Ordinal Measurement Approach or Indifference Curve Approach

Modern Economists like Edgeworth, Prof. Pareto, J.R. Hicks and Prof. R.G.D. Allen used indifference curves approach for analyzing consumer's behavior. According to this approach, when a consumer spends his income on various items and purchases various quantities at various prices, he gets such combinations of goods which may provide equal level of satisfaction to him. In simple words, it can be explained as under:-

"An indifference curve is a locus of points or combinations of goods each of which yields same level of satisfaction or at which the consumer becomes indifferent".

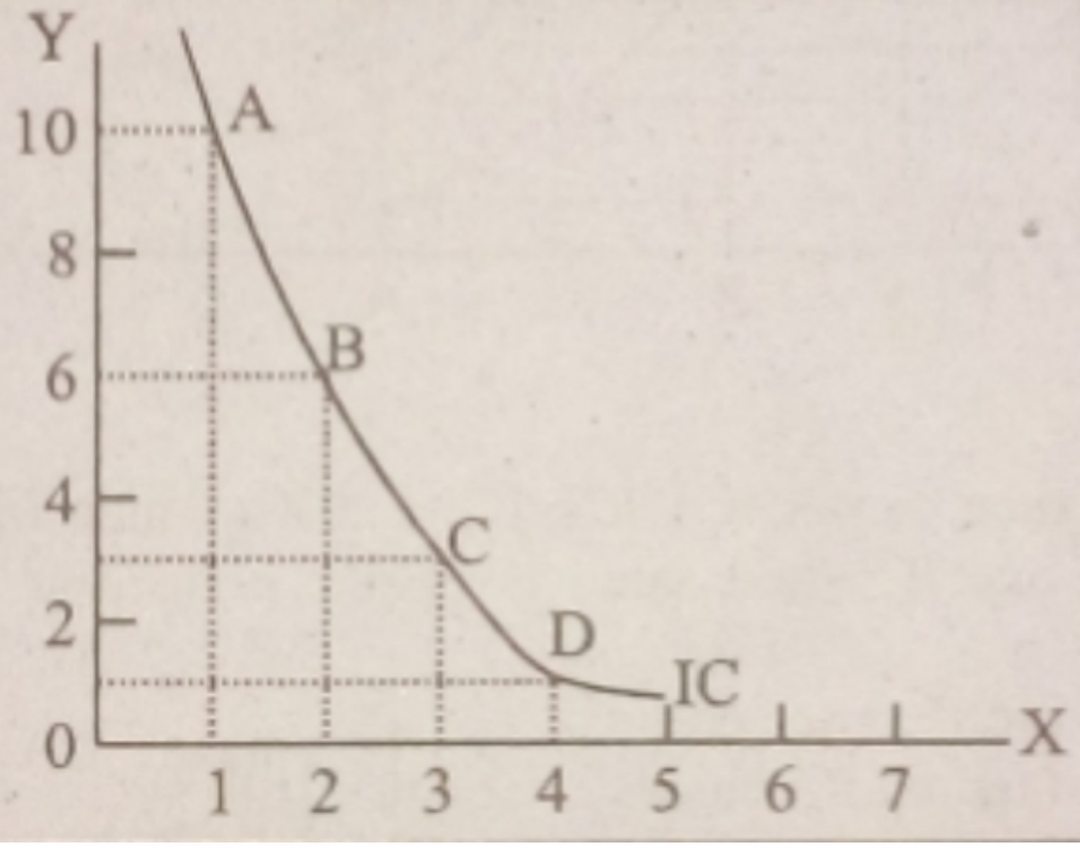
"OR"

"An indifference curve indicates various combinations of two goods which gives the consumer the equal level of satisfaction".

It is explained with the help of following table and diagram:-

Pairs of goods	Good X	Good Y	Level of Satisfaction
1st	1	10	B
2nd	2	6	B
3rd	3	3	B
4th	4	1	B

In this table there are four pairs of x and y goods which give same level of satisfaction. These are shown by points A, B, C, D in the graph, with the help of these points; we draw Indifference Curve (IC) which shows same level of satisfaction on the graph.



"MARGINAL RATE OF SUBSTITUTION"

Neo-classical economists considered utility measurable and in favour of cardinal approach to analyze consumer, equilibrium, But in beginning of 20th century pare to denied this view point.

Edgeworth, J.R. Hicks and Prof. Allen Ordinally defined consumer's equilibrium through indifference curves approach.

In daily routine life each consumer purchases various goods in difference quantities and it is proved by general observation that there are certain combinations of certain goods which yield same level of satisfaction and the consumer becomes indifferent.

Now for example if, one unit of x commodity and 10 units of y commodity give same level of satisfaction as 2 units of x and 6 units of y commodity and consumer becomes indifferent between both the pairs. It shows that first combination consist of one unit of x and 10 units of y whereas, second combination consists of 2 units of x and 6 units of y commodity. It shows that one unit of x is equal to 4 units of y, and a consumer substitutes 4 units of y to 1 unit of x and remains at the same level of satisfaction. This ratio is called "Rate of Substitution". It is explained with the help of following table:-

Pairs of goods	Good X	Good Y	MRS
1st	1	10	-
2nd	2	6	1:4
3rd	3	3	1:3
4th	4	1	1:2

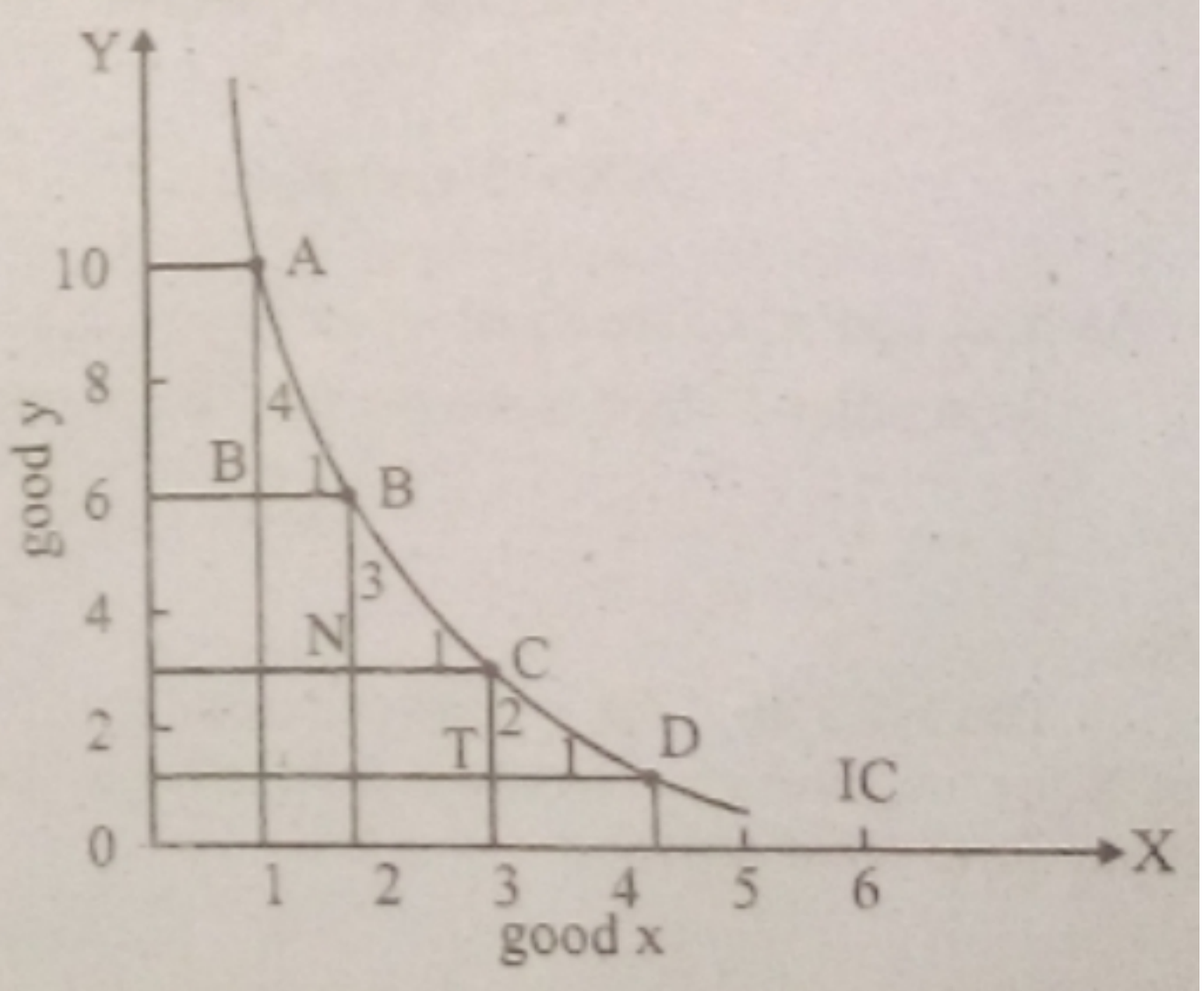
There are four columns in the table. In first column we put different pairs of goods. In second we have x and in third column we have units of y commodity. Fourth column shows marginal rate of substitution (MRS). All the pairs indicate same level of satisfaction, and consumer does not prefer to any of the pair, consumer substitutes an additional unit of x with four units of y, then 3 units of y with one additional unit of x, and 2 units of y are substituted with another unit of x, and it is called MRS.

"The Marginal Rate of Substitution may be defined as the ratio between small quantities of the commodities which are equally valued by an individual".

"Diminishing marginal rate of substitution"

Above mentioned table shows that marginal rate of substitution diminishes as a consumer substitutes y commodity to x. As he substitutes 2nd unit of x with 4 units of y and third unit of x with 3 units of y and fourth unit of x with 2 units of y, MRS diminishes and that's why it is called (DMRS). "Diminishing Marginal Rate of Substitution".

It is explained with the help of diagram.



"Consumer's price line"

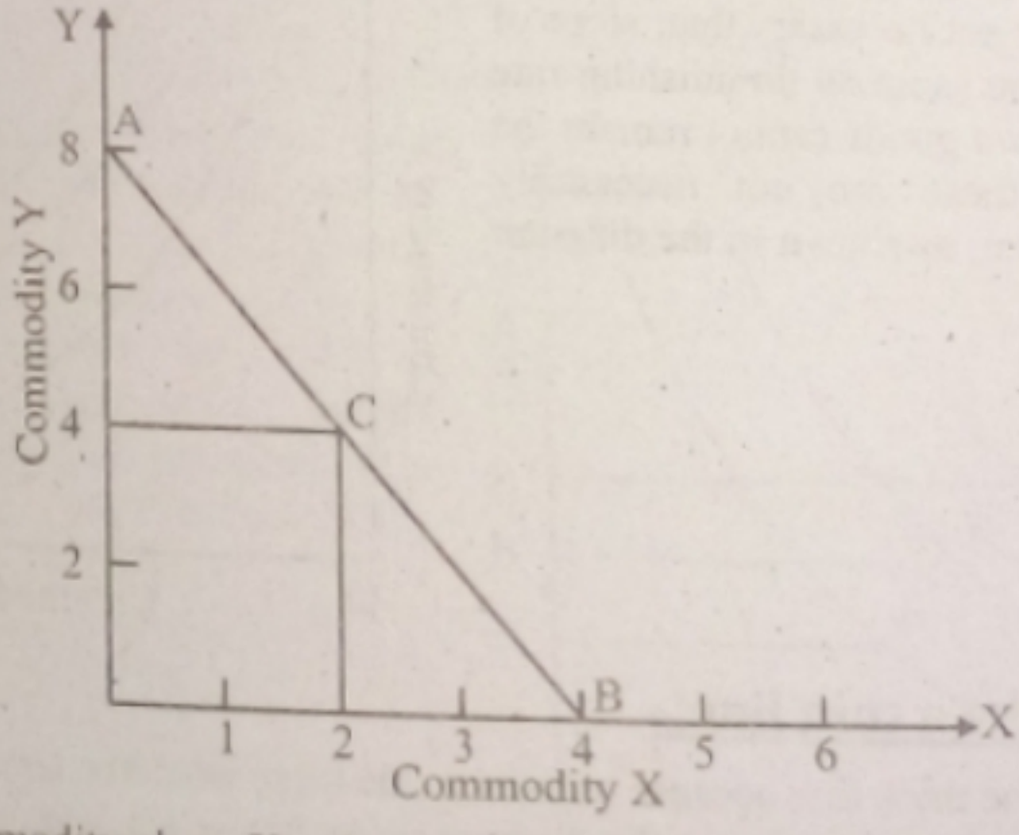
A Consumer has price and income constraint.

$$Y = p_1q_1 + p_2q_2 + p_3q_3 + \text{---} + p_nq_n$$

As income is the sum of the product of quantities of goods and their prices. This curve is called price lines, budget line or consumption opportunity line.

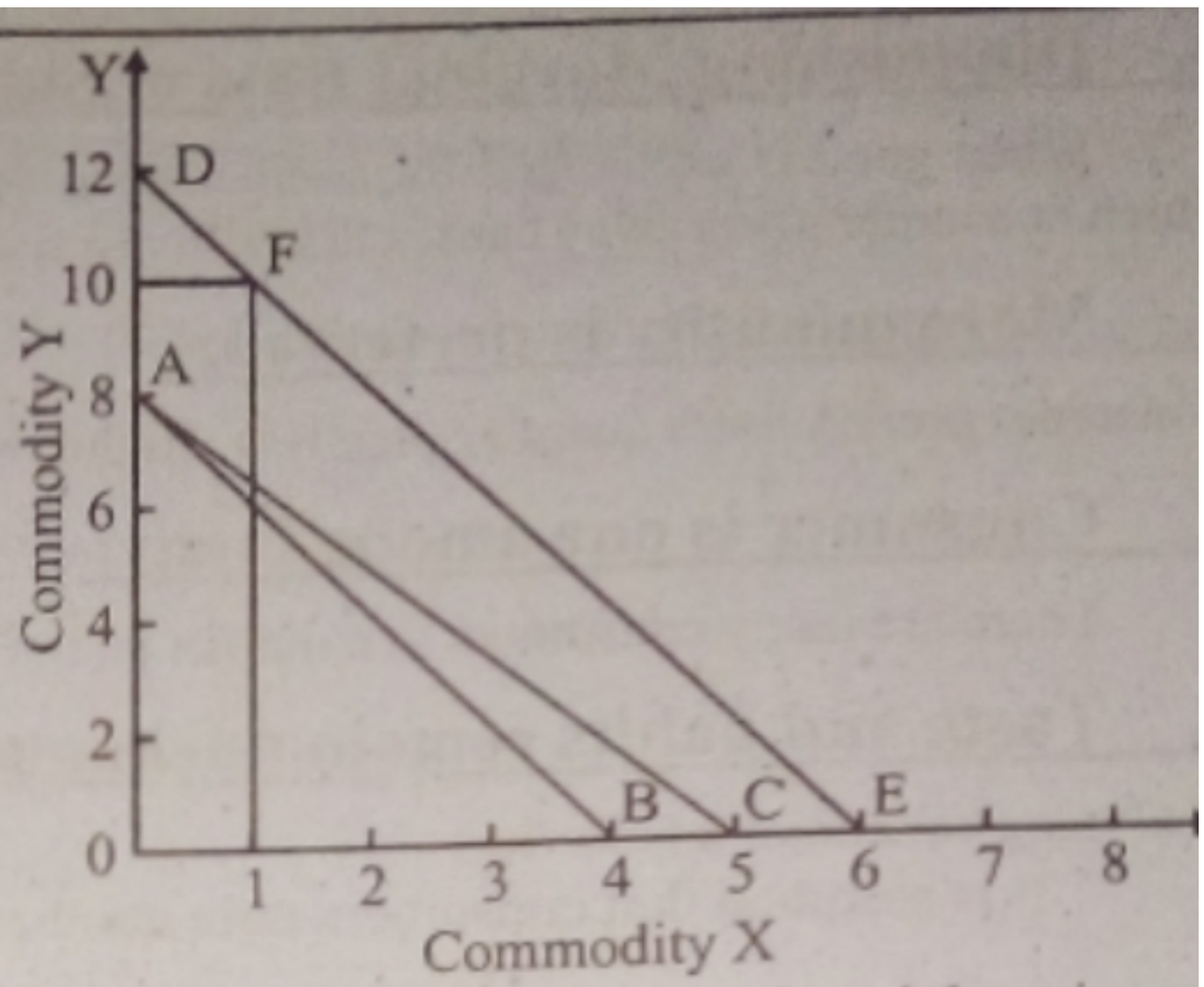
Suppose consumer has total 40 Rs. and he wants to purchase X and Y commodities. The price of X is 10/- Rs. while price of Y is 5/- Rs. per unit.

It is explained with the help of diagram as under:-



We put X commodity along X-axis and Y commodity on Y-axis. Consumer can either buy 4 units of X commodity and he will be at point B. In such a way, he does not have a single penny to spend on Y commodity, while at point A he can get 8 units of Y commodity in his total income

of 40 Rs. AB line is consumer's price line or consumption possibility curve. At this line any pair of X and Y will cost 40 Rs. For Example at point C he will spend 20 Rs. on the purchase of 2 units of X commodity (2x10 = 20), and 20 Rs. on 4 units of Y commodity (5x4 = 20). Price line changes due to change in the price of one or both commodities or due to the change in consumer's income. It can be explained with the help of graph given below:-



AB line is consumer's price line. If, the price of Y remains at 5/- per unit and the price o commodity decreases to 8/- Rs. per unit then consumer can get 5 units of X commodity instead 4, and his price line becomes AC.

If, the prices of both commodities remain constant but consumer's income increases fr 40 Rs. to 60 Rs. then he can get 12 units of X commodity instead of 8 units and 6 units o commodity instead of 4 units and new price line becomes DE that shows any pair at this line cost 60 Rs. For Example; at point F buyer will spend 10 Rs. on the purchase of one out c commodity and 50 Rs. on 10 units of Y commodity, and total expenditure will be (50+10= Rs.).

Changes in price line due to change in price of goods is called "Price Effect", as price shifts upward AB to AC. At the other hand shifting of curve is due to change in income tha called "Income Effect" as the price line AC shifted upwards as DE.

"Assumptions of The Theory":-

1. Consumer is Rational:-

Consumer is rational and spends his income carefully to maximize his satisfaction level.

2. Utility is Ordinal:-

Consumer can rank his preferences according to the satisfaction means he can order preferences.

3. Constant Prices:-

Consumer is well aware of the prices and these remains constant during the purchas goods.

4. Axiom of Consistency:-

Consumer is consistent. If he prefers one thing on other, then he will not prefer the 2nd first thing e.g. If A>B then $B \not> A$.

5. Axiom of Transitivity:-

If, consumer sees that; A>B and also B>C then definitely A>C.

6. Diminishing Marginal Rate of Substitution:-

When good is exchanged for another good then the substitution declines because the good which consumer gives away causes his utility to rise.

7. More quantity is preferred:-

Consumer prefers more quantity than less, Higher IC gives higher level of satisfaction.

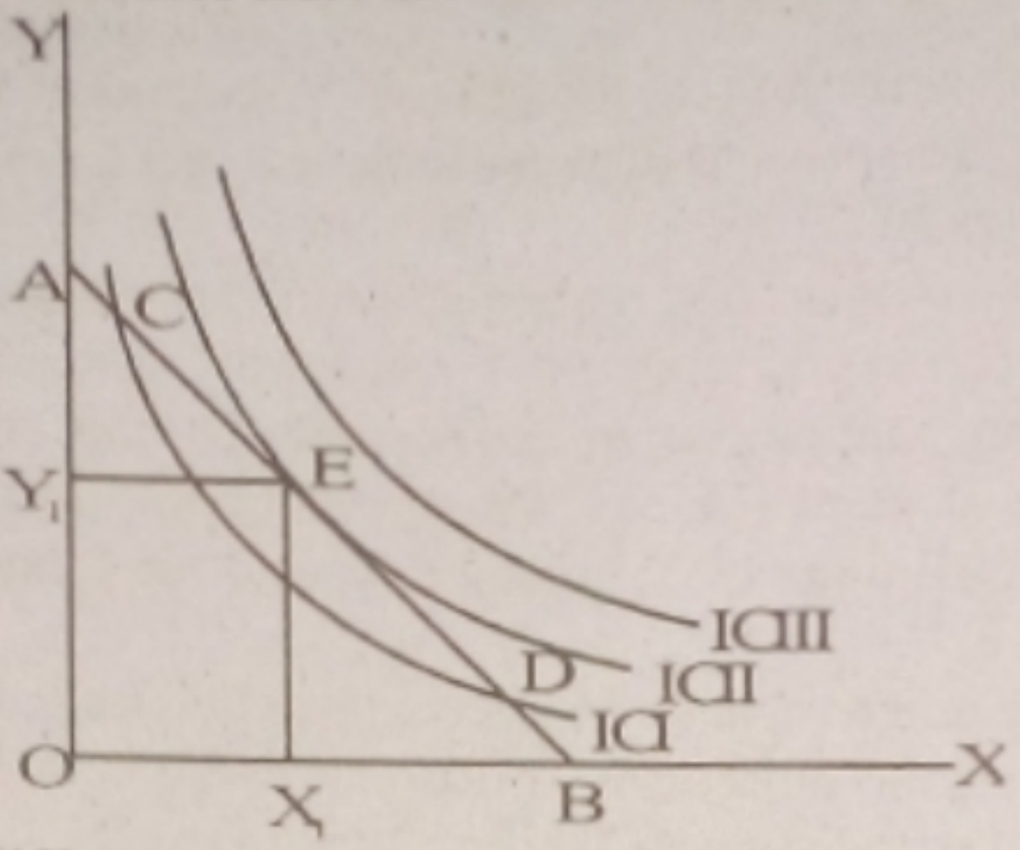
8. Consumer is one among many:-

There are many consumers in a market and everyone wants to maximize his satisfaction.

9. Taste and habits remain unchanged:-

Analyzing consumer's behavior.

It is assumed that consumers taste habit and income do not change.



There are three Indifference curves IC_1, IC_2 and IC_3 in the above diagram IC1 shows lowest level of satisfaction and IC3 shows the highest level of satisfaction. As IC_{II} is higher than IC_I but lower than IC_{III} AB is the price line IC_I intersect AB budget line at point C and D IC_I which provides same level of satisfaction to the consumer. but consumer will prefer point 'E' where IC intersects AB budget line. Which is located at higher IC_{II}, and gets OX_1 units of commodity 'x' and O y_1 units of Y commodity. IC_{III} shows highest level of satisfaction but it is out of reach of the consumer with present Px, Py and y (income) he cannot purchase any good at ICIII.

Conditions for consumer's equilibrium.

(1) Necessary Condition:

MRS should be equal to the ratio of relative prices.

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

(2) Sufficient Condition:

IC should be convex to the origin at equilibrium point. Consumer's equilibrium point E at above diagram satisfies both these conditions.