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Indifference curve analysis

1. What is an indifference curve?

The indifference curve analysis was first developed by *Edgeworth, pareto* and *slutsky*. The most detailed presentation is given by *Hicks* and *Allen*. The indifference curve analysis of demand is also known as the ordinal utility analysis. It is based on ordinal utility, where as the utility analysis of demand is based on cardinal utility.

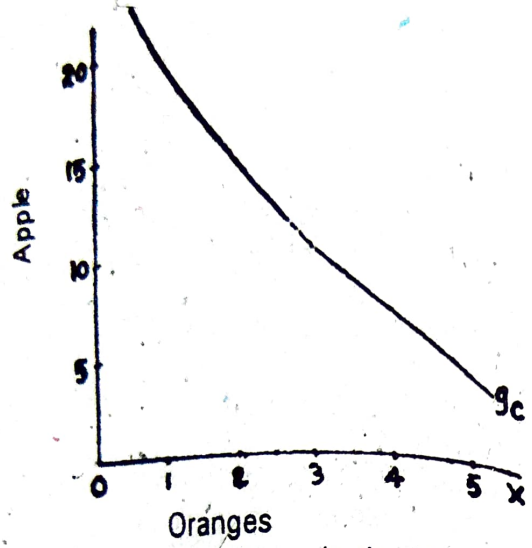
Indifference curve: *An indifference curve refers to the levels of the satisfaction of the consumer derived from a combination of two commodities.* It is assumed that the various combinations give equal satisfaction to the consumer. The following indifference schedule clearly explains the various combinations of goods. The various combinations of the following two commodities give the same total satisfaction to the consumer.

Indifference Schedule:

Combinations	Apples	Oranges	MRS
1	20	1	-
2	15	2	5:1
3	11	3	4:1
4	8	4	3:1
5	6	5	2:1

The above indifference schedule can be represented in the form of an indifference curve.

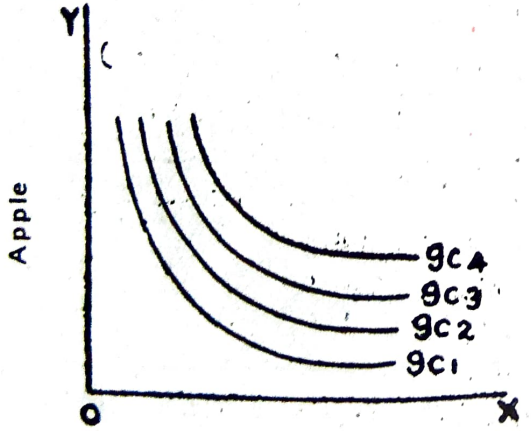
In the diagram OX-axis refers oranges, OY axis refers Apples.



The different combinations are shown in the IC. The IC is t indifference curve showing the various combinations of t two commodities which give the consumer equal satisfactio

An indifference curve may be defined as the locus various combinations of the two commodities which yield t same satisfaction to the consumer. Actually there are numb of indifference curves corresponding to each level of satisfa tion.

Indifference Map:



The various indifference curves have been shown the di gram. This is known as indifference map. There are vario curves on the indifference map. All points in any one IC represent the same level of satisfaction to the consumer. But no point on one curve yield the same satisfaction as another point on another curve. Higher indifference curve represent greater satisfaction and lower IC represent lesser satisfaction. The set of indifference curve is called as indifference map.

2. Explain the properties of indifference curves.

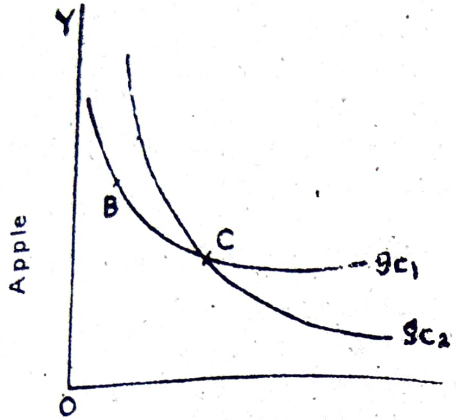
Properties of indifference curve: Indifference curves have three important properties or features (1) They always slope downward from left to right. (2) They are convex to the origin and (3) They never intersect each other.

1) The first property is that all *indifference curves necessarily slope downward from left to right.* The reason is if the consumer wants to have more of one good. He will have less of other good. As such, the indifference curve must slope downwards to the right. The indifference curve can neither be an upward sloping curve nor a horizontal or vertical curve. The only possibility is that it must slope downwards to the right.

2) The second property is that they are *convex to the orgin.* The indifference curve is normally steep first and tends to become horizontal. This property of indifference curve is based on the assumption of diminishing *marginal rate of substitution.* It is this diminishing rate of substitution which is responsible for the convexity of indifference curves. An indifference curve cannot be concave because such a curve represents an increasing marginal rate of substitution.

3) The third property is that *indifference curves never intersect each other.* This property is based on the assumption that different indifference curves represent different utilities. The figure shows that indifference curves cut each other which will never happen.

In the figure point A on IC_2 represents a higher level of satisfaction than point B on IC_1. Point C is on both the curves



which means that the level of satisfaction is the same. This clearly impossible. Thus indifference curve never interse each other. These are the important properties of indifferenc curves.

CONSUMER EQUILIBRIUM

3. Explain consumer's equilibrium with the help of indifferenc curves.

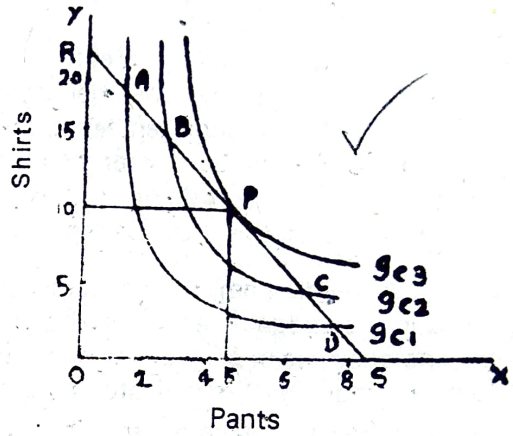
The consumer is said to be in equilibrium when he se cures maximum satisfaction from his limited income. In orde to explain how a consumer reaches equilibrium position, w have to make the following assumptions.

Assumptions:

1. The consumer has an indifference map showing hi scale of preference for various combinations of goods. Thi scale of preference remains the same throughout the analysis
2. The consumer has fixed amount of money to spend o two goods.
3. Prices of the goods are given and it is constant.
4. The consumer acts rationally and tries to maximise hi satisfaction.

Consumer's Equilibrium: Suppose a Consumer has Rs.20

vith him. He desires to spend on shirts and pants. The price f shirt is Rs.10 and pant Rs.20.



The consumer has an indifference map as shown in the gure.

Shirts are represented along OY axis and pants along OX xis. If the consumer spends all his money on shirts, he can et 20 shirts, (OR). If he spends all his money on pants, he an get 10 pants (OS). The line RS shows various combina- on of shirts and pants which the consumer can get for his oney income (Rs.200). This line is called price line or Budget ne.

The question is which of those combinations he will se- ct. At point P, the price line is tangent to the indifference rve. The consumer will be in equilibrium at this point. The mbination of 5 pants and 10 shirts gives him maximum sat- faction. A consumer will attain equilibrium at a point where e price line cuts the IC_1 at point A and IC_2 at point B and C. ut these points represent lower level of satisfaction, any com- nation other than P give less satisfaction to the consumer.

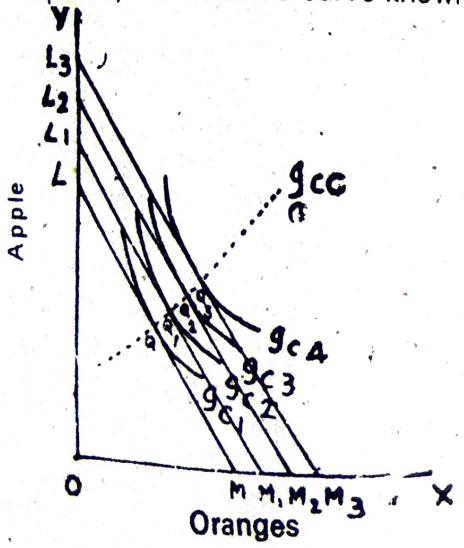
Therefore point A indicates the ideal combination between e two commodities, giving the consumer the maximum sat- faction with his limited income. At this point, consumer is in quilibrium. The fundamental condition of equilibrium is that

the marginal rate of substitution of the commodity X fo
modity Y should be equal to the ratio of prices betwe
two goods.

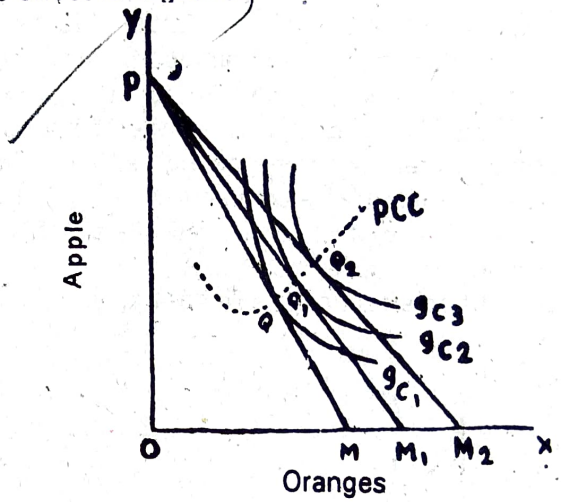
4. Explain income effect, price effect, substitution effe

a) Income effect: The income effect may be defi
the effect on the purchase of the consumer caused by ch
in income, when prices of goods remaining constant.
increase in income takes the consumer to a higher Ic_1,
decrease in income brings him down to a lower Ic_1. T
come consumption curve (Icc_1) traces the income effec

As shown in the diagram, the consumer is in equili
at the point Q in the budget line LM. As his income inc
the income line price line or budget line shifts upwards
right. The new budget line are indicated by L_1M_1, L_2M_2,
These lines are parallell to each other. There is no chan
the prices of the two commodities. Only the income o
consumer has increased. The increase in income enable
consumer to purchase larger quantities of both the com
ties. With the increase in income the consumer reaches
equilibrium positions in his new budget line $Q_1Q_2Q_3$. By j
together these points, we obtain a curve known as in



onsumption curve (Icc). This curve indicates the changes in
onsumption of goods as a result of changes in income of the
onsumer. It usually slope upwards to the right. If one of
oods is an inferior good, it may slope upwards to the left or
lope downwards to the right. Generally for inferior goods the
ncome effect is negative.



b) Price consumption curve or price effect: The effect of
hange in the price of a commodity on its purchase is known
s the price effect. The price consumption curve (PCC) traces
he price effect. For e.g., if the price of one of the two com-
nodities changes, due to the change in price of one commod-
y, there is a change in the price line. The consumer in order
o reach the new equilibrium moves on to another indifference
urve. This movement can be termed as the "Price effect".

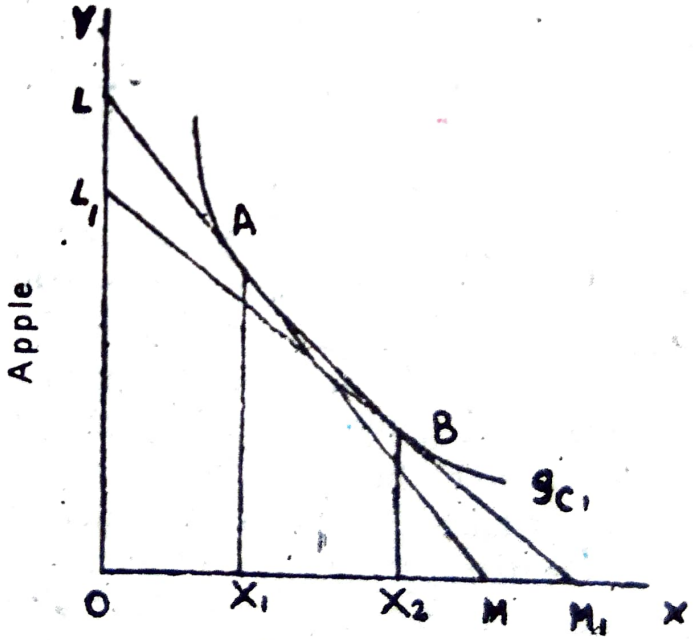
The price effect has been illustrated in the diagram, PM is
he initial price line. Indifference curve touches the price line
t the point Q. The initial point of equilibrium of the consumer
s at Q.Now the price of oranges falls down.

The new price line will be PM_1 This price line is tangent to
he next higher in difference curve Ic_1, at Q_1. The consumer is
ow in equilibrium at point Q_1 if there is still change in the
rice, price line will also change. The new price line is PM_2.The

new position of equilibrium will be at Q_2. If we join toge the equilibrium points Q, Q_1 and Q_2. We get the price sumption curve (Pcc). The Pcc shows the reaction of consumer when there is change in the price for one of commodities. This shows the *price effect*.

C) Substitution effects: This substitution effect refe the change in the demand of two commodities as a resu their relative change in prices, the total utility remaining same. Substitution effect occurs when the relative pric goods change and there is compensating varition in inco The consumer will substitute a commodity which is relat cheaper for a commodity which is relatively dearer. This ca a movement along an indifference curve.

The substitution effect can be illustrated with the he a diagram.



Substitution effect

In the diagram, the two axis represents two goods. L the budget line and the equilibrium position is indicated by suppose the price of orange falls, orange become cheaper apple become relatively dearer. The cheapness of one and costliness of the other have neutralised or compensated e other. So the consumer remain on the same indifference cu

The consumer finds new equilibrium point B on L_1M_1 the new budget line. It will be clear that the consumer has now more of orange and less of apple. The movement along the same indifference curve from A to B or from X_1 to X_2 represents substitution effect (i.e). The substitution of the dearer commodity by a cheaper commodity. The substitution effect is said to be always positive.