

Theory of Consumer Behaviour – Indifference Curve

Prepared by: Ms. Khushboo Mittal

General Economics

Approaches to Consumer Behaviour

Cardinal Utility Approach

- Propounded by Marshall
- Known as Marshalling Approach

Ordinal Utility Approach

- Propounded by Hicks & Allen
- Known as Indifference Curve Analysis

Utility

- **Utility** is synonymous with “Pleasure”, “Satisfaction” & a Sense of Fulfillment of Desire.
- **Utility** → “WANT SATISFYING POWER” of a Commodity.
- **Utility** is a Psychological Phenomenon.

Utility

- **Utility refers to Abstract Quality whereby an Object Serves our Purpose.**

- Jevons

- **Utility is the Quality of a Good to Satisfy a Want.**

-Hibdon

- **Utility is the Quality in Commodities that makes Individuals want to buy them.**

-Mrs. Robinson

Features of Utility

- **Utility is Subjective**

- It deals with the Mental Satisfaction of a Man. For Example, Liquor has Utility for a Drunkard but for a Teetotaler, it has no Utility.

- **Utility is Relative**

- Utility of a Commodity never remains same. It varies with Time, Place & Person. For Example, Cooler has utility in Summer but not during Winter.

Features of Utility

- **Utility is Not Essentially Useful**
 - A Commodity having Utility need not be Useful. E.g., Liquor is not useful, but it Satisfies the Want of an Addict thus have Utility for Him.
- **Utility is Ethically Neutral**
 - Utility has nothing to do with Ethics. Use of Liquor may not be good from the Moral Point of View, but as these Intoxicants Satisfy wants of the Drunkards, they have Utility.

Concepts of Utility

Initial Utility

- The Utility Derived from the Consumption of 1st Unit of Commodity.

Total Utility

- The Aggregate of Utilities obtained from the Consumption of Different Units of Commodity.
- $TU_n = U_1 + U_2 + U_3 + U_4 + \dots + U_n$

Marginal Utility

- Change in Total Utility resulting from the change in Consumption.
- $MU = TU_n - TU_{n-1}$

Types of Marginal Utility

Positive Marginal Utility

- With Consumption of an Additional Unit of a Commodity, Total Utility Increases.

Zero Marginal Utility

- With Consumption of an Additional Unit of a Commodity, Total Utility Remains Same.

Negative Marginal Utility

- With Consumption of an Additional Unit of a Commodity, Total Utility Decreases.

Marginal Utility Analysis (MUA)

- Formulated by Alfred Marshall.
- Theory Explains How a Consumer spends his Income on Different Goods & Services so as to attain Maximum Satisfaction.
- Based on Certain Assumptions.

Assumptions to MUA

- **Cardinal Measurability of Utility**
 - **Utility is a Measureable & Quantifiable Entity.**
 - **Money is the Measuring Rod of Utility i.e. The amount of Money which a Person is prepared to Pay for a Unit of Good rather than go without it is a Measure of Utility Derived.**

Assumptions to MUA

- **Constancy of the Marginal Utility of Money**
 - **MU of Money remains Constant.**
 - **Not Realistic. But has been made in order to Facilitate the Measurement of Utility of Commodity in Terms of Money.**

Assumptions to MUA

- **Hypothesis of Independent Utility**
 - **Theory Ignores Complementarity Between Goods.**
 - **Total Utility derived from Whole Collection of Goods Purchased is the Sum Total of Separate Utilities of the Good.**

Laws of Diminishing Marginal Utility

- The Additional Benefit which a Person derives from a given Increase in Stock of a thing Diminishes with Every Increase in the Stock that he already has.

-Marshall

- As the Amount Consumed of a Good Increases, the Marginal Utility of the Good tends to Decrease.

- Samuelson

Assumptions to Law of Diminishing Marginal Utility

Other things being equal

- **Utility can be Measured in the Cardinal Number System.**
- **Marginal Utility of Money remains Constant.**
- **Marginal Utility of Every Commodity is Independent.**
- **Every Unit of the Commodity being used is of Same Quality & Size.**

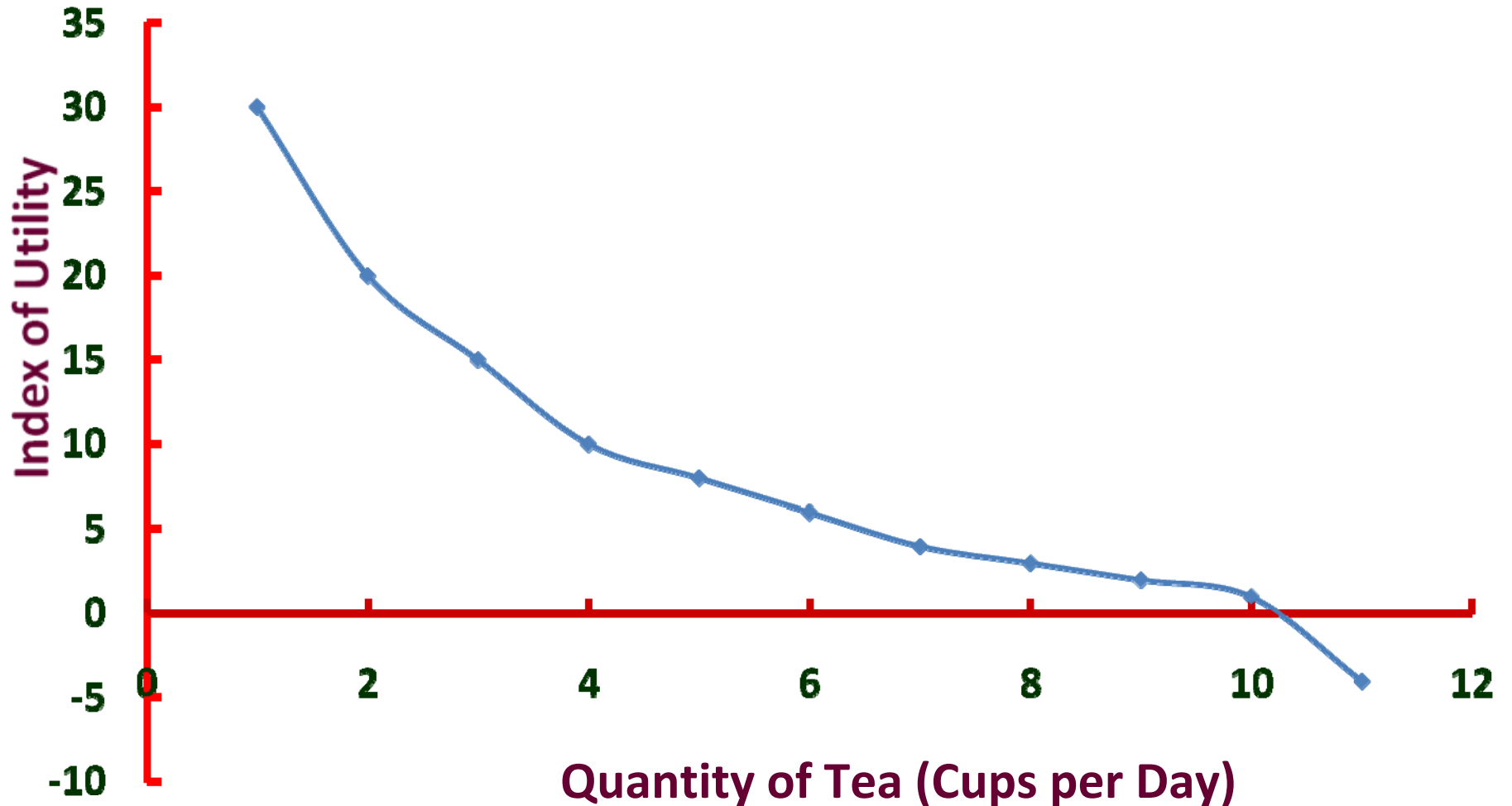
Assumptions of Law of Diminishing Marginal Utility

- There is a Continuous Consumption of the Commodity.
- Suitable Quantity of the Commodity is Consumed.
- There is No Change in the Income, Tastes, Character, Fashion and Habits of the Consumer.
- There is No Change in the Price of the Commodity and its Substitutes.

Explanation

Quantities of Tea Consumed (cups per day)	Total Utility	Marginal Utility
1	30	30
2	50	20
3	65	15
4	75	10
5	83	8
6	89	6
7	93	4
8	96	3
9	98	2
10	99	1
11	95	-4

Explanation



Limitations of the Law

- **Utility considered as Cardinaly measureable is Untenable as Utility is a Subjective Concept.**
- **Unrealistic Assumption regarding Marginal Utility of Money being Constant. Money is subject to change.**
- **No Empirical Verification.**
- **The Derivation of Law is based on assumption of Ceteris Paribus which is unrealistic.**

Marshallian Consumer's Surplus

- **Marshall defined Consumer's Surplus as**
“the excess of the Price which a Consumer would be willing to Pay rather than go without the thing, over that which he actually does pay.”
- **Consumer's Surplus = What a Consumer is Willing to Pay – What he Actually Pays.**
- **Derived from the Law of Diminishing Marginal Utility.**

Assumptions to Marshallian Consumer's Surplus

- **Perfect Competition prevails in Market**
- **Consumer purchases only one Commodity.**
- **Price Of the Commodity is Fixed.**
- **Marginal Utility of Money is Constant.**

Marshallian Consumer's Surplus

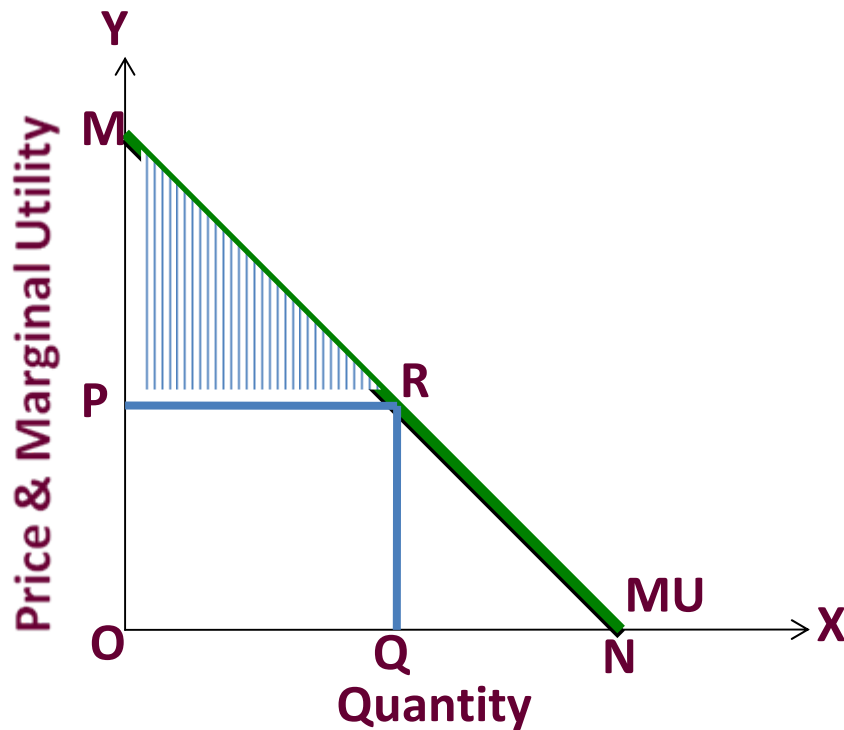
No. of Units	Marginal Utility	Price (Rs.)	Consumer's Surplus
1	30	20	10
2	28	20	8
3	26	20	6
4	24	20	4
5	22	20	2
6	20	20	0
7	18	20	-

Marshallian Consumer's Surplus

X Axis – Quantity

Y Axis – Price & MU

MN – Marginal Utility Curve



Total Utility = area OMRQ

Price Paid = area OPRQ

Thus,

Consumer Surplus = area PMR

Limitations of Marshallian Consumer's Surplus

- **Consumer's Surplus cannot be Measured precisely because it is difficult to measure the Marginal Utilities of different units of a Commodity consumed by a person.**
- **In case of Necessaries, the Marginal Utilities of earlier units are infinitely large. In such cases, Consumer's Surplus is always Infinite.**

Limitations of Marshallian Consumer's Surplus

- **Consumer's Surplus derived from a Commodity is Affected by the Availability of Substitutes.**
- **No Simple rule for deriving the Utility Scale of Articles of Distinction e.g. Diamonds.**
- **Marginal Utility of Money is Assumed to be Constant which is Unrealistic.**

Indifference Curve

- A Single Indifference Curve shows the different Combinations of X and Y that yield Equal Satisfaction to the Consumer.

- Leftwitch

- An Indifference Curve is a Combination of Goods, each of which yield the Same Level of Total Utility to which the Consumer is Indifferent.

Assumptions to Indifference Curve Analysis

- **Rationality of Consumer**
 - The Consumer is Rational & aims at maximizing his Total Satisfaction.
- **Ordinal Utility**
 - Utility can be expressed Ordinally i.e. Consumer is able to tell only Order of his Preferences.
- **Nonsatiety**
 - Consumer is not Oversupplied with Goods in Question.

Assumptions to Indifference Curve Analysis

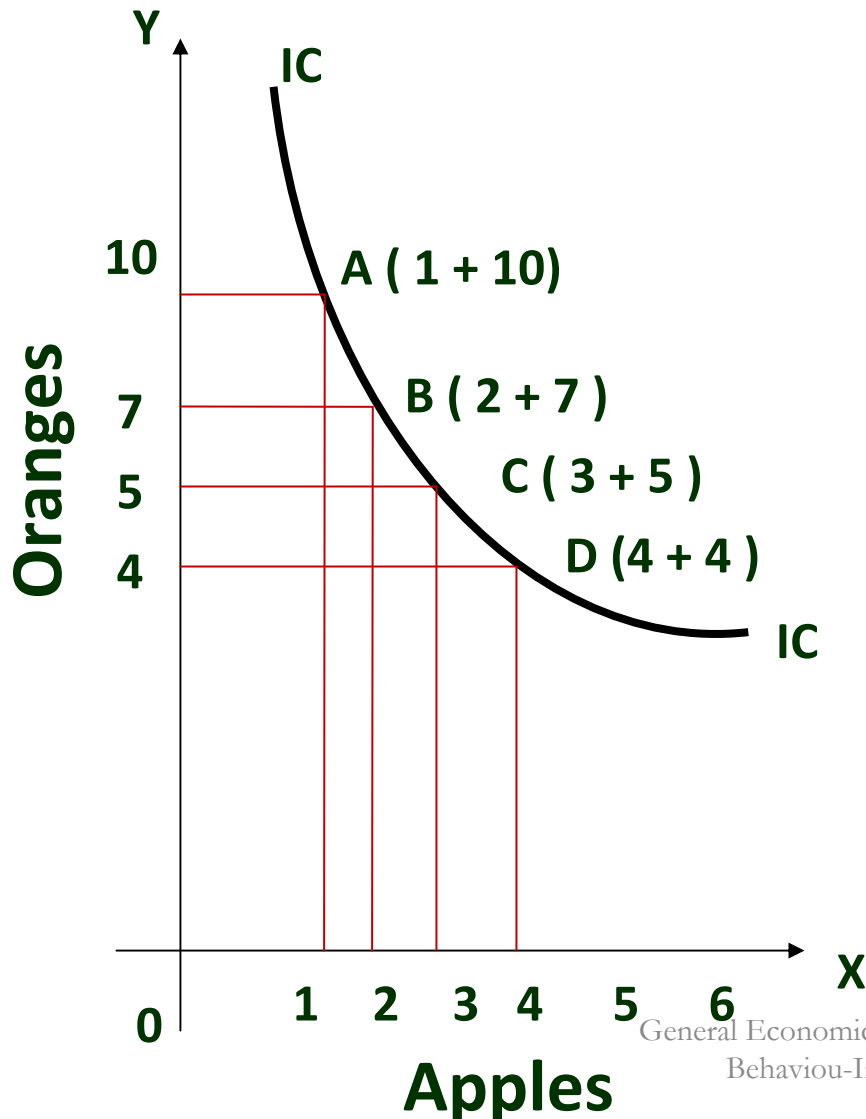
- **Transitivity of Choice**
 - Means that if a Consumer prefers A to B & B to C, he must prefer A to C.
- **Consistency of Choice**
 - Means that if a Consumer prefers A to B in one period, he will not prefer B to A in another period or Treat them as Equal.
- **Diminishing Marginal Rate of Substitution**

Indifference Curve Schedule

- An Indifference Curve Schedule refers to a Schedule that indicates different combinations of two commodities which yield equal satisfaction.

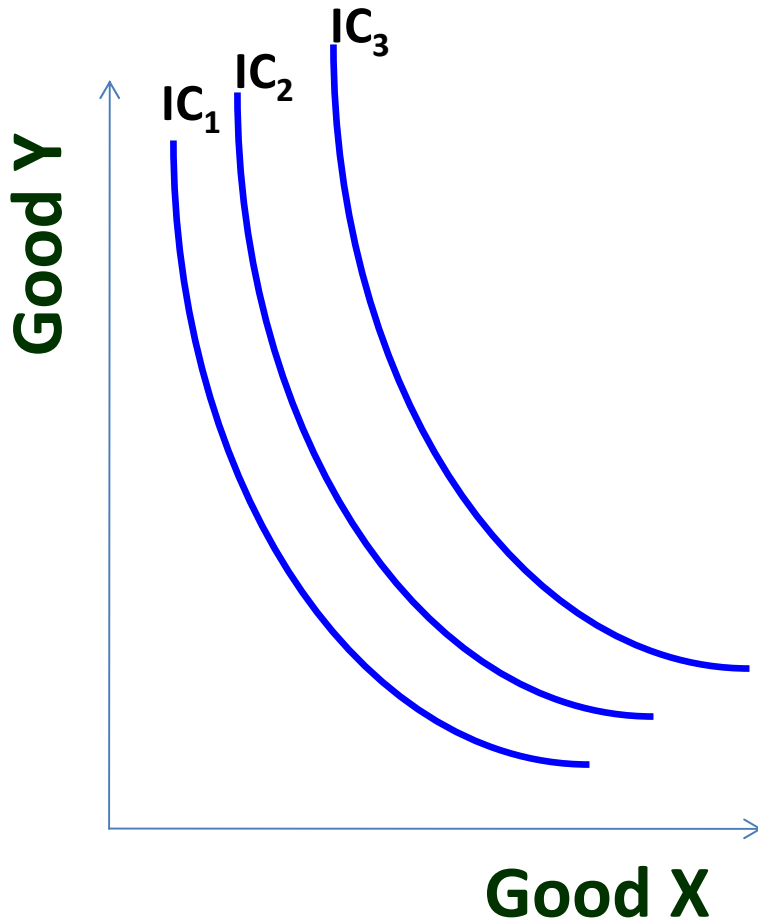
Combination of apples and oranges	Apples	Oranges
A	1 +	10
B	2 +	7
C	3 +	5
D	4 +	4

Indifference Curve



- Indifference Curve is a Diagrammatic Representation of Indifference Schedule.
- IC is an Indifference curve.
- It is a line that shows all possible Combinations of Two Goods between which a person is Indifferent.

Indifference Map



- An Indifference Map represents a Group of Indifference Curves each of which expresses a given level of Satisfaction.
- If an Indifference curve Shifts to Right, the Level of Satisfaction goes on Increasing.
- From the Point of View of Satisfaction

Marginal Rate of Substitution (MRS)

- The Rate at which an Individual must give up “Good A” in order to obtain One More Unit of “Good B”, while keeping their Overall Utility (Satisfaction) Constant. The MRS is Calculated between Two Goods placed on an Indifference Curve, which displays a Frontier of Equal Utility for Each Combination of “Good A” and “Good B”.
- MRS Keeps on Declining since Consumer has more & more units of one Good, he gives up Less Units of Other Good.

Properties of Indifference Curve

- An Indifference Curve has a Negative Slope i.e. it Slopes Downwards.
- Indifference Curves are always Convex to the Origin.
- Two Indifference Curves never Intersect or become Tangent to Each other.
- Higher Indifference Curve represents Higher Satisfaction

Properties of Indifference Curve

- **An Indifference Curve has a Negative Slope i.e. it Slopes Downwards.**
 - **This Property Implies that when the amount of one Good in Combination is Increased, the amount of the Other Good is reduced. This is Essential if the Level of Satisfaction is to remain the same on an Indifference Curve.**

Properties of Indifference Curve

- Indifference Curves are always Convex to the Origin.
 - This implies that the Two Commodities are Imperfect Substitutes for each other & that the MRS between the two Goods Decreases as a Consumer moves along an Indifference Curve.

Properties of Indifference Curve

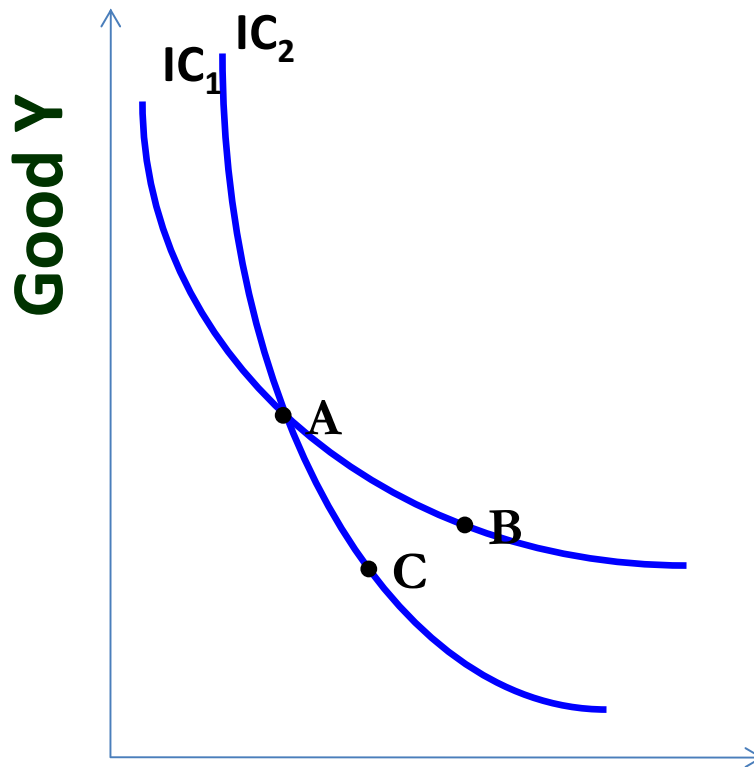
- Indifference Curves are always Convex to the Origin.
 - Two Extreme conditions also exists.
 - When 2 Goods are Perfect Substitutes, Indifference Curve will be a Straight Line on which MRS is Constant.
 - When 2 Goods are Complementary, Indifference Curve will consist of 2 Straight Lines with a Right Angle bent which is convex to the Origin i.e. it will be L shaped.

Properties of Indifference Curve

- **Two Indifference Curves never Intersect or become Tangent to Each other.**
 - **If Two Indifference Curves Intersect or are Tangent, it would imply that an Indifference Curve indicates Two different Levels of Satisfaction (One Being Larger than the Other) yield the Same Level of Satisfaction. This will Violate the Rule of Transitivity.**

Properties of Indifference Curve

- Two Indifference Curves never Intersect or become Tangent to Each other.



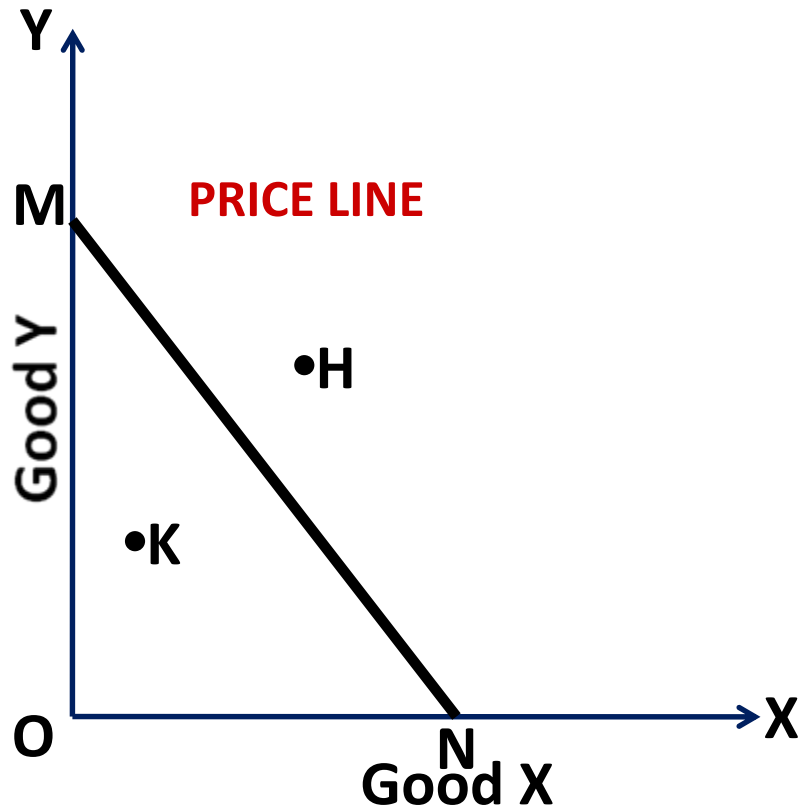
Properties of Indifference Curve

- **Higher Indifference Curve represents Higher Satisfaction**
 - **This is because the Combinations lying in Higher Indifference Curve Contain More of either one or Both Goods and More Goods are preferred to Less of them.**

Price Line or Budget Line

- **The Budget Line shows all those Combinations of Two Goods which the Consumer can buy Spending his Given Money Income on two Goods at their given Prices.**
- **Remember, that the Amount of a Good that a Person can buy will depend upon their Income and the Price of the Good.**

Price Line or Budget Line

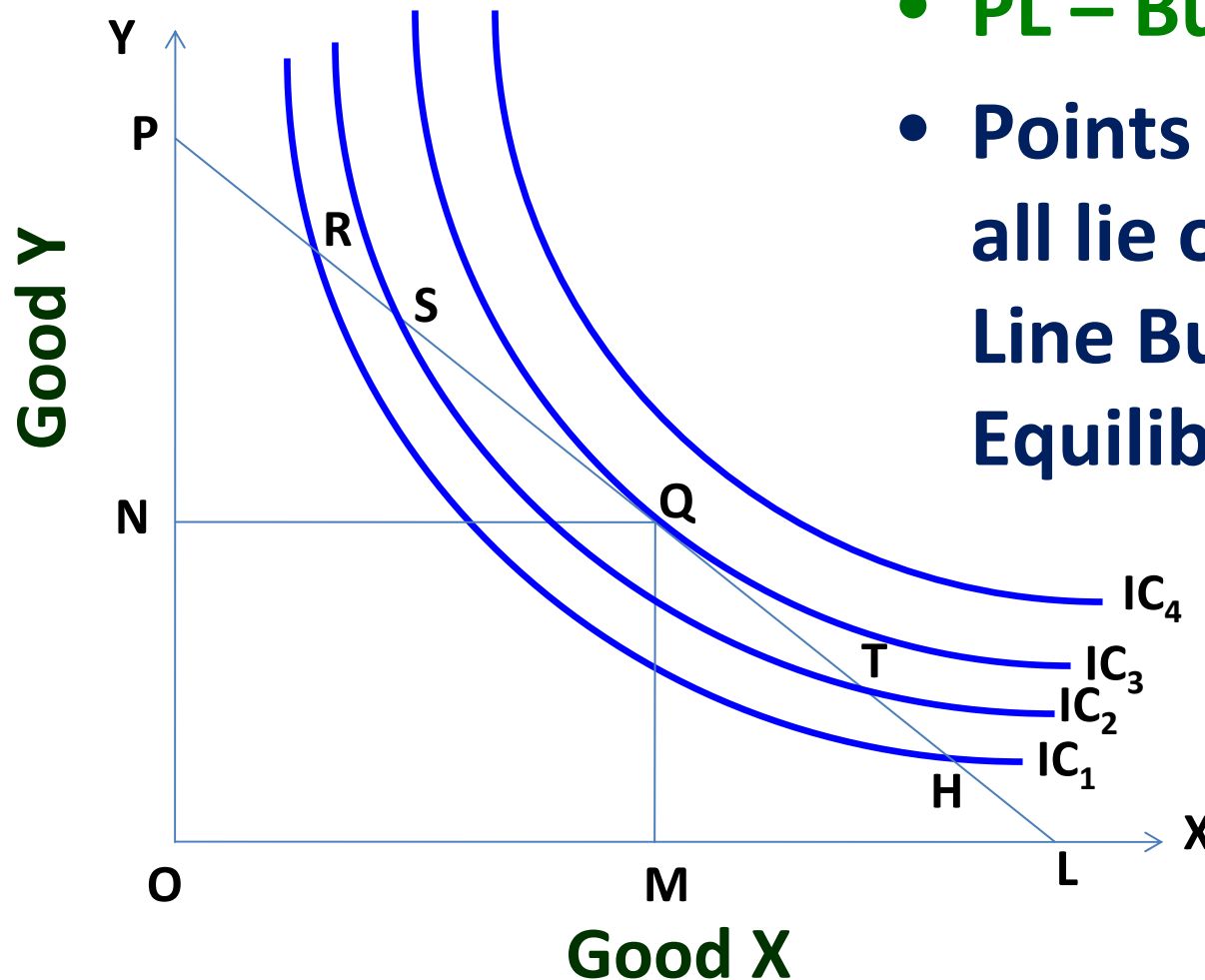


- Point outside the given Price Line, like H, will be Beyond the Reach of the Consumer.
- Point Below the given Price Line, Like K, shows the Under Spending of the Consumer.

Consumer Equilibrium

- **Consumer Equilibrium will be reached when he is deriving Maximum possible Satisfaction from the Goods & is in no Position to Rearrange his Purchase of Goods.**
- **The Indifference Map in Combination with the Budget Line allows us to Determine the One Combination of Goods and Services that the Consumer most wants and is able to Purchase. This is the Consumer Equilibrium.**

Consumer Equilibrium



- **PL – Budget Line**
- **Points R, S, Q, T, H all lie on Budget Line But Q is Equilibrium Point.**

Consumer Equilibrium

- At the Tangency Point Q, the slopes of the Price Line PL And Indifference Curve IC_3 are equal.
- Slope of Indifference Curve shows MRS of X for Y (MRS_{xy})
- At Equilibrium Point Q,

$$MRS_{XY} = \frac{MU_X}{MU_Y} = \frac{P_X}{P_Y}$$

Q 1

Total Utility is Maximum when:

- a) Marginal Utility is Zero.**
- b) Marginal Utility is at its highest point.**
- c) Marginal Utility is equal to Average Utility.**
- d) Average Utility is Maximum.**

Q 2

The Consumer is in Equilibrium at a point where the Budget Line:

- a) Is Above an indifference Curve.**
- b) Is Below an Indifference Curve.**
- c) Is Tangent to an Indifference Curve.**
- d) Cuts an Indifference Curve.**

Q 3

An Indifference Curve slopes Down towards Right since more of one Commodity & less of another result in:

- a) **Same Satisfaction.**
- b) **Greater Satisfaction.**
- c) **Maximum Satisfaction.**
- d) **Decreasing Expenditure.**

Q 4

Which of the following is a Property of an Indifference Curve?

- a) It is Convex to the Origin.**
- b) The MRS is Constant as you move along an Indifference Curve.**
- c) MU is Constant as you move along an Indifference Curve.**
- d) Total Utility is greatest where the 45 degree line cuts the Indifference Curve.**

Q 5

Indifference Curve Analysis is Based on

- a) Ordinal Utility.**
- b) Cardinal Utility.**
- c) Marginal Utility.**
- d) None of the Above.**

Q 6

Which is not the assumption of Indifference Curve Analysis?

- a) The Consumer is Rational & Possesses Full Information about all aspects of Economic Environment.**
- b) The Consumer is not capable of ranking all combinations.**
- c) If Consumer Prefers Combination A to B, & B to C, then he must prefer combination A to C**
- d) If Combination A has more Commodities than B, then A must be preferred to B.**

Q 7

Higher Indifference Curve Shows:

- a) A higher level of Satisfaction**
- b) A higher level of Production**
- c) A higher level of Income**
- d) None of the above**

Q 8

Consumer Surplus is:

- a) **What a Consumer is ready to pay + What he actually pays**
- b) **What a Consumer is ready to pay – What he actually pays**
- c) **What he actually pays – What a Consumer is ready to pay**
- d) **None of the above**

Q 9

**Indifference Curve is Convex to the origin
due to:**

a) Falling MRS

b) Rising MRS

c) Constant MRS

d) None of the above

Q 10

Marginal Utility Analysis was mainly propounded by:

a) J.B.Say

b) Robbins

c) Adam Smith

d) Alfred Marshall

Q 11

Indifference Curve Analysis is propounded

by:

a) Alfred Marshall

b) Adam Smith

c) Hicks And Allen

d) None of the Above.

Q 12

Cardinal Measurability of Utility Means:

- a) **Utility can be Measured.**
- b) **Utility cannot be Measured.**
- c) **Utility can be Ranked.**
- d) **Utility can be Measured in some cases.**

Q 13

Slope of Indifference Curve indicates:

- a) Price Ratio between two commodities.**
- b) Marginal Rate of Substitution.**
- c) Factor Substitution.**
- d) Level of Indifference.**

Q 14

Law of Diminishing Marginal Utility does not apply to:

a) Money

b) Butter

c) Pepsi, Coke, etc.

d) Ice Cream

Q 15

Consumer Surplus is highest in the case of:

a) Necessities.

b) Luxuries.

c) Comforts.

d) None of the Above.

Q 16

If two goods were perfect substitutes of each other, it necessarily follows that

- a) **An Indifference Curve relating the two goods will be Curvilinear.**
- b) **An Indifference Curve relating the two goods will be linear.**
- c) **An Indifference Curve relating the two goods will be divided into two segments**
- d) **An Indifference Curve relating the two goods will be Convex to the origin.**

Q 17

The Law of Consumer Surplus is Based on:

- a) Indifference Curve Analysis**
- b) Revealed Preference Theory**
- c) Law of Substitution**
- d) Law of Diminishing Marginal Utility**

Q 18

The Law of Diminishing Returns implies that:

- a) For each extra unit of X consumed, holding constant consumption of other goods, total utility increases.
- b) Total Utility remains unchanged regardless of how many units of X are consumed.
- c) Marginal Utility will increase at a constant rate as more units of X are consumed.
- d) Each extra unit of X consumed, holding constant consumption of other goods, adds successively less to total utility.

Q 19

Consumer Stops purchasing the Additional Units of the Commodity when-

- a) Marginal Utility starts declining.**
- b) Marginal Utility becomes Zero.**
- c) Marginal Utility is equal to Marginal Utility of Money.**
- d) Total Utility is Increasing.**

Q 20

Marginal Utility of a Commodity depends on its quantity and is

- a) Inversely related to its quantity**
- b) Not proportional to its quantity**
- c) Independent of its quantity**
- d) None of the Above**

THE END

*Theory of Consumer Behaviour -
Indifference Curve*