Indifference curve analysis

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. An indifference curve is a curve that shows all those combinations (bundles) of two goods which give equal satisfaction to the consumer.

Table 14.4 shows an indifference schedule showing all the combinations of good X and good Y giving 'equal satisfaction to the consumer. Combinations A, B, C and D of good X and Y viz. (1X + 8Y), (2X + 4Y), (3X + 2Y) and (4X + 1Y) give the consumer equal satisfaction. In other words, consumer is indifferent between these combinations of good X and good Y. When these combinations are represented graphically, we get an indifference curve as shown in Fig. 14.2.

Table 14.4: Indifference Schedule

Combinations	Good X (Units)	Good Y (Units)	Marginal Rate of Substitution (ΔY/ΔX)
A	1	8	–
B	2	4	4Y: 1X
C	3	2	2Y: 1X
D	4	1	1Y : 1X

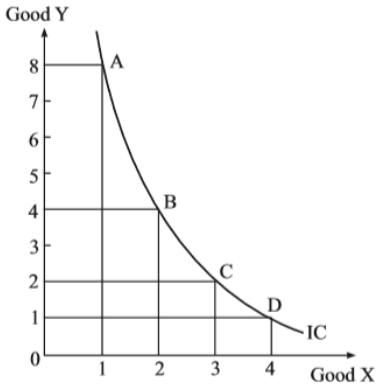

Fig. 14.2

Indifference map

An indifference map is a collection of indifference curves that represent different levels of satisfaction. Higher indifference curves represent higher level of satisfaction because higher indifference curves represent more quantities of both the goods or same quantity of one good and more quantity of other good.

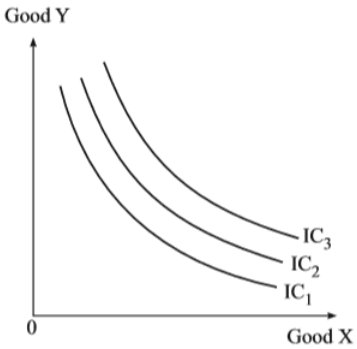

Fig. 14.3 Indifference Map

An indifference map containing three indifference curves IC1, IC2 and IC3, is drawn in Fig. 14.3. All the bundles on IC2 give more satisfaction to the consumer in comparison to IC1. Similarly, the bundles on IC3 give more satisfaction to the consumer in comparison to IC1 and IC2.

What is marginal rate of substitution (MRS)?

Marginal rate of substitution (MRS) refers to the rate at which consumer is willing to give up amount of other good to obtain one extra unit of the good. MRS is the slope of an indifference curve.

It is expressed as MRS_{xy} of good X for good Y. MRSxy can be explained with the help of Fig. 14.5.

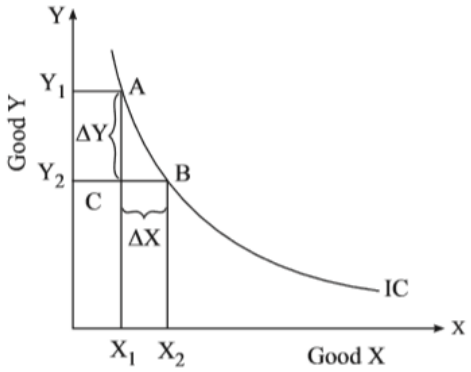

Fig. 14.5

$$MRS_{XY} = \Delta Y/\Delta X = AC/CB$$

State the properties of indifference curve.

Following are the properties:

(i) Indifference curves are always convex to the origin
(ii) Indifference curves always slope downwards
(iii) Indifference curves never intersect
(iv) Higher Indifference curves represent higher level of satisfaction.

What is a 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.

Suppose, the consumer wants to buy good X and good Y; price of each unit of X is P_1 and that of Y is P_2; Then the expenditure on X will be equal to P_1X and the same on Y will be equal to P_2Y. Total expenditure on good X and Y will be $P_1X + P_2Y$. Let the money required to buy these goods is denoted as M. So, we can write that $P_1X + P_2Y = M$

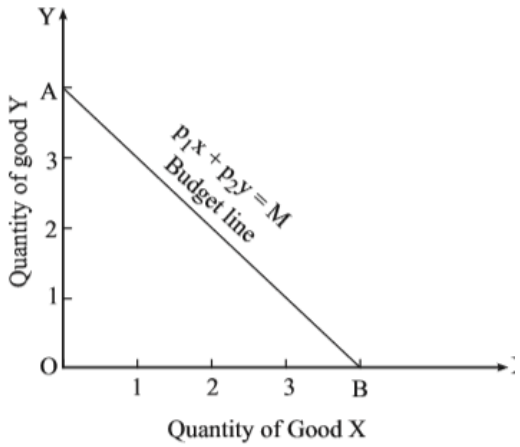

Fig. 14.4

In the Fig. 14.4, AB is the budget line. Point A is located by dividing the entire income over quantity of good Y only. Similarly point B is located by dividing the entire income over quantity of good X only. At any point on the line AB other than, A and B, the consumer can buy certain combination of X and Y by using her income.

Why is budget line negatively sloped and when it changes?

A budget line changes when either the prices of the goods or income of the consumer or both changes. A budget line is negatively sloped because to buy more units of a good, consumer must buy less units of other good as consumer's income is fixed.

Demand

What is Demand?

Demand for a commodity refers to the quantity of a commodity that a consumer is willing to buy at a given price during a given period of time. When a consumer wishes to consume a commodity and has also the necessary purchasing power i.e. income along with willingness to spend, he is said to have demand for the commodity.

What is individual demand and market demand?

Individual demand for a commodity refers to the quantity of the commodity that an individual buyer is willing to buy at a given price during a given period of time. For example, Akshay's demand for apple is the individual demand for apple.

But Akshay is not the only buyer of apple in the market. There may be other persons who may demand apples in the market. Let us assume that besides Akshay there are three more buyers of apples in the market Rohit, Ritik and Ajai. Market demand for apples will be the sum of demand of all the buyers of apples at a given price during a given period of time. Suppose, when price of apples is ` 60 per Kg., Akshay buys 2 Kgs. , Rohit buys 3 Kgs. , Ritik buys 2.5 Kgs. and Ajai buys 1.5 Kgs. of apples during a week then market demand for apples will be 2 + 3 + 2.5 + 1.5 = 9 kgs. at price ` 60 per kg.

Thus, **market demand** for a good means the total quantity of a commodity that all the buyers of the good are willing to buy at a given price over a given time period.

Derive individual and market demand curve using demand schedules.

Individual demand schedule shows different quantities of a commodity demanded by an individual buyer at different prices. Such a schedule is given in table 15.2.

Table 15.2 Individual Demand for Apples

Price of Apples Per kg. (₹)	Quantity Demanded of Apples (per week) (In kgs.)
90	1
80	2
70	3
60	4
50	5

The above schedule shows that when price of apples is ` 90 per Kg. quantity demanded is 1 Kg. per week. But when price falls to ` 80, ` 70, ` 60 and ` 50 per Kg. quantity demanded increases to 2 Kgs., 3 Kgs., 4 Kgs. and 5 Kgs. per week respectively. So, the demand schedule is a tabular statement of law of demand. Demand schedule shows different quantities of a commodity demanded at different prices in tabular form.

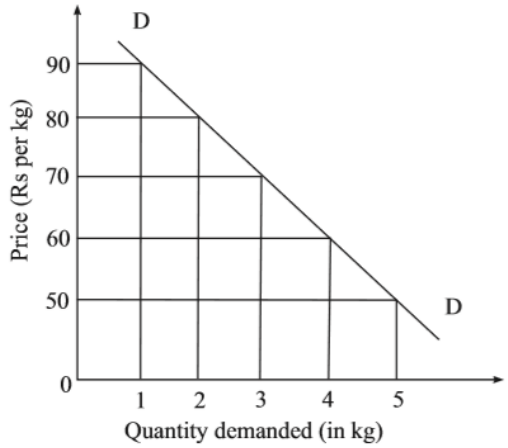

Fig. 15.2: Individual demand curve

If we plot the individual demand schedule on the graph paper, we will get a curve which is called as individual demand curve. Individual demand curve is shown in Fig. 15.2. As seen in the diagram, price is taken on Y-axis and quantity demanded on X-axis. Points A, B, C, E and F represent five combinations of price and quantity demanded of apples given in table 15.2. Point A shows that at the price of ` 90 per Kg. the quantity demanded of apples is 1 Kg. per week, Point B shows the quantity demanded is 2 Kgs. per week when the price is ` 80 per Kg. Similarly, the other combinations of price and quantities demanded

of apples as given in table 15.2 are shown as points C, E and F. By joining these points individual demand curve for apples has been derived.

Market demand is the total quantity of a commodity that all its buyers taken together are willing to buy at a given price during a given period of time. From the individual demand schedules of a commodity, we can prepare the market demand schedule of that commodity. We assume that there are only three buyers A, B and C of apples in the market. The demand schedules of these buyers are given in table 15.3.

Table 15.3: Market Demand for Apples

Price of Apples	Quantity Demanded of Apples per week (In kgs.)			Market Demand of Apples per week (In kgs.)
	A	B	C	M.D. = A + B + C
90	1	3	2	1 + 3 + 2 = 6
80	2	5	3	2 + 5 + 3 = 10
70	3	7	4	3 + 7 + 4 = 14
60	4	9	5	4 + 9 + 5 = 18
50	5	11	6	5 + 11 + 6 = 22

When price of apples is ` 90 per Kg. A demands 1 Kg. of apples, B demands 3 Kgs. of apples and C demands 2 Kgs. of apples. Thus, market demand for apples at a price of ` 90 per Kg. is 1 + 3 + 2 = 6 Kgs. per week. Likewise, market demand for apples can be obtained at other prices also as shown in table 15.3.

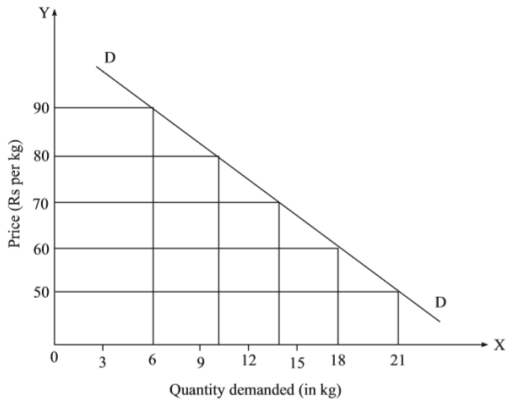

Fig. 15.3

Just as we plotted the individual demand curve on a graph paper, if we now plot the market demand schedule given in table 15.3, we will get the following figure 15.3. In Figure 15.3 points F, G, H, I and J show the quantity demanded of apples per week in the market at each of the price given in schedule 15.3. Point F shows that the market demand per week of apples is 6 Kgs when the price of apples is ` 90 per Kg. Similarly, the other combinations of price and quantity demanded of apples as given in table 15.3 are shown as points G, H, I and J. By joining these points market demand curve for apples can be obtained.

Which factors influence the demand of a commodity?

The factors that influence a consumer's decision to purchase a commodity are also known as determinants of demand. The following factors affect the individual demand for a commodity:

1. price of the commodity- when price of a commodity falls, we tend to buy more of it and when its price rises, we tend to buy less of it.

2. price of related goods- While purchasing a good, prices of its substitutes and complement goods affect its quantity purchased.

3. income of buyer of the commodity- demand for commodities increases when income of the buyer increases and demand for these commodities decreases when income of the buyer decreases

4. tastes and preferences of the buyer- Those commodities which are popular, their demand for those rises. On the other hand, if a commodity goes out of the fashion, its demand falls because no consumer will like to buy it.

What is the law of demand? What are its assumptions?

The law of demand states that other things remaining same, quantity demanded of a commodity is inversely related to its price. In other words, demand for a commodity rises when its price falls and its demand falls when price rises provided other factors remain unchanged.

The law of demand can better be explained with the help of table 15.1 and figure 15.1

Table 15.1

Price (In ₹)	Quantity Demanded (In Units)
1	10
2	8
3	6
4	4
5	2

As you see in table 15.1 when price of the commodity rises, quantity demanded decreases.

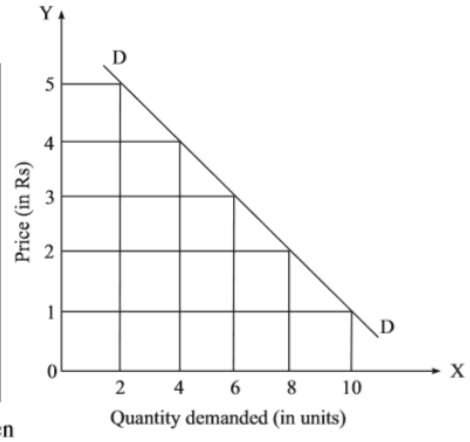

Fig. 15.1

As you see in table 15.1 when price of the commodity rises, quantity demanded decreases. That is why the demand curve slopes downwards from left to right as shown in Fig. 15.1. Downward slope of demand curve shows the inverse relationship of price and quantity demanded of a commodity.

Following are the assumptions on which the law is based:

1. Prices of substitute goods do not change.

2. Prices of complementary goods do not change.

3. Income of the buyer remains the same.

4. There is no change in tastes and preferences of the buyer.

Show the movement along demand curve and shifts in demand curves using diagram.

1. Movement along the same demand curve

When quantity demanded of a commodity changes due to change in its price, keeping other factors constant, it is called change in quantity demanded. It is graphically expressed as a movement along the same demand curve.

There can be either a downward movement or an upward movement along the same demand curve. Upward movement along the same demand curve is called contraction of demand or decrease in quantity demanded and downward movement along the same demand curve is known as expansion of demand or increase in quantity demanded. These can better be explained with the help of Fig. 15.4.

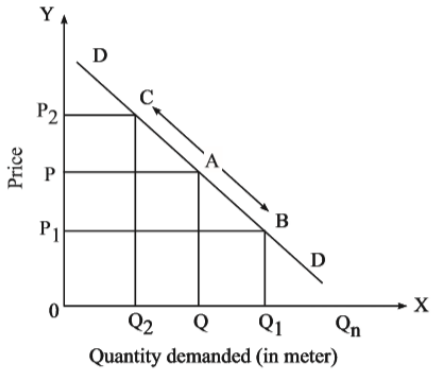

Fig. 15.4: Movement along the demand curve

A fall in price from OP to OP1 leads to increase in quantity demanded from OQ to OQ1 (expansion of demand) resulting in a downward movement from point A to point B along the same demand curve DD. When Price rises from OP to OP2, quantity demanded falls from OQ to OQ2 (contraction of demand) leading to an upward movement from point A to point C along the same demand curve DD.

2. Shifts in demand curve:

When the demand for a commodity changes due to change in any factor other than the price of the commodity, it is known as change in demand. It is graphically expressed as shift in demand curve. Demand curve of a commodity may shift due to change in price of substitute good, change in price of complementary goods, change in income of the buyer, change in tastes and preferences, change in population, change in distribution of income, change in season and weather etc. The shift in demand curve can be explained with the help of Fig. 15.5:

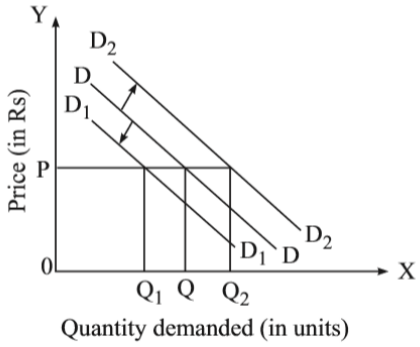

Fig. 15.5: Shift in demand curve

You can see in fig. 15.5 that quantity demanded decreases from OQ to OQ1 at the same price OP. This decrease is due to unwanted change in factors other than price of the commodity. This is called decrease in demand. When there is decrease in demand, the demand curve shifts towards left. When quantity demanded increases from OQ to OQ2 at same price OP, this is called increase in demand. Increase in demand is due to favourable change in factors other than price of the commodity. In case of increase in demand, the demand curve shifts towards right.

When does law of demand does not apply or what are its exceptions?

The law of demand does not apply in case of following goods:

1. Giffen Goods.

2. Luxury Goods: Some goods are used by rich people as status symbols, e.g., diamonds, gold jewelry etc. The higher the price, the higher will be the demand for these goods. When price of such goods falls, these goods are no longer looked at as status symbol goods and, therefore, their demand falls.

3. Irrationality of consumers.