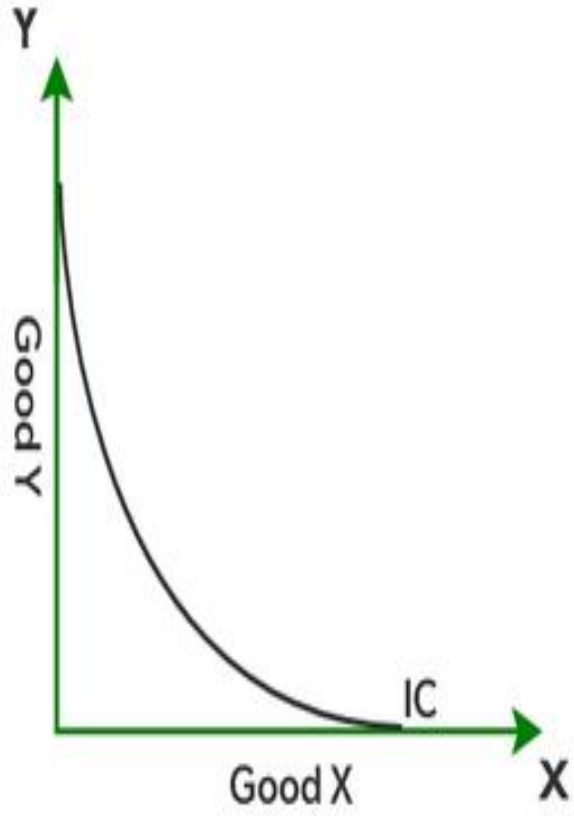
4. Indifference curve can never intersect with each other.

- Indifference curve cannot intersect each other. If they intersect with each other then consumer's choices will not be consistent and transitive.



5. Indifference curve can never touch X-axis or Y-axis.

- If an indifference curve touches the horizontal or vertical axis, it implies that the customer prefers only one commodity.
- Because when it touches axes, one of the commodities become zero quantities.
- This violates the basic definition of an indifference curve.

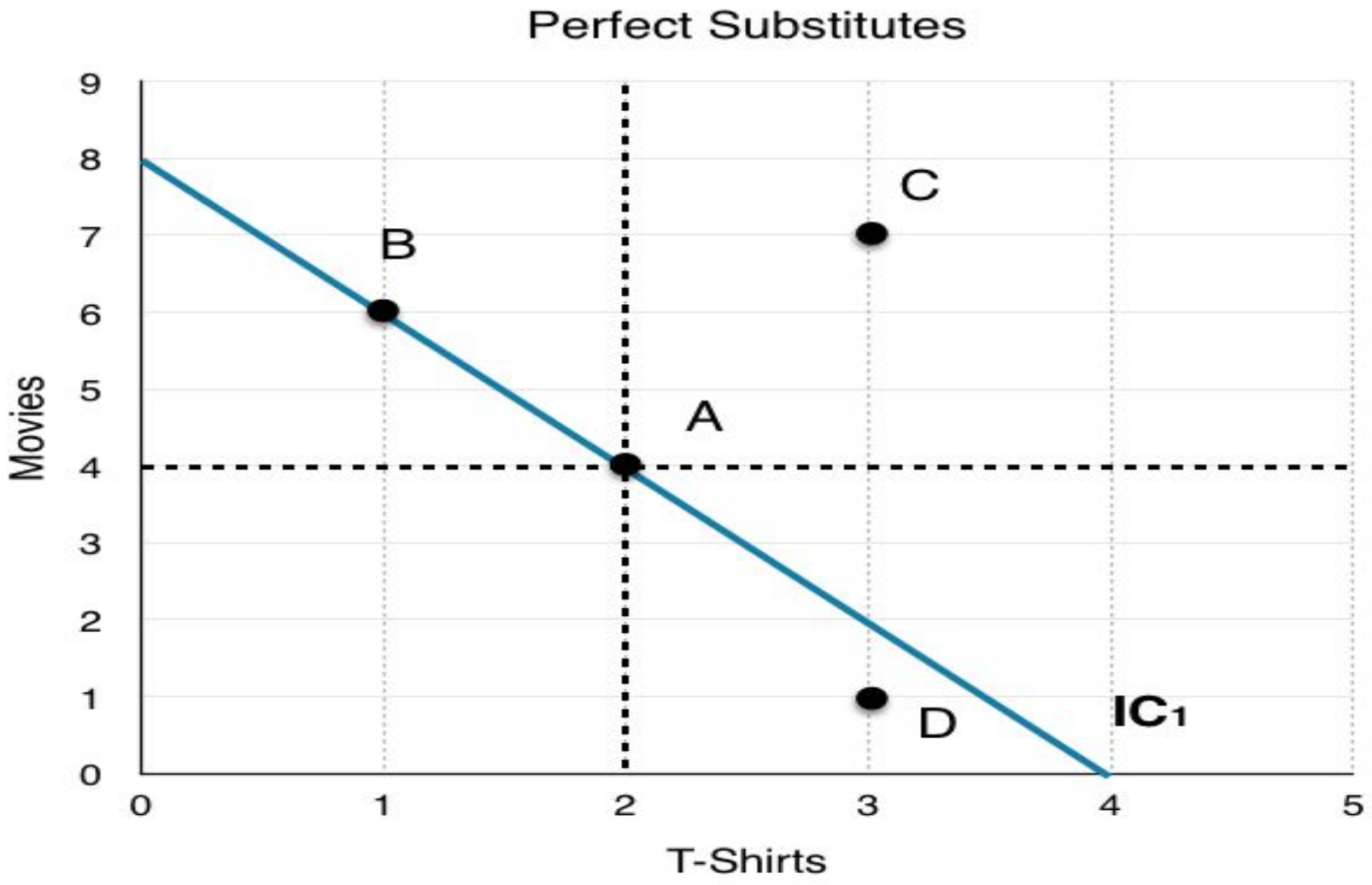


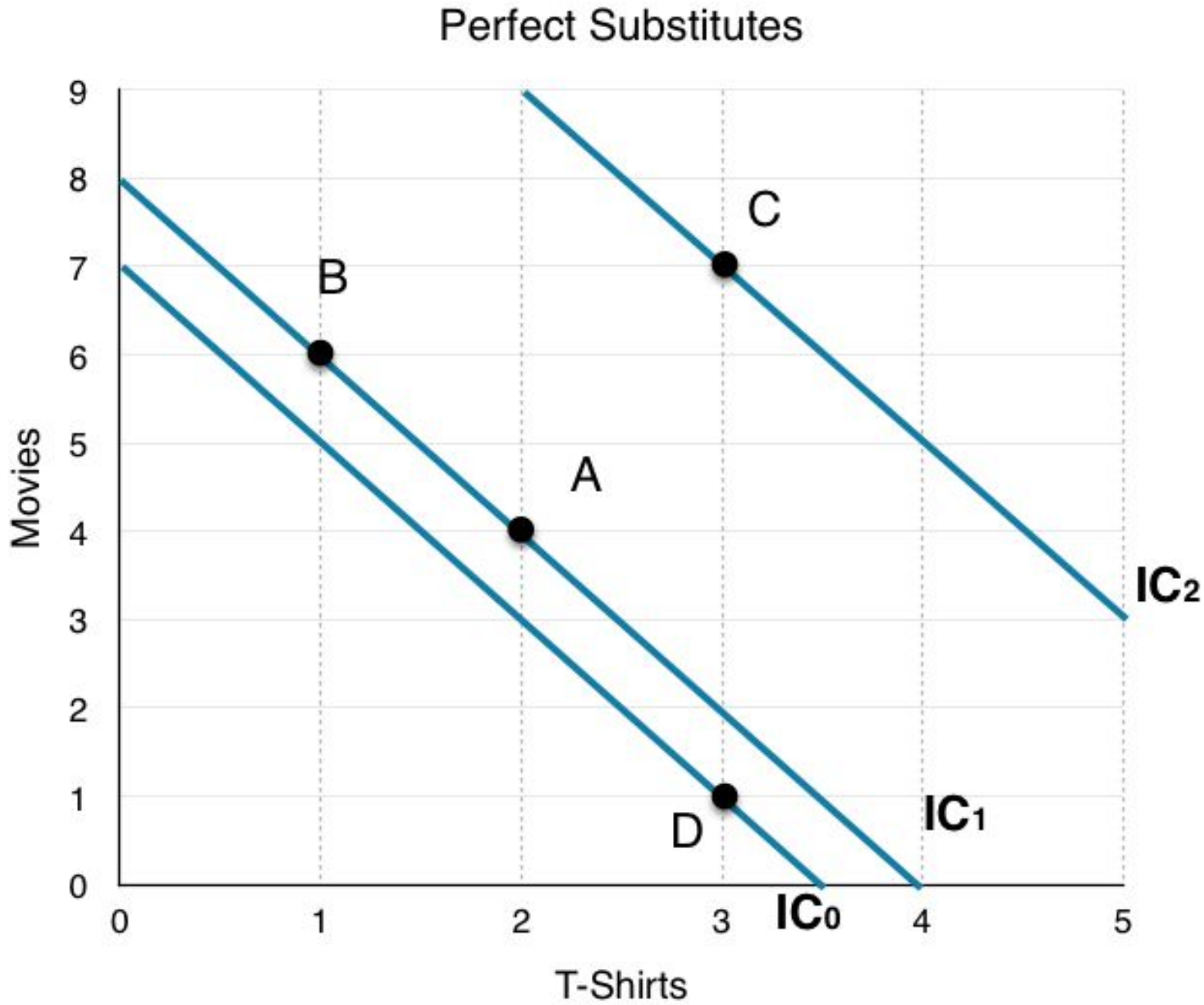
6. The indifference curve need not be parallel to each other

- Indifference curves are not necessarily parallel to each other. Though they are falling, negatively inclined to the right, yet the rate of fall will not be the same for all indifference curves.

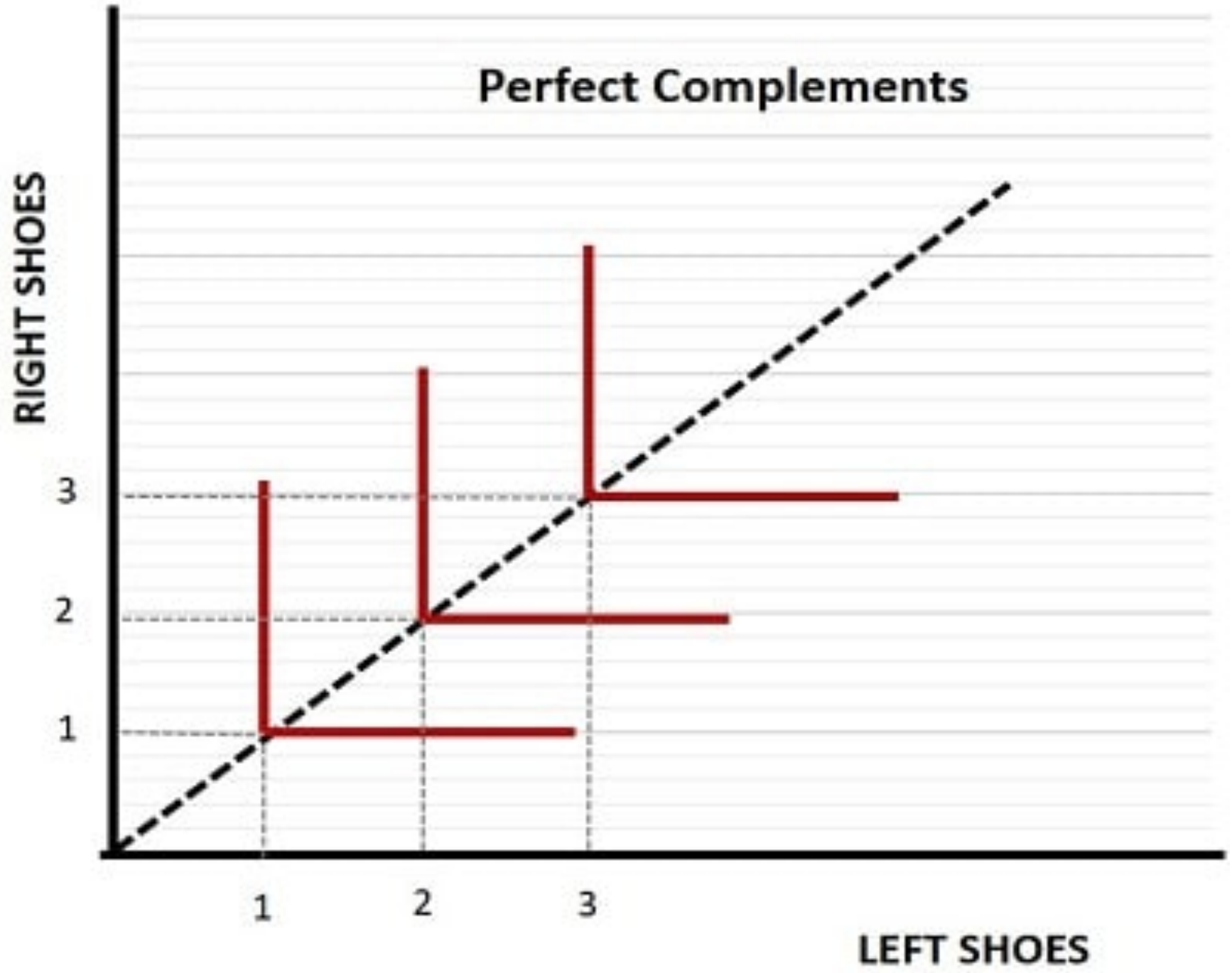
- In other words, the diminishing marginal rate of substitution between the two goods is essentially not the same in the case of all indifference schedules.

Indifference Curves: Perfect Substitutes




Perfect Substitutes
Movies
T-Shirts
0
1
2
3
4
5
6
7
8
9
A
B
C
D
IC2
IC1
IC0

Indifference Curves: Perfect Complements



Indifference Curves: Neutral Goods

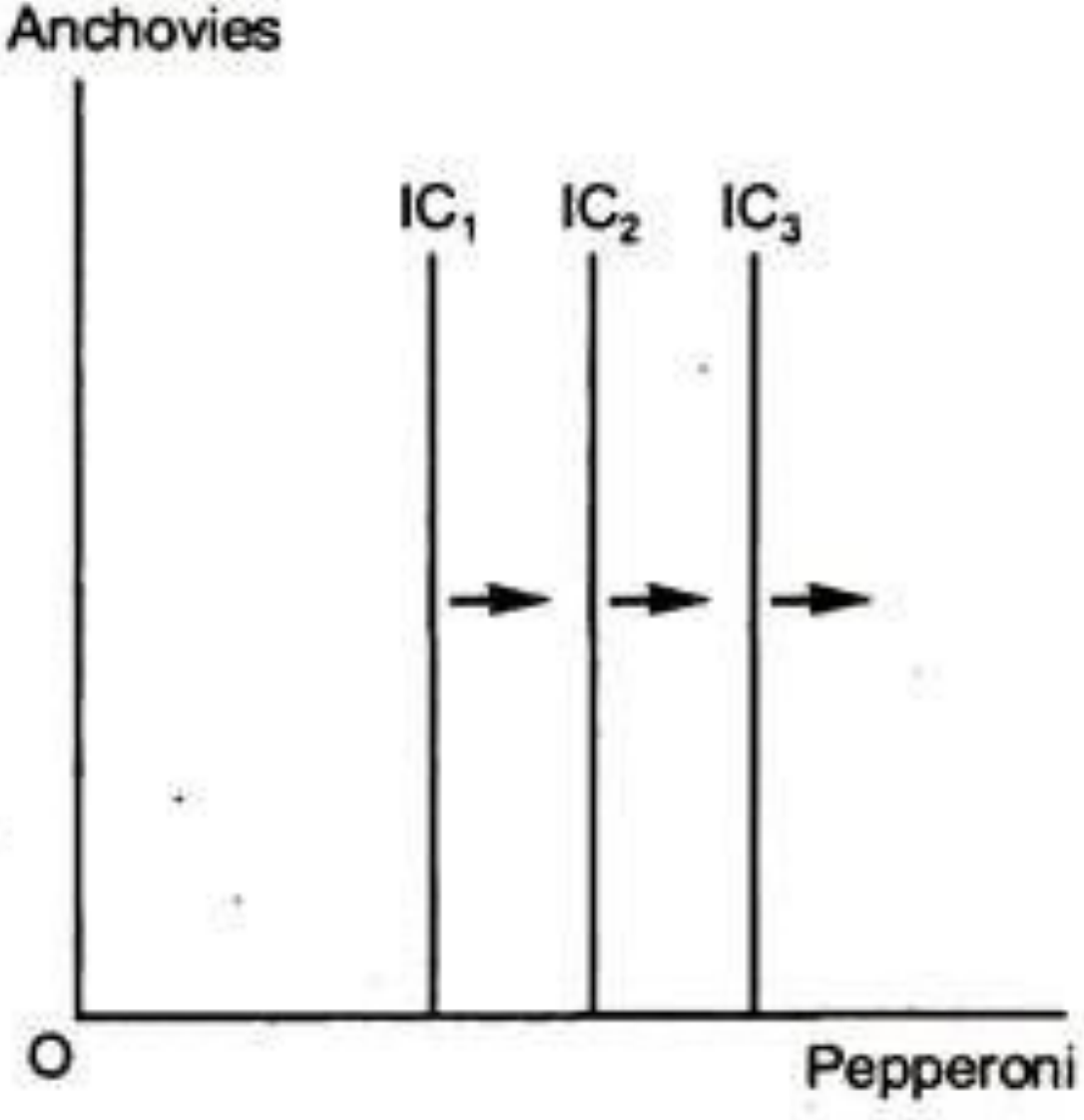


Figure A: Anchovies is neutral good

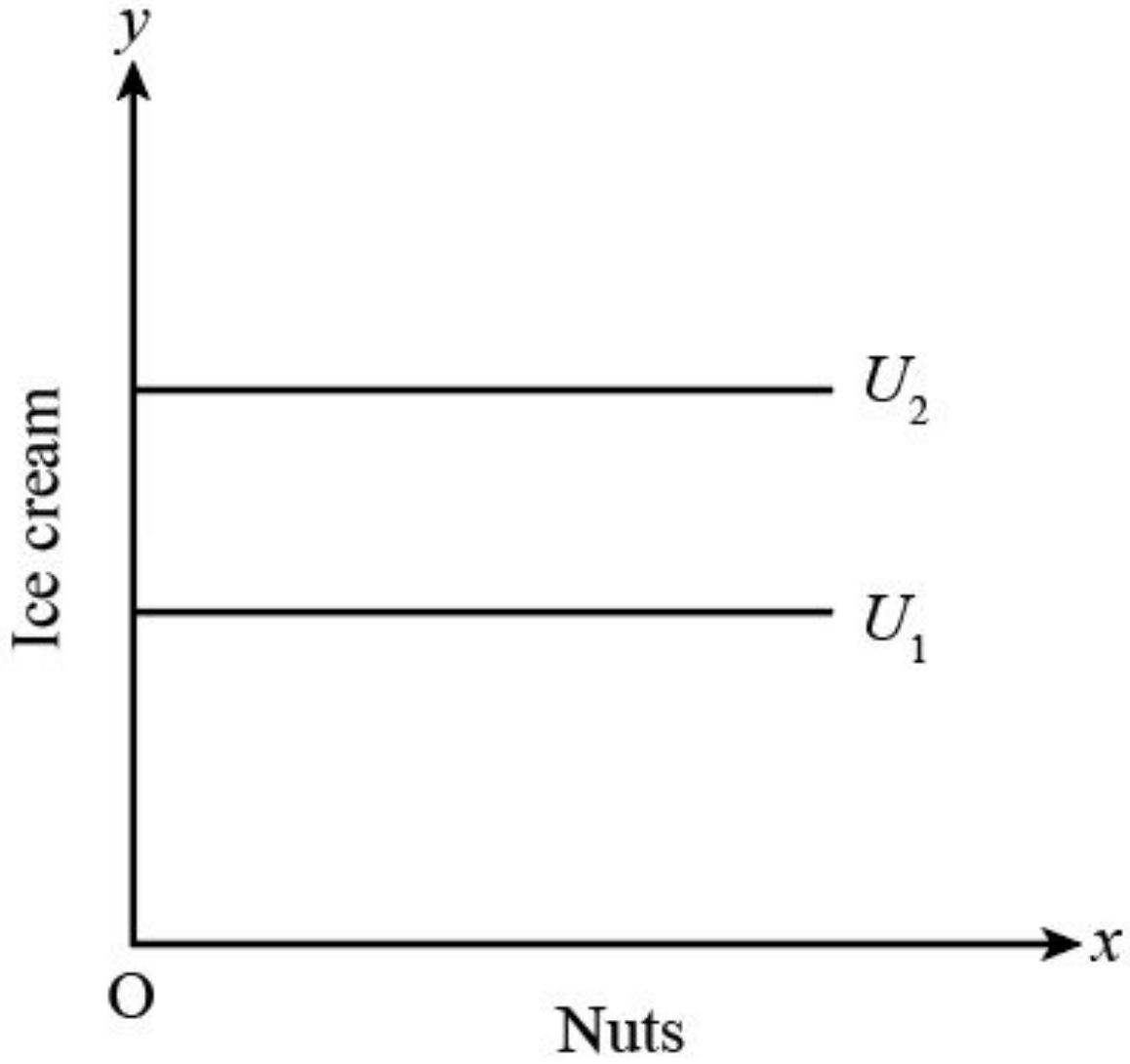
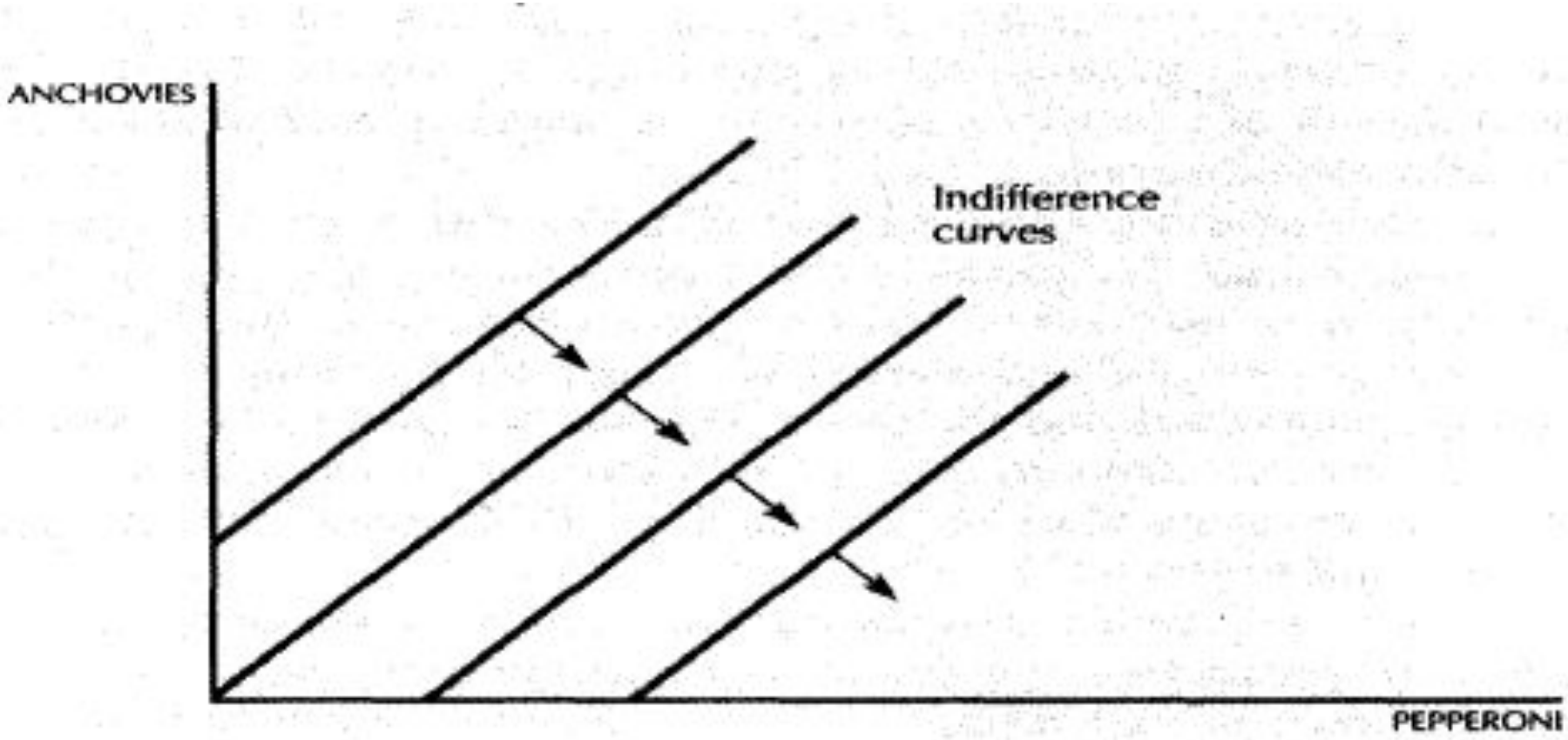


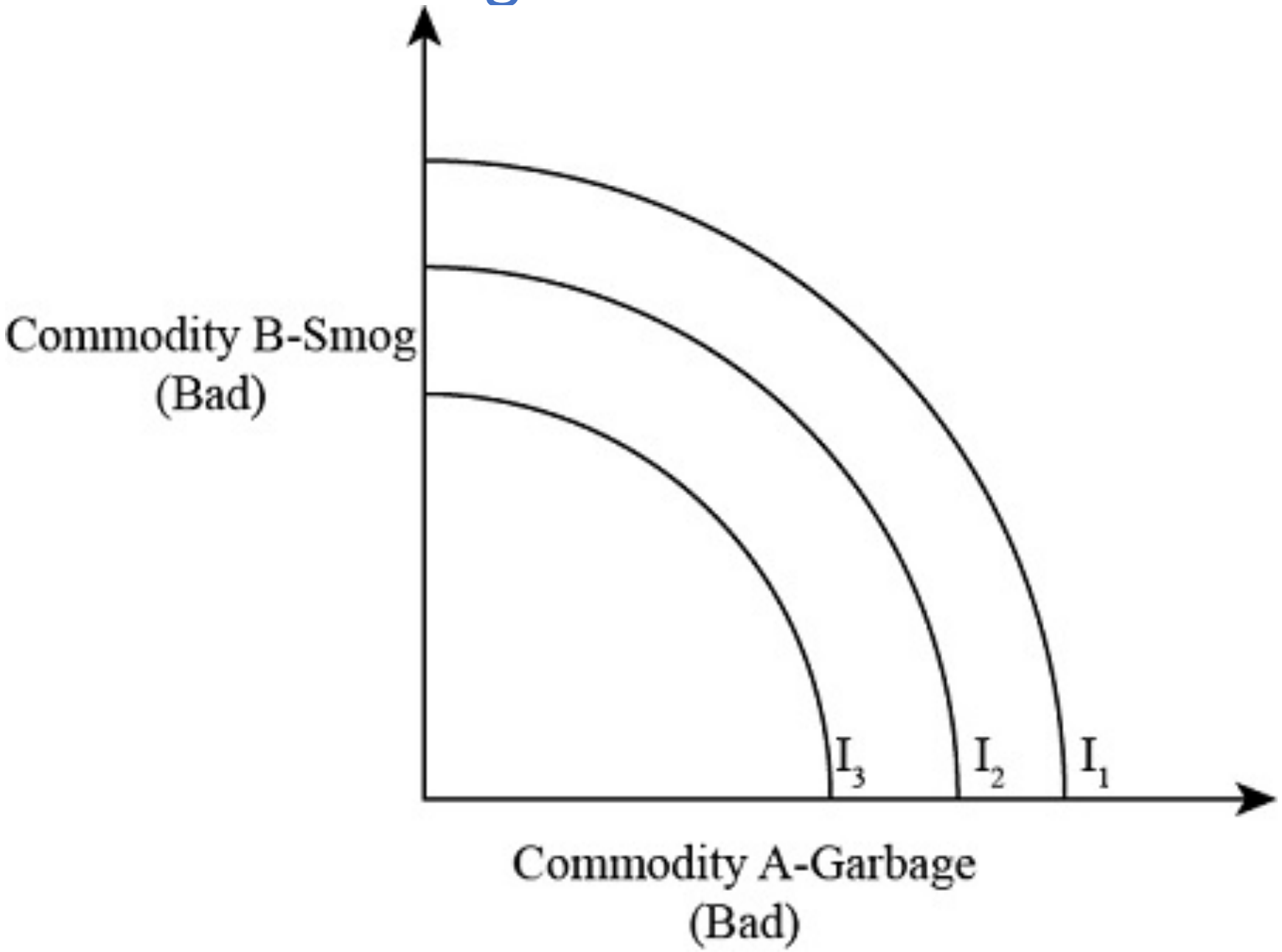
Figure B: Nuts is the neutral good

Indifference Curve: Bad Goods



Bads. Here anchovies are a "bad," and pepperoni is a "good" for this consumer. Thus the indifference curves have a positive slope.

What if both the goods are bad….



Budget line

- It is the graphical representation of all possible combinations of two goods which can be purchased with given income and prices, such that the cost of each of these combinations is equal to the money income of the consumer.

- The two basic elements of a budget line are as follows:

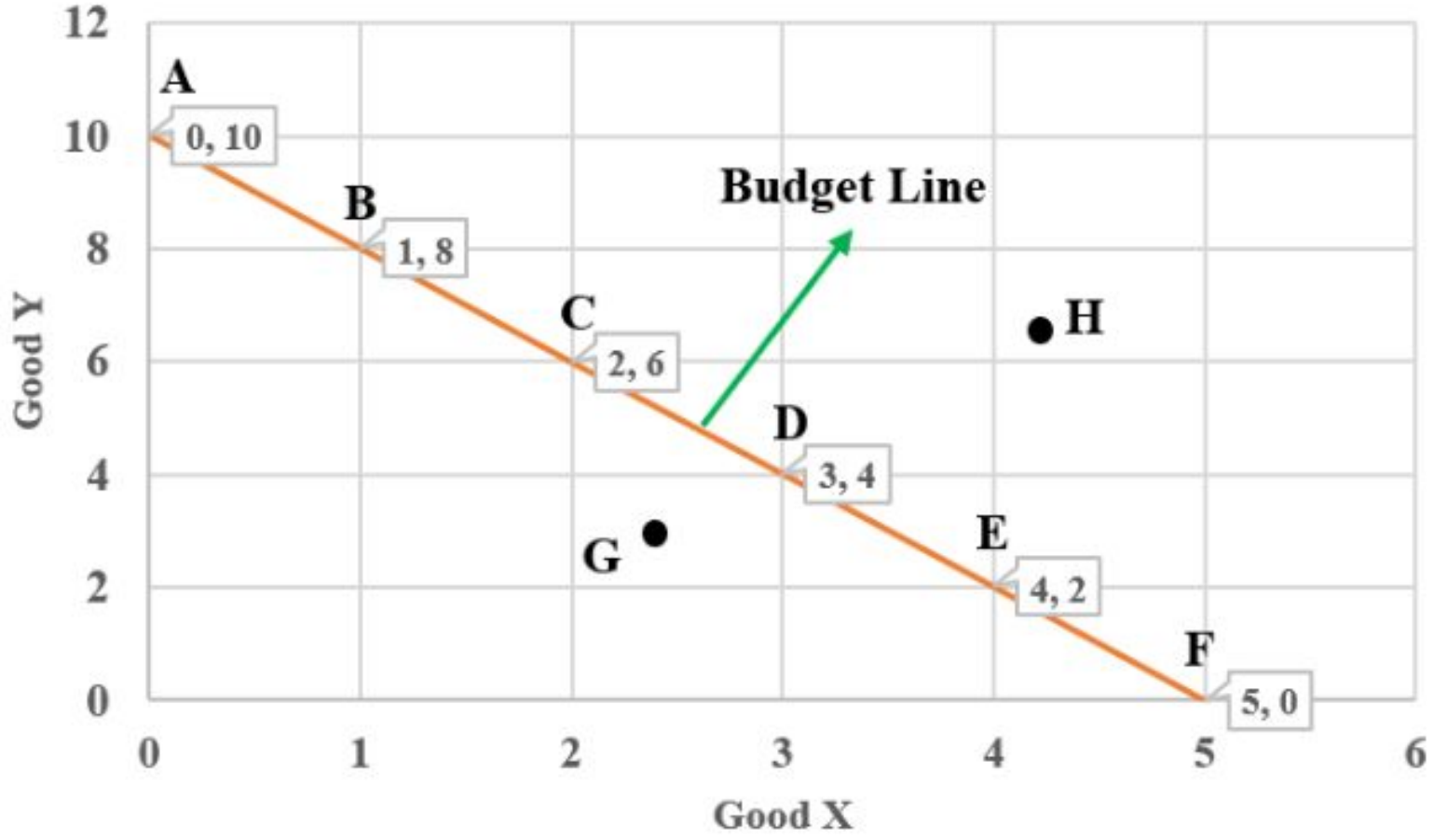
The consumer's purchasing power (his/her income)

The market value of both the products

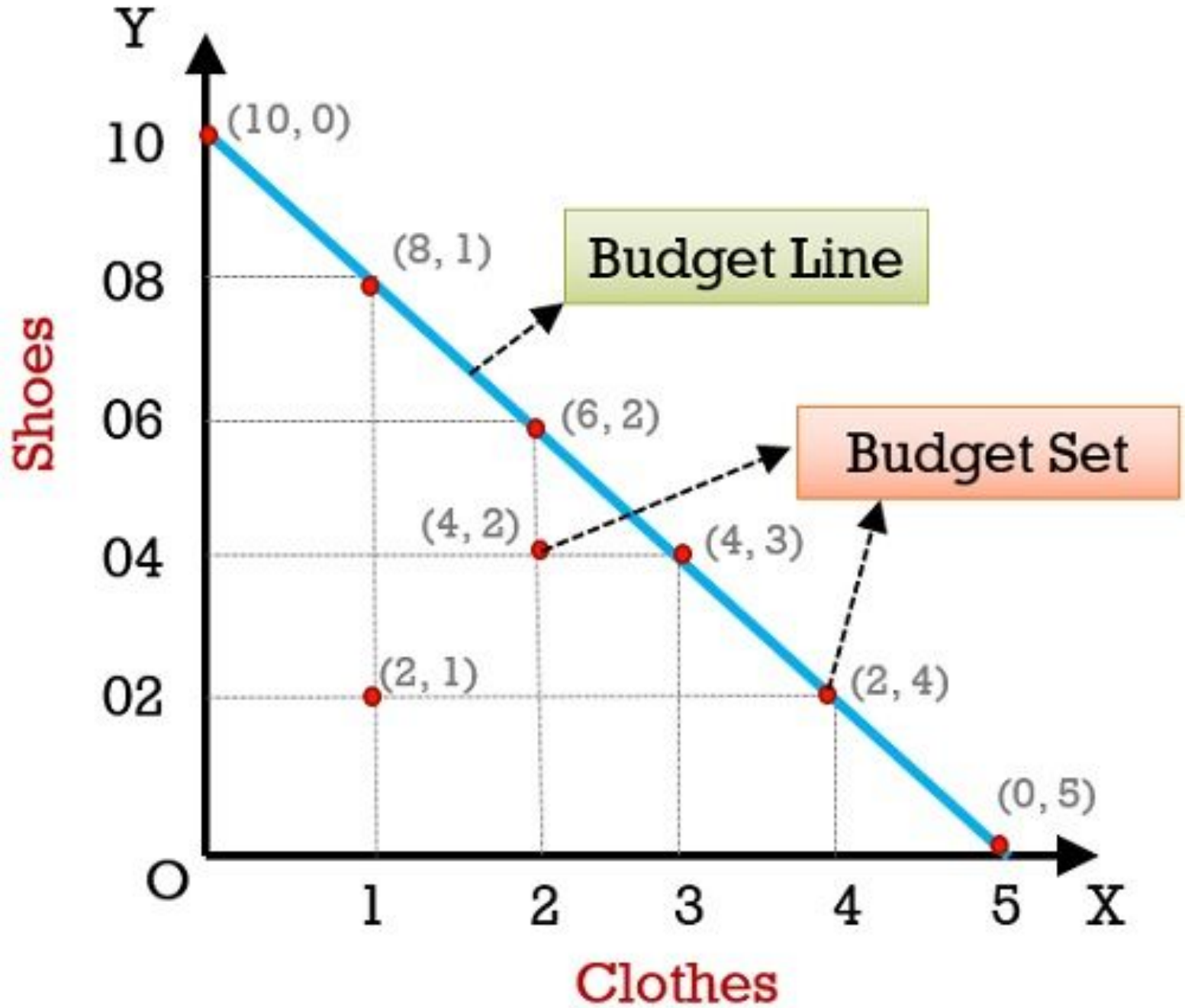
Suppose the available money income is Rs. 100, the price of good-X (PX) is Rs. 20 and that of good-Y (PY) is Rs. 10. The following schedule shows the possible quantities of purchase from the given money income and prices of the goods.

Combination	P_X	Q_X	P_XQ_X	P_Y	Q_Y	P_YQ_Y	Total Budget
A	20	0	0	10	10	100	100
B	20	1	20	10	8	80	100
C	20	2	40	10	6	60	100
D	20	3	60	10	4	40	100
E	20	4	80	10	2	20	100
F	20	5	100	10	0	0	100

Construction of Budget Line



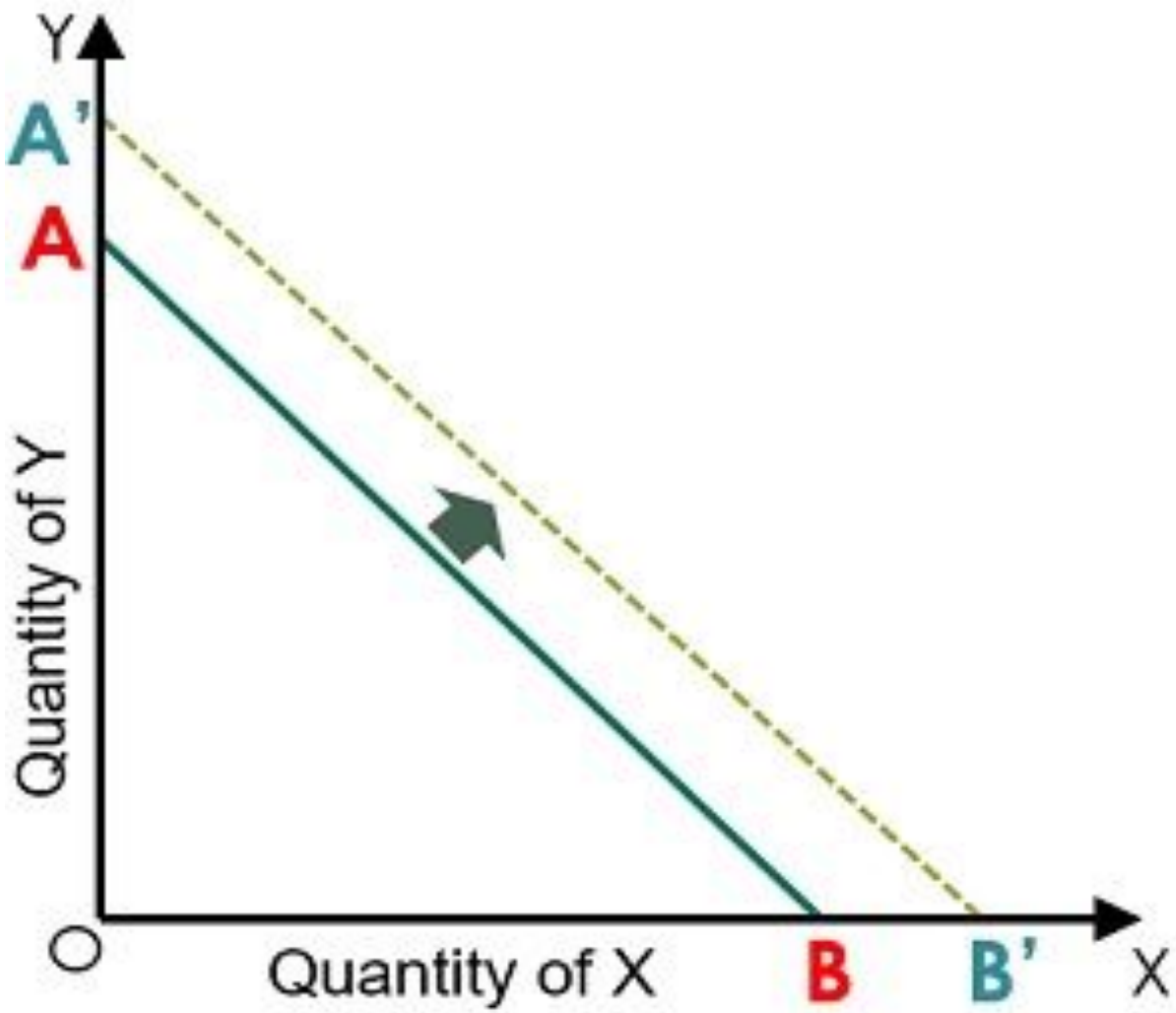
Price/Budget Line or Budget Constraint

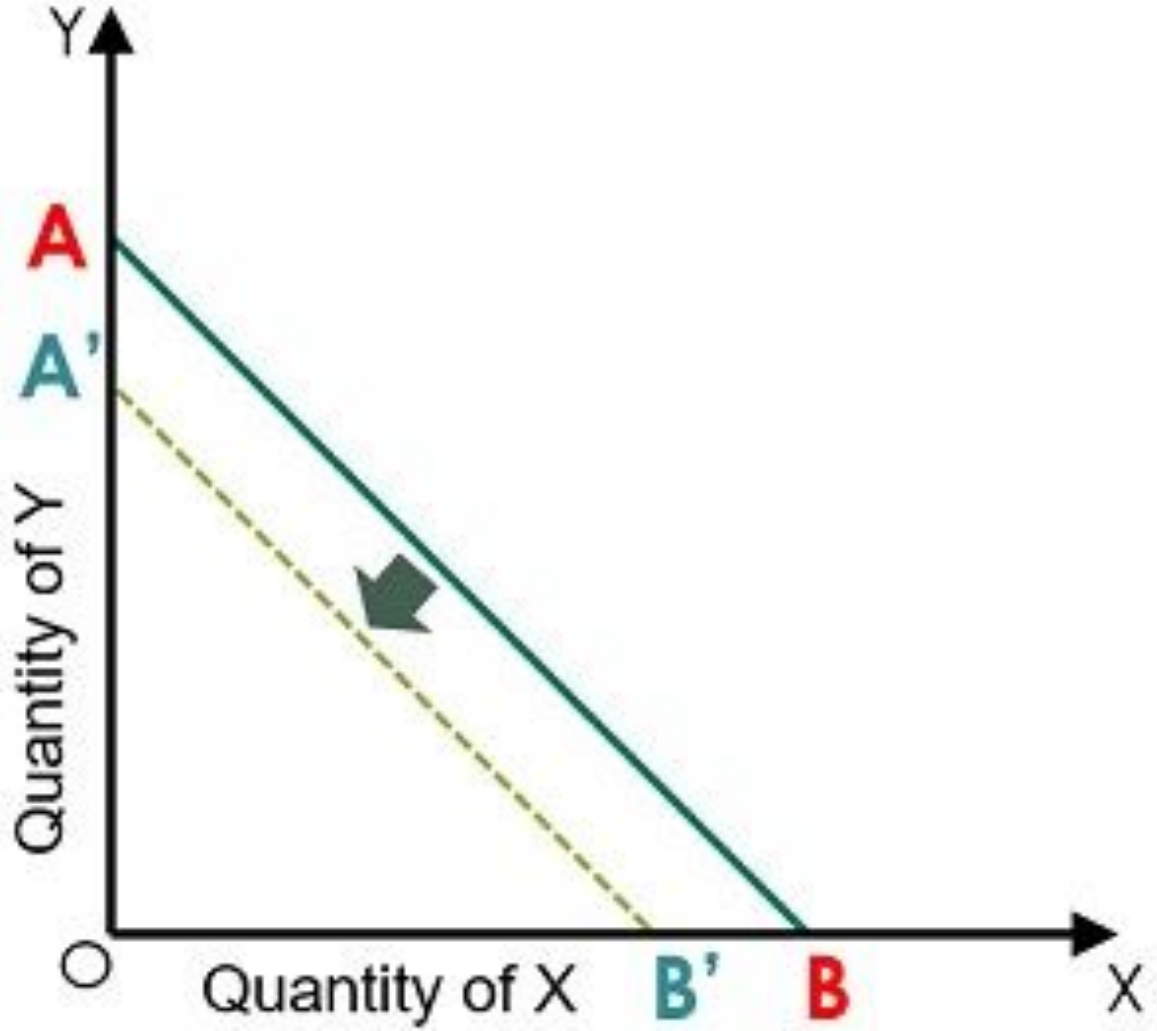

Y
10
08
06
04
02
O
1
2
3
4
5
X
Shoes
Clothes
(10, 0)
(8, 1)
(6, 2)
(4, 2)
(4, 3)
(2, 1)
(2, 4)
(0, 5)
Budget Line
Budget Set

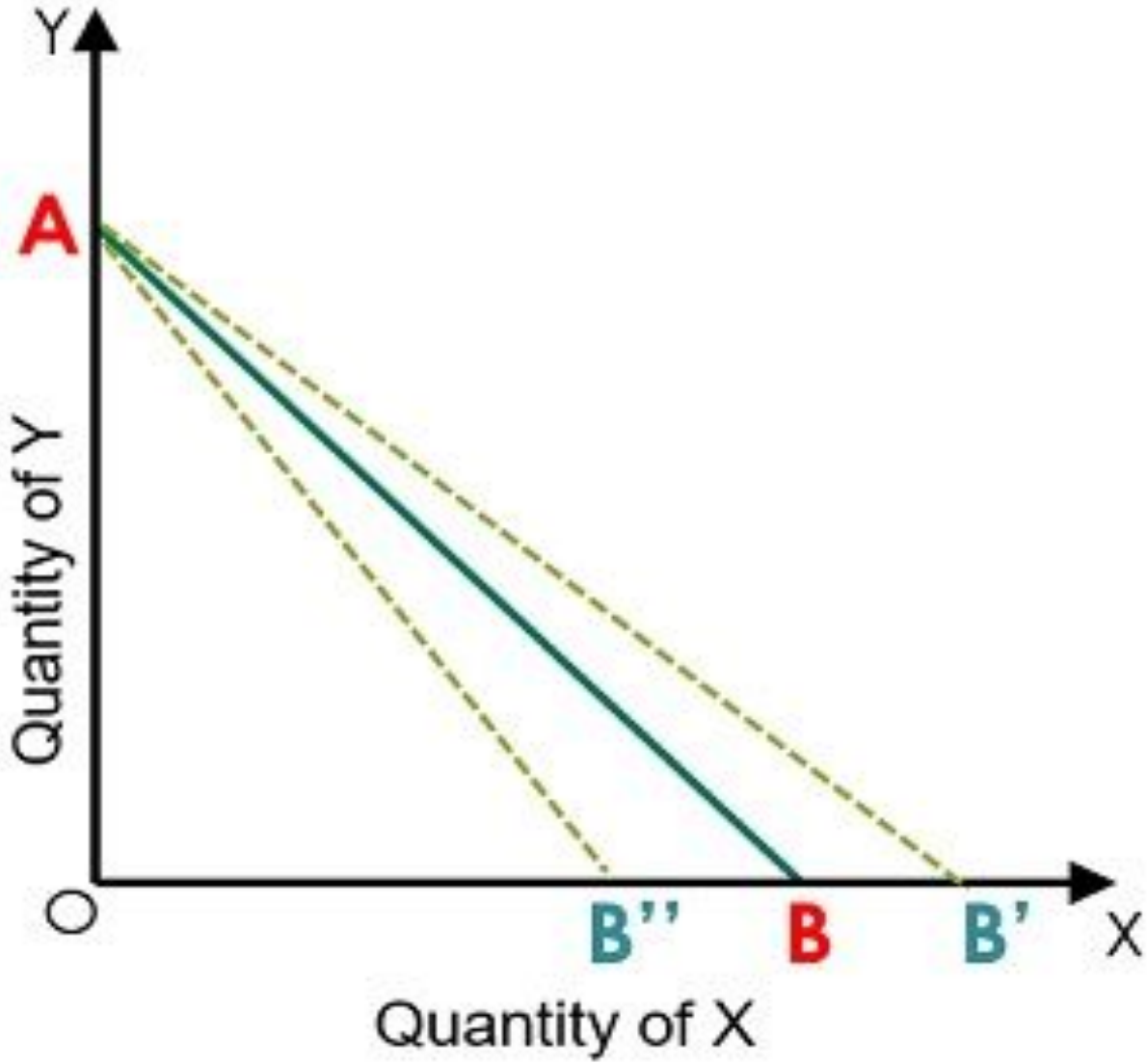
Assumptions of Budget Line

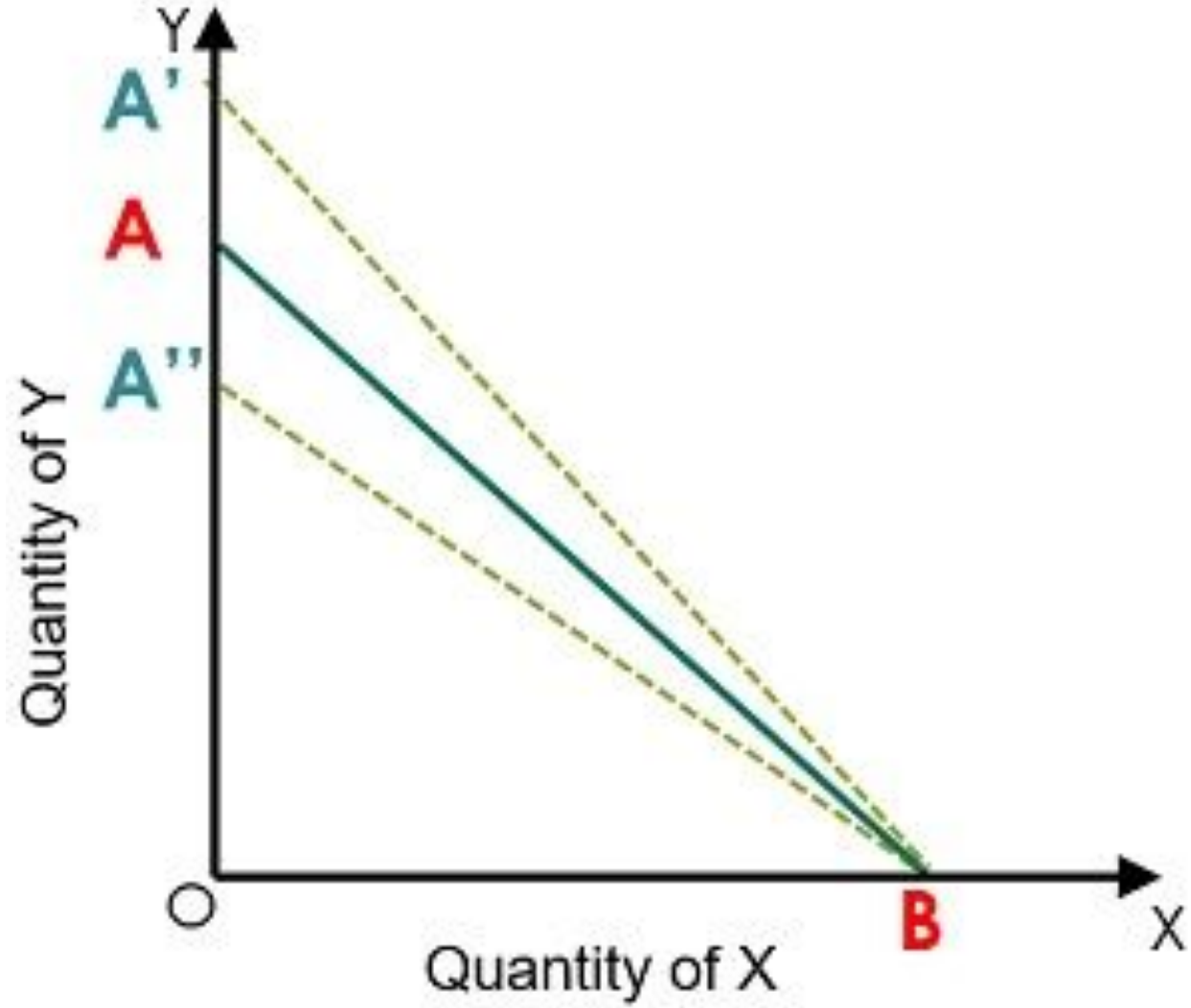
- There are two commodities.
- Income of the consumer is fixed.
- The price of the goods is fixed.
- The consumer spends all of his income to buy those two goods.

Shift in the Budget line

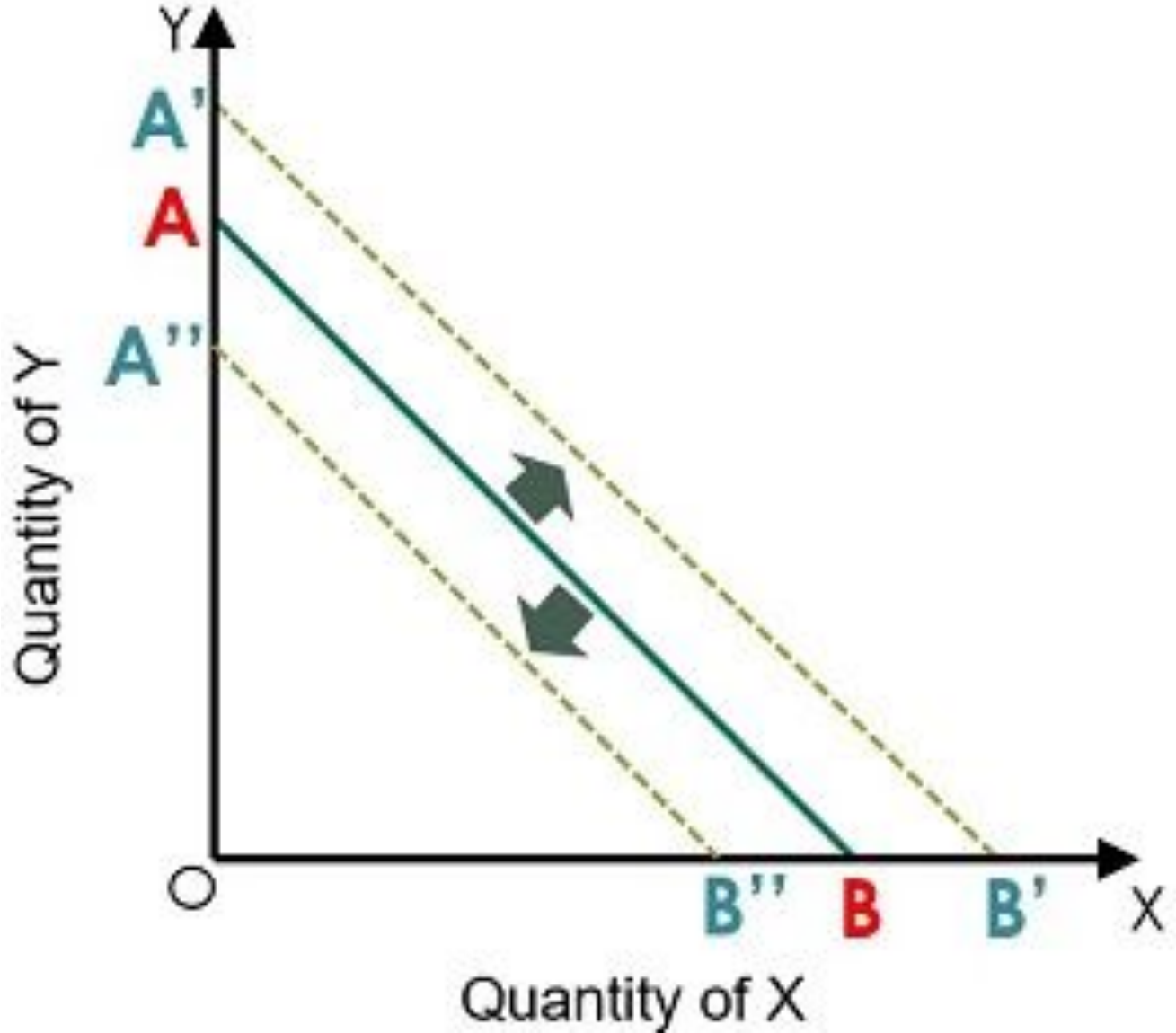





Y
A
Quantity of Y
O
B''
B
B'
X
Quantity of X


Y
A'
A
A''
Quantity of Y
O
B
X
Quantity of X

Change in the Price of both the Commodities simultaneously



Consumer Equilibrium

Conditions of Consumer's Equilibrium

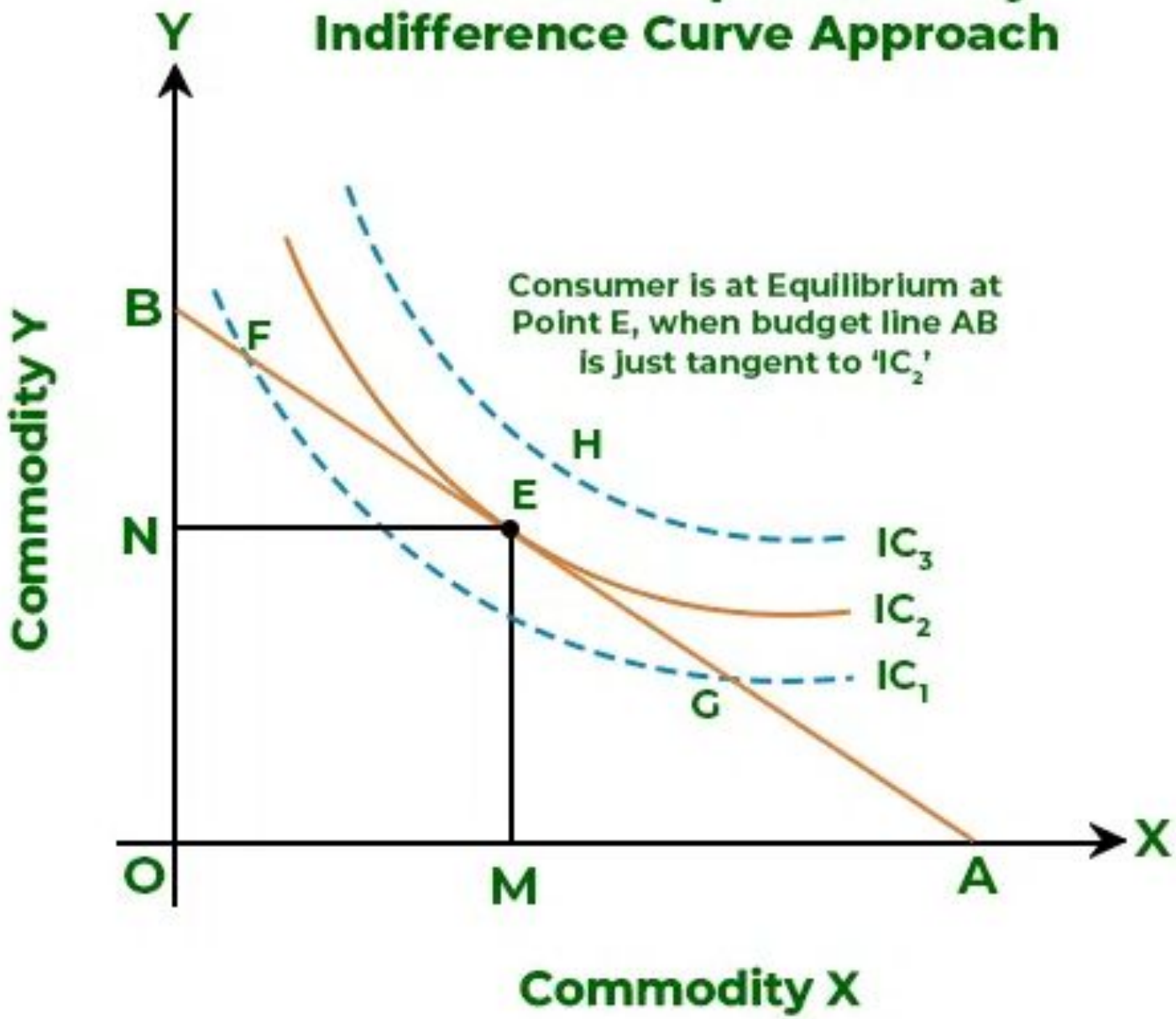
1. MRS_{xy} = Ratio of Prices or (P_x / P_y) = Market Rate of Exchange

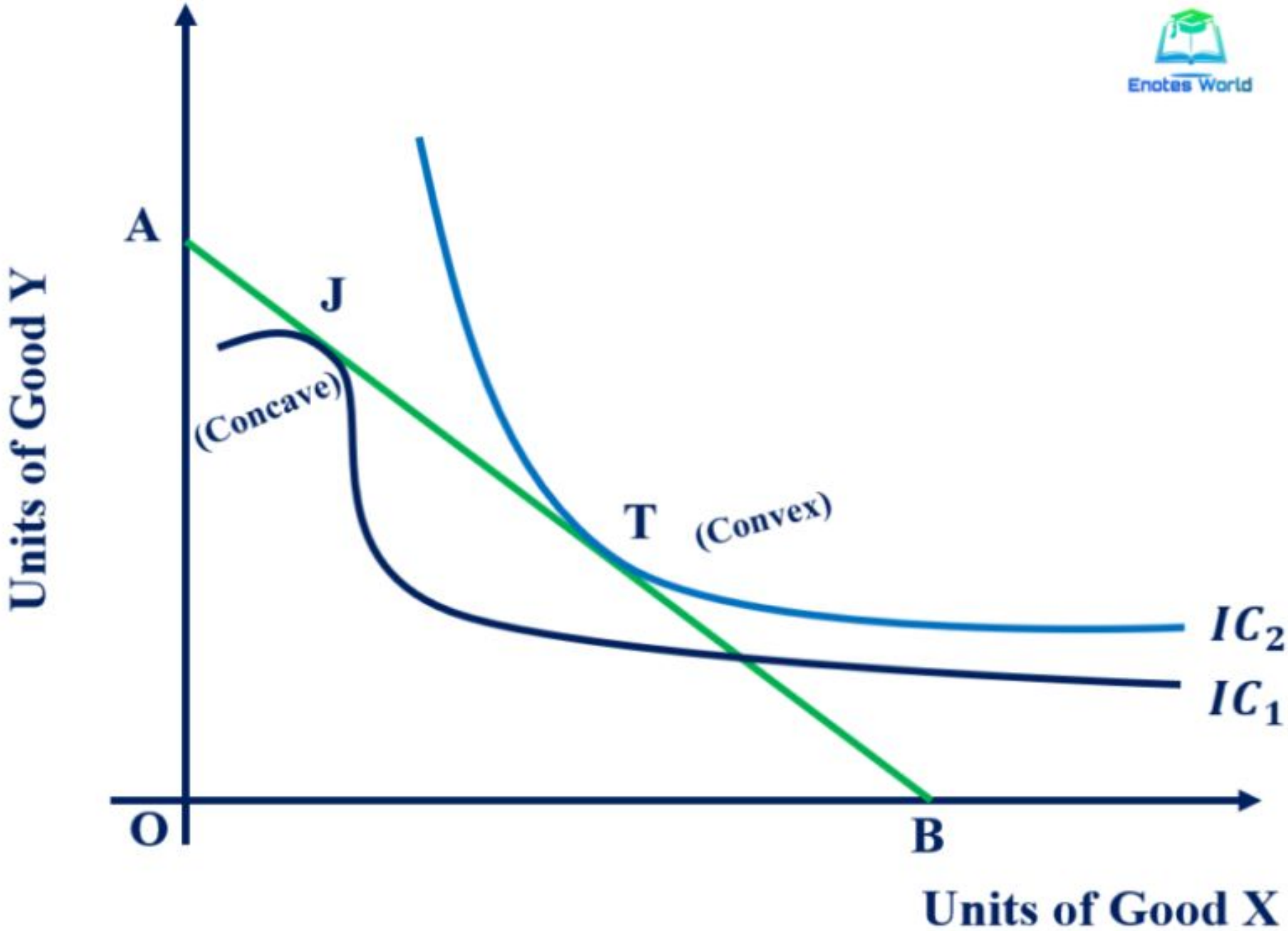
   Or

   Slope of Indifference Curve = Slope of Budget Line

2. Marginal Rate of Substitution (MRS) continuously falls.

Consumer's Equilibrium by Indifference Curve Approach




Enotes World
A
J
(Concave)
T
(Convex)
IC_2
IC_1
O
B
Units of Good Y
Units of Good X

Corner Solution

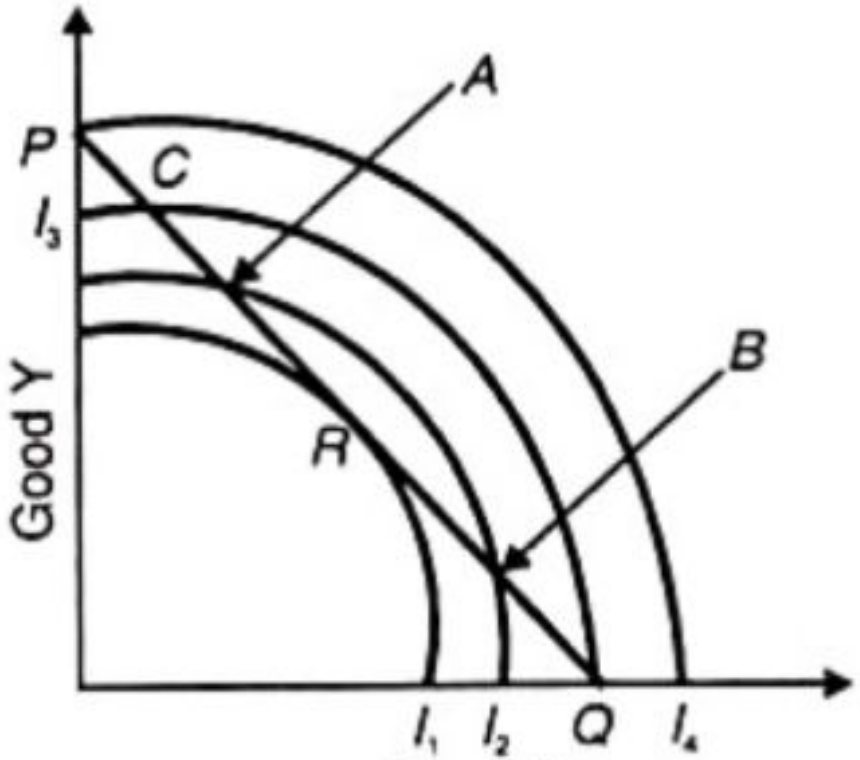


Fig. 19

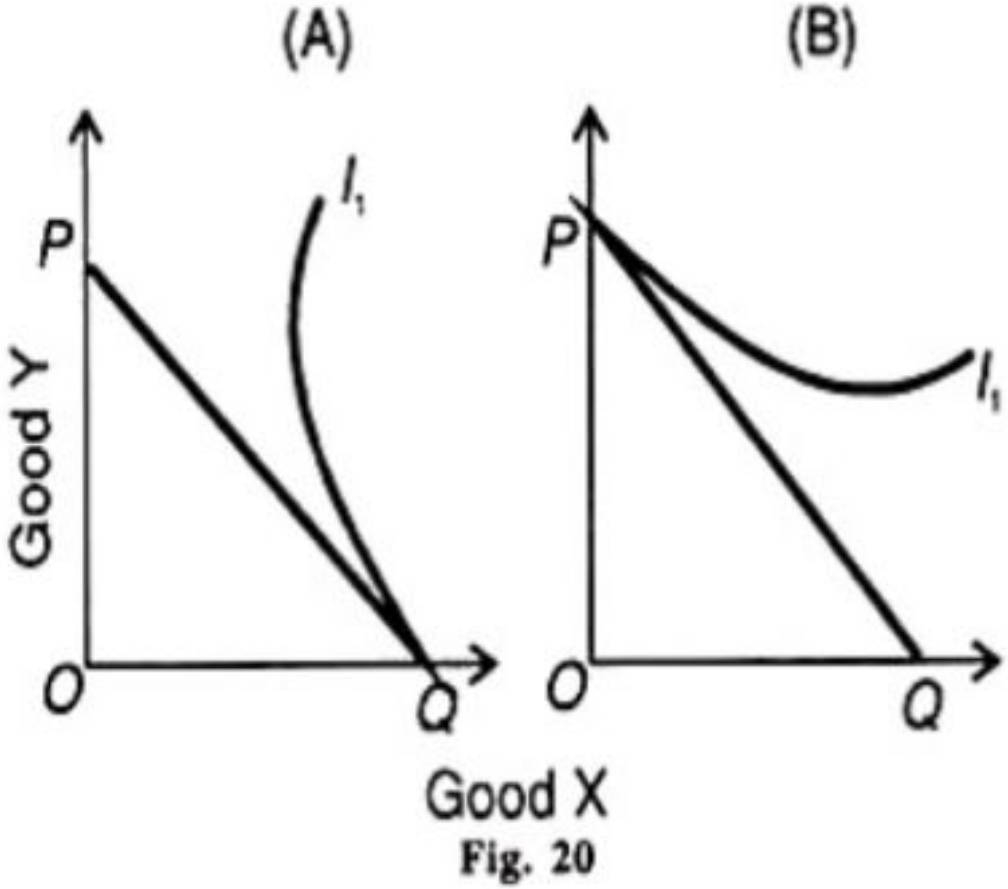
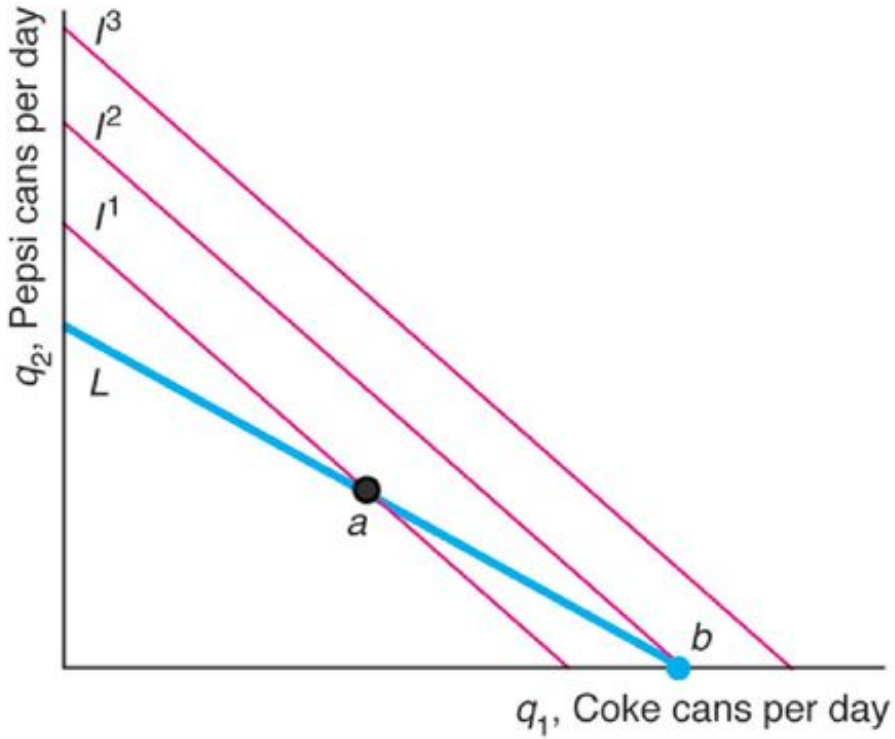


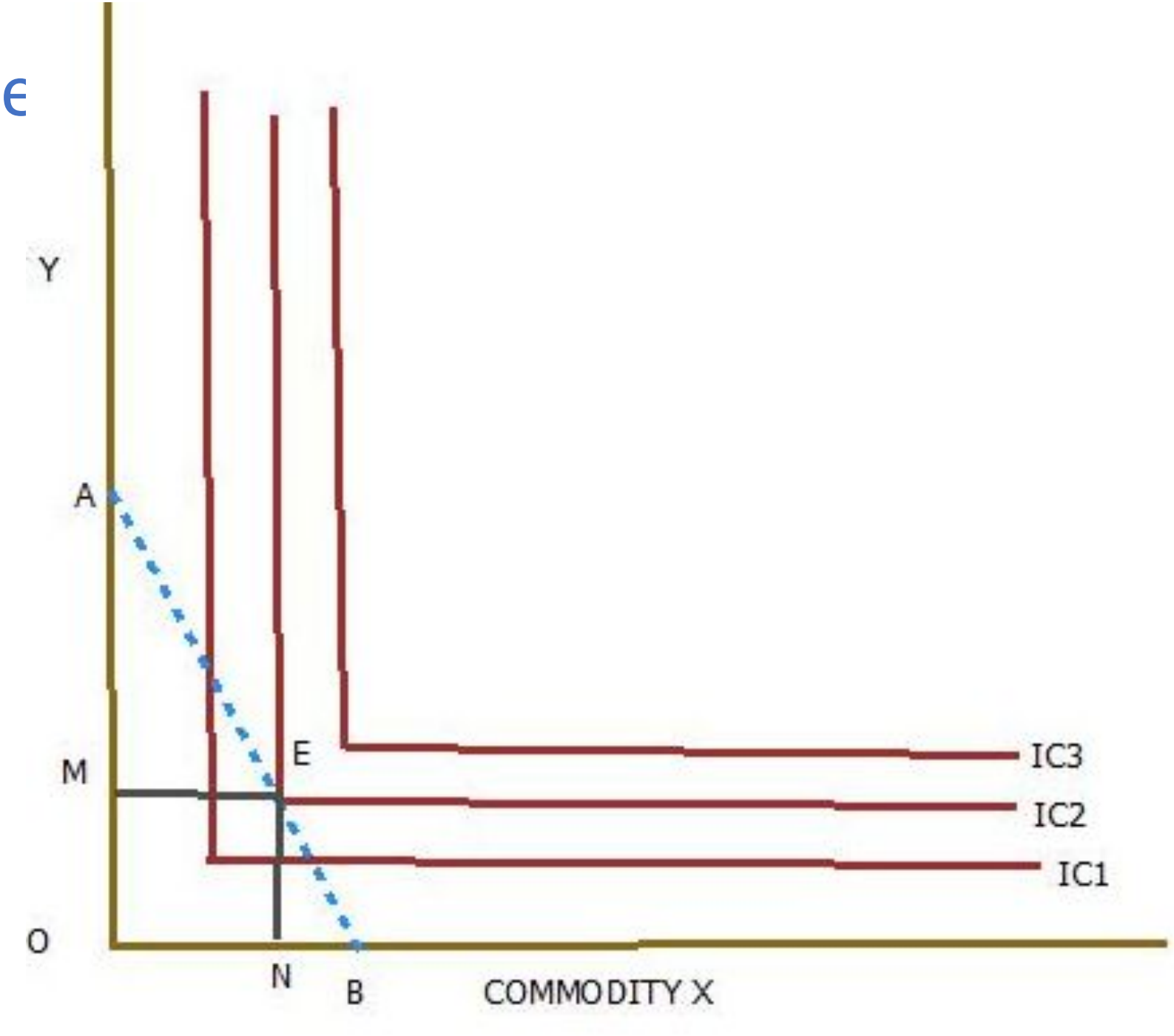
Fig. 20

Constrained Consumer Choice with Perfect Substitutes

- With perfect substitutes, if the marginal rate of substitution does not equal the marginal rate of transformations, then the consumer's optimal bundle occurs at a ***corner solution***, bundle **b**.



Corner Solution in case of Complementary goods



Review Question

If a consumer only chooses to spend all his income on just one of two goods, then which one of the following is necessarily true?

a) The other good must be a “bad” good.
b) The other good must be a “neutral” good.
c) The other good must generate less marginal utility per rupee spent on the good.
d) The two goods must be perfect substitutes.
e) None of the above.

Answer: c