Lesson – 14

Consumer`s Equilibrium

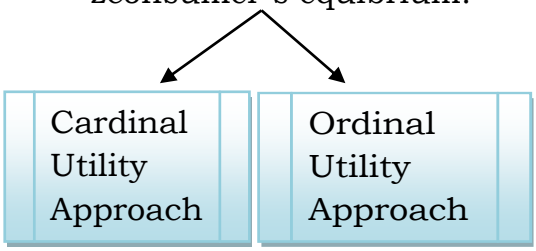
Summary

The concept of consumer`s equilibrium is the subject matter of consumer`s behavior in which we learn how a consumer rationally spends his income on various goods and services to attain maximum satisfaction. The term Consumer's Equilibrium means a state of maximum satisfaction. A situation where a consumer spends his given income purchasing one or more commodities so that he gets maximum satisfaction and has no urge to change this level of consumption, given the prices of commodities, is known as the consumer's equilibrium. Concept of consumer`s equilibrium is explain on the basis of two approaches – A) Utility Analysis Approach and B) Indifference Curve Analysis Approach.

Meaning of Consumer`s Equilibrium

- Consumer's equilibrium refers to a situation where the consumer has achieved maximum possible satisfaction from the quantity of the commodities purchased given his/her income and prices of the commodities in the market.

- Approaches to study zconsumer`s equibrium.



- According to cardinal utility approach utility can be counted in numbers.
- According to ordinal utility approach utility can be expressed in terms of ranks or order.

Cardinal Utility Approach

Some Definitions -

Utility - Utility is defined as the power of a commodity to satisfy a human want.

Marginal Utility (MU) - Marginal utility is the addition to the total utility derived from the consumption of an additional unit of a commodity.

$$MU_n = TU_n - TU_{n-1}$$

Or

$$MU = \frac{\Delta TU}{\Delta X}$$

Where, MU_n = Marginal Utility of n^{th} unit of a commodity

TU_n = Total Utility of n^{th} unit

TU_{n-1} = Total Utility of $(n-1)^{th}$unit

ΔTU = Change in Total Utility

ΔX = Change in unit of commodity

Total Utility - Total utility is the total satisfaction obtained from the consumption of all possible units of a commodity.

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

$$TU_n = \sum MU$$

Where, TU_n = Total Utility of n^{th} Unit of a commodity

$MU_1 + MU_2 + MU_3 + \cdots\cdots + MU_n =$

Marginal Utility of $1^{st}, 2^{nd}, 3^{rd}, \cdots n^{th}$

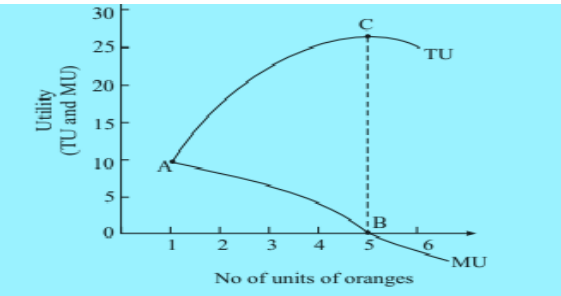
Unit of commodity

Relationship between Total Utility and Marginal Utility

It can be explained with the help of schedule and graph -

Units	MU (Units)	TU (Units)
0	-	0
1	10	10
2	8	18
3	6	24 $TU\uparrow$
4	4	28
5	2	30 TU Max
6	0	30 MU = 0
7	-2	28 $TU\downarrow$

Graphical Presentation-



- MU is the rate of change of TU. It means that Total Utility increases as long as marginal utility is positive.
- Total Utility is maximum when marginal utility is zero.
- Total utility starts declining when marginal utility becomes negative

Law of Diminishing Marginal Utility

"As more and more units of a commodity are consumed, marginal utility derived from each successive unit goes on diminishing."

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Assumption of Law of Diminishing Marginal Utility

- It is assumed that utility can be measured and a consumer can express his satisfaction in quantitative terms like 1, 2, 3 etc.
- Quality of the commodity should not undergo any change.
- Consumption should not proceed at intervals.
- Consumer should be a rational person.
- Time period of consumption should not be too long.
- The price of the substitute and complementary goods should not change.

Exceptions to the Law of Diminishing Marginal Utility

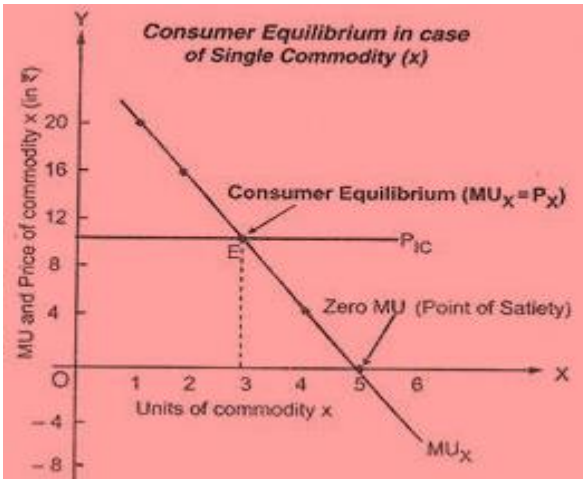
- This Law is not applicable in case of misers and accumulators of wealth.
- A collector of rare articles like stamps, coins, paintings etc. may escape this law.
- The law may not apply when it comes to a melody recital or a beautiful scenic view.
- No change in tastes, habits, customs, fashion and income of the consumer.

Consumer`s Equilibrium in case of Single Commodity

The consumer will be at equilibrium when marginal utility of commodity X equals the price paid for the commodity X.

Condition for Equilibrium

$$MU_X = P_X \qquad \text{Equilibrium}$$



Consumer`s Equilibrium in case of Several Commodities

It is also known as 'Law of Equi-Marginal Utility.

- According to the law of equi-marginal utility a consumer will be in equilibrium when the ratio of marginal utility of a commodity to its price equals the ratio of marginal utility of other commodity to its price.

- Equation for Equi Marginal Utility $\frac{MU_1}{P_1} + \frac{MU_2}{P_2} + \frac{MU_3}{P_3} + \ldots\ldots \frac{MU_n}{P_n} = MU_M$

Ordinal Utility Approach (Indifference Curve Analysis)

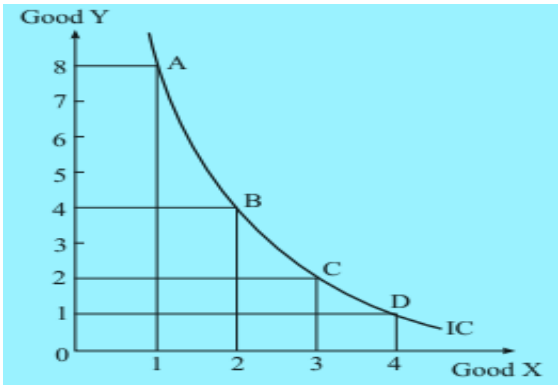
Meaning of Indifference Curve –

- When a consumer consumes various goods and services, then there are some combinations (bundles) which give him same satisfaction. The graphical representation of such combinations is termed as indifference curve.

Indifference Schedule

Combinations	Goods X(Units)	Goods X(Units)	Marginal Rate of Substitution $\left(\frac{\Delta Y}{\Delta X}\right)$
A	1	8	-
B	2	4	$4Y:1X$
C	3	2	$2Y:1X$
D	4	1	$1Y:1X$

Graphical Presentation



Monotonic Preferences

Consumer's preferences are called monotonic if and only if between two bundles, consumer prefers the bundle which has more of at least one of the good and no less of other good as compared to other bundles.

Budget Line

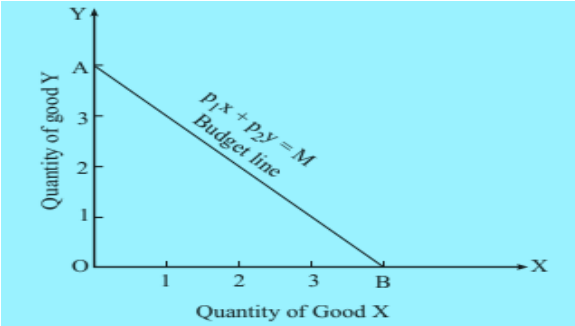
- A budget line graphically represents all possible combinations of two goods which a consumer can buy with his entire income at the prevailing market prices.

P1X + P2Y = M

Where, M = Total Expendture

P1X = Price and Quantity of X commodity

P1Y = Price and Quantity of Y commodity



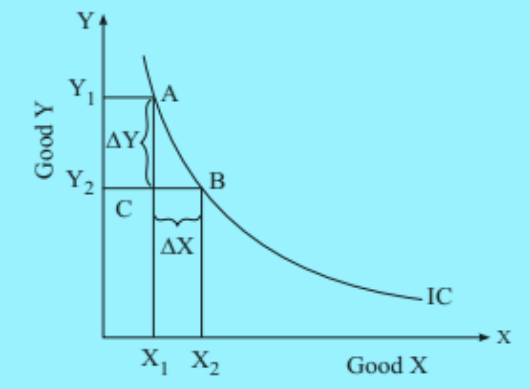
Budget Set

Budget set is the set of all possible combinations of two goods which a consumer can afford, given his income and market prices of the two goods.

Marginal rate of substitution (MRS)

The marginal rate of substitution is defined as the rate at which a consumer is ready to exchange a number of units of goods X for one more Good Y, at the same level of utility.

- It is expressed as MRSxy of good X for good Y. Symbolically, MRSxy = Loss of good Y/ Gain of good X = $\Delta Y/\Delta X$



MRSXY = $\Delta Y/\Delta X$ = AC/CB

Properties of Indifference Curve

- Indifference Curves are always convex to the origin.
- Indifference Curves slope downwards.
- Higher Indifference Curves represent Higher level of satisfaction.

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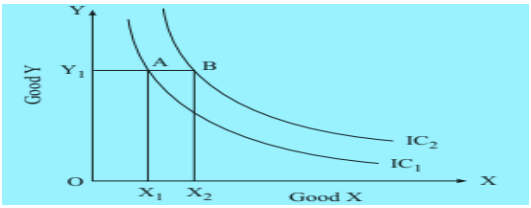
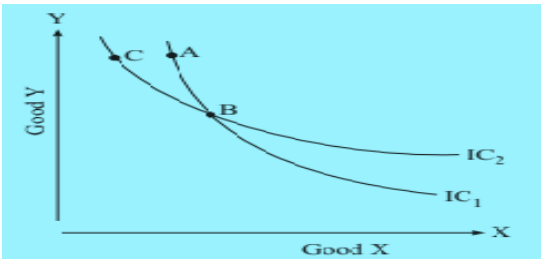


- Indifference Curves can never Intersect.



Assumptions of Indifference Curve

- It is assumed that the consumer has fixed amount of money which is to be spent on two goods, given the market prices of goods.
- It is assumed that the consumer has not reached the point of satiety. He always prefers more of both the commodities.
- Consumer can rank his preferences on the basis of the satisfaction from each bundle of goods.
- It is assumed that marginal rate of substitution is diminishing.
- Consumer is a rational person i.e. he always aims to maximize his satisfaction.

Consumer`s Equilibrium By Indifference Curve Analysis

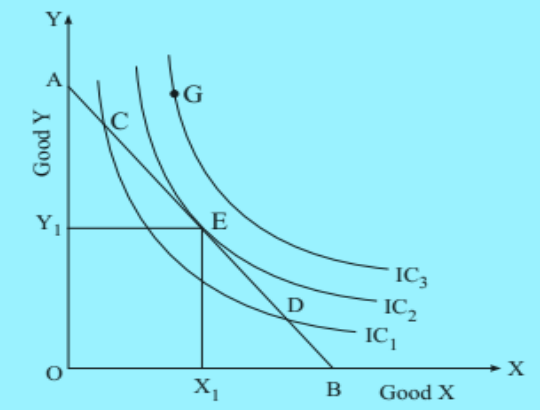
Condition of Consumer's Equilibrium –

- Budget line is tangent to the indifference curve. i.e. slope of budget line = slope of indifference curve.

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

- Indifference curve must be convex to the point of origin.

Graphical Presentation of Indifference Curve



Evaluate Yourself

Q. Define following terms – Marginal Utility, Total Utility, Consumer`s Equilibrium, Marginal Rate of Substitution.

Q. Distinguish between utility analysis approach and indifference curve approach of consumer`s equilibrium.

Q. Mention properties of Indifference curve.

Q. Explain concept of consumer`s equilibrium by Indifference curve analysis analysis.(Use Graph).