CHAPTER-4

Elasticity of Demand

Q.1 What is price elasticity of demand? Explain various types of price elasticity of demand.

Ans:- Introduction:-

Demand always varies with price .The law of demand states that there is an inverse relationship between price and quantity demanded. But it does not tell us anything about the proportionate changes. When price of any commodity changes, demand of that commodity is affected. But the extent of variation is not uniform in all cases. In some cases, the variation is extremely wide, while in some other cases it may be just nominal. The extent of variation in demand is thus technically expressed as elasticity of demand.

The term elasticity of demand, when used without clarification is commonly referred to as price elasticity of demand. But this is a loose interpretation of the term. In a strict logical sense the elasticity of demand is a measure of the extent of change in demand in response to the change, in any one of demand determinants.Infact economist consider three important kinds of elasticity of demand like:-

(i) Price elasticity of demand

(ii)Income elasticity of demand

(iii)Cross elasticity of demand

1. Price elasticity of demand:-

According to Prof.Marshall-The price elasticity of demand may be defined as-"The ratio of the relative change in demand to a relative change in price. In other words, we may say-Price elasticity refers to the responsiveness of demand to price change

The price elasticity of demand attempts to measure the relationship between percentage change in price and percentage change in demand for a give commodity.

Thus, **Price elasticity Demand =** **%change in demand for x**

% change in price for x

Symbolically it may be stated as under

$$\text{Price ed} \quad = \quad \dfrac{\dfrac{\Delta Dx}{Dx}}{\dfrac{\Delta Px}{Px}}$$

$$\therefore \quad \dfrac{\Delta Dx}{Dx} \times \dfrac{Px}{\Delta Px}$$

Where,

D = Demand

P = Price

Δ = Change

X = Commodity

By using the above formula the numerical co-efficient of price elasticity can be measured from any such given data. It may be noted that the numerical co-efficient of price elasticity of demand is always negative because there is an inverse relationship between change in price of a commodity and change in its demand. It is for the sake of convenience that economists ignore the negative sign and generally use a positive figure.
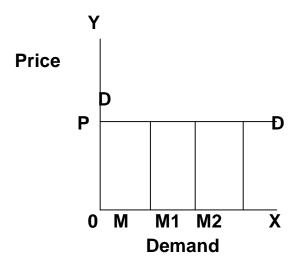
Types of price Elasticity:-On the basis of responsiveness of demand to a change in price of commodity **Prof.Marshall has** suggested three fold classification of types of price elasticity of demand. But the modern

economists have stated 5 types of price elasticity of demand. They are as follows.

1. Perfectly Elastic Demand:-

An endless demand at a given price is the case of perfectly elastic demand. When the demand is perfectly elastic, with a slight rise in the price reduces the demand to zero and a slight fall in the price increases demand to infinity.

The scope of demand curve reflects the elasticity of demand. In case of perfectly elastic demand. The demand curve will be a horizontal straight line. It should be parallel to **X**-axis as given below.
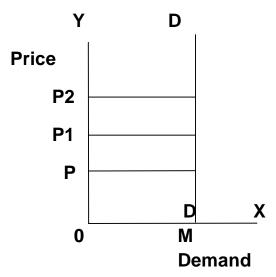

Perfectly elastic demand is the case of theoretical extremity. There is no commodity in the market which has perfectly elastic demand.

In case of perfectly elastic demand co-efficient would be infinity Ed=α

2. Perfectly Inelastic Demand:-

When the demand for a commodity shows no response at all to change in price, whatever is the change in price. But the demand remains the same. We have a case of perfectly inelastic demand. Here the change in price fails to bring about any change in the demand.
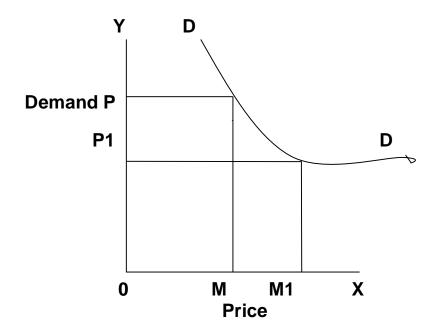
It has also theoretical importance .But the commodity of absolute necessity like salt seems to have perfectly inelastic demand .In this case demand curve can be drawn as follows:-

```
        Y              D
  Price
          P2 ───────────────
          P1 ─────────────
           P ───────────
                         D      X
        0              M
              Demand
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In case of perfectly inelastic demand the demand curve would be the straight vertical line .Here inelasticity of demand=0. Therefore Ed = 0
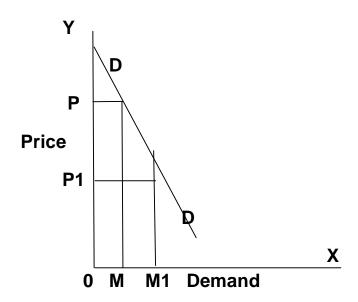
3. Unitary Elastic Demand:-

When the proportion of change in demand is exactly the same as the change in price .the demand is said to be unitary elastic. Here the change in price will bring equal change in demand. We can draw unitary elastic demand curve as under.

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        Y       D

 Demand P ─────────────
                          D
      P1 ─────────────────────

        0        M    M1      X
              Price
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In case of unitary elastic demand the demand curve would be rectangular hyper bolla curve. Hence elasticity of demand=1 there for ed =1

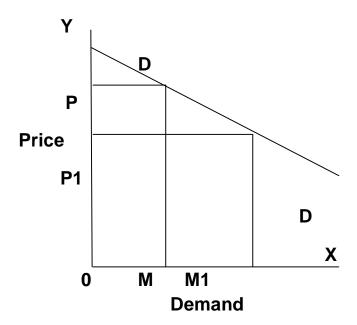## 4. Relatively Inelastic Demand:-

When the proportion of change in the quantity demanded is less than that of price, the demand is said to be relatively inelastic. Here, the demand is less elastic than unit. We can draw the curve as under.

In case of relatively inelastic demand, the demand curve would be rapidly sloping downward. It should be steeper demand curve Here elasticity of demand is less than 1. ∴ Ed< 1

5. Relatively elastic Demand:-

When the proportion of change in the quantity demanded is greater than that of price, the demand is said to be relatively elastic, here the demand is more elastic than units. We can draw demand curve as follows:-

In case of relatively elastic demand, the demand curve would be gradually sloping downward. It should be flatter more .Here ,the elasticity of demand is more than 1. ●●●Ed >1

Q.2 Explain Factors affecting price elasticity of demand

Ans:-price elasticity of demand is relative. A change in demand for a commodity in response to a change in its price may differ from person to person. Therefore, it is not possible to say exactly Whether the demand for a commodity is elastic or inelastic. Some general indications can be given. The demand for a commodity is elastic or inelastic will depend on a variety of factors.The major factors are follows:-

1. Necessaries:-

Demand for such a commodities or services are largely fixed. It changes less than proportionately to change in price.Thus, we find that demand for foodgrains,salt,tea, etc.is generally inelastic.

2. Luxries:-

The demand for luxuries like Washing –Machine,A-C,car etc .is relatively elastic. A slight fall in price may induce more than proportionate

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increase in demand .It may be noted that luxuries are the relative term. What may be luxuries for one may be necessity for other.

For Example:-very costly dress is a luxury for a college student but a necessity for a film actress.

3.Substitute Goods:-

The demand for a commodity which has substitute is generally elastic.

For Example:-If the price of Lux falls relatively to Liril.The demand for Lux will rise more than proportionately. The consumers who formally were using Liril may turn to Lux. But in respect of commodities having no substitute there demand will be somewhat inelastic.Therefore,the demand for Salt,Onions,Potatoes,are highly inelastic.

4.Goods for several uses:-

If a particular commodity has many uses the demand for it is said to be elastic. Take the case of electricity. electricity is used for light cooking and many other domestic and industrial purpose. But all uses are not equally important, with a fall in the price this commodity may be demand more for various uses, therefore demand is elastic.

5.Durable Goods:-

In case of durable goods the demand generally tends to be elastic in the short run.For Example:-Radio,T.V,Scooter,Furniture etc.

In case of these commodities demand can be postponed because it is repairable commodity But in reference to perishable goods like Milk and Vegetables demand is relative inelastic.

6. Level of prices:-

The demand for goods whose prices are either very high or very low is inelastic. Generally very high priced goods are purchased by the rich people and their demand is inelastic because they do not care about

price.Smilarly, the very low priced goods are generally necessaries and hence the demand for them is inelastic.

7. Complementary Goods:-

Goods which are jointly demanded have less elasticity.

For Example:-Ink and Pen have inelastic demand for this reason.

8. Influence of habit and custom:-

There are certain articles which have a demand on account of customs or habit. In this case elasticity is less.

For Example:-Mangalsutra to Hindu bride or cigarettes to a smoker have inelastic demand.

Q.3 Income Elasticity of Demand:-

Demand for a commodity is function of many variables. Price is one of them. Among other variable influencing demand –income of the buyer is important. Therefore, sometimes demand changes due to change in the buyers income. All other factors including price remain constant. It expresses relationship between percentage change in income and percentage change in demand for the given commodity.

The income elasticity is thus defined as the ratio of percentage change in quantity demanded to the percentage change in income. Income elasticity co-efficient is thus measured by the following formula.

$$\text{Income } Ed = \frac{\%\text{change in demand}}{\%\text{change in income}}$$

$$edy = \frac{\Delta D}{D} \times \frac{Y}{\Delta Y}$$

Where,

       D=Demand

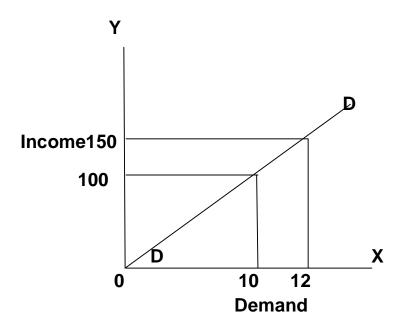 $\triangle$ =Change

       Y=Income

Types of Income Elasticity:-

Income elasticity, on the basis of its co-efficient may be classified as under-

1. Positive Income Elasticity:-

When an increase in income causes an increase in the demand for a commodity, the demand is said to be a positive income elastic. In the case of positive income elasticity the co-efficient would be positive(+).The commodity which are consider as "Superior" or normal have positive income elasticity. The slope of demand curve in this case will be upward as below.

Following are the types of positive income elasticity:-

(a) Unitary income elastic Demand:-

When the percentage change in demand is equal to the percentage change in income the demand is unitary income elastic. Here change in income will bring equal change in demand. Therefore, elasticity of demand =1, therefore edy=1
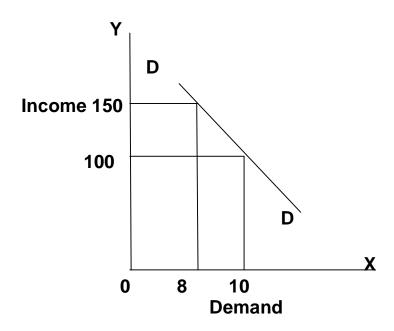
(b) Income elasticity greater than unity:-

When the percentage change in quantity demanded is greater than the percentage change in income. The income elasticity of demand is more than unity. Here the change in income will bring more change in demand. Therefore edy >1

(c) Income elasticity less than unity:-

When the percentage change in quantity demanded is less than the percentage change in income, the income elasticity of demand is less than unity. Here the change in income will bring less change in demand. Therefore edy < 1
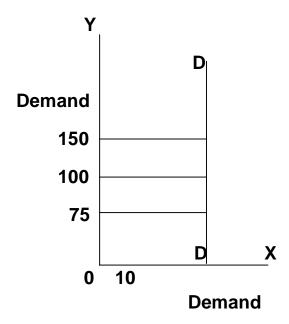
2. Negative Income Elasticity:-

When an increase in income causes a decrease in the demand for a given commodity, the demand is said to be negative income elasticity. In case of negative income elasticity the co-efficient would be negative (-).The commodity which are considered as"inferior"generally have negative income elasticity. The demand curve in this case will be downward sloping as given below:-

3. Zero income Elasticity:-

When the demand for commodity shows no response at all to change in income, whatever is the change in income but the demand remains the same it is the case of zero income elasticity. In case of zero income elasticity the co-efficient would be zero (0).The commodities like Sale, Match-box, Pin, Post-card etc, have zero income elasticity. Demand curve in this case is a vertical straight line as given below:-

Q.4 short note: - cross elasticity of Demand

Demand for commodity is influenced not only by the price of the commodity and income of the consumer but also by the price of other commodity. Thus the demand for orange depends on the price of apples also. The cross elasticity of demand express a relationship between the change in the demand for a given commodity in response to the change in the price of some other commodity.

The concept of cross elasticity is important in the case of commodityes, which are either **substitutes or complementary .** Lux and liril are substitute for each other.pen and ink, car and petrol are complementary goods, cross elasticity can be measured by the following methods:-

Cross ed =   %change in demand of 'x'   X and Y refers
**   %change in price of 'y'   different commodity**
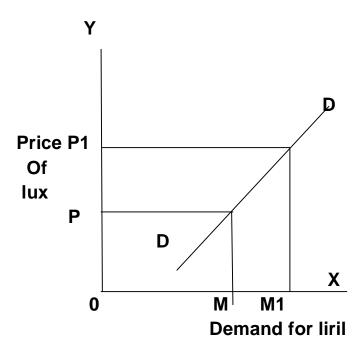
Types of cross elasticity:-

On the basis of co-efficient of cross elasticity, we can divide the cross elasticity of demand in to two types. They are as follows:-

   1. **Positive cross elasticity:-**

In the case of substitute commodity, the cross elasticity of demand would be positive. For e.g. Lux & Liril. If the price of Lux falls, demand for Lux rises. But the demand for Lux would rise at the lost of Liril. (Some consumer who preferred Liril earlier now turns to lux)

Therefore, the demand for Liril would fall in response to a fall in a price of lux.In diagram, we can put it as follows:-
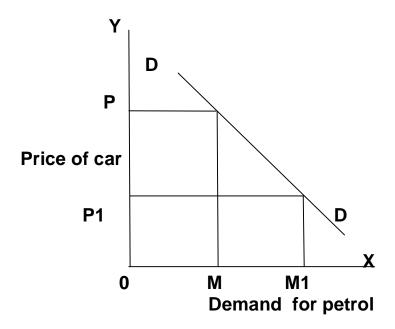
```
Y
                                           D
Price P1 ┤──────────────────────┐
 Of                             │
 lux                            │
   P ┤───────────────┐          │
          D         ╱           │
                   ╱            │
                  ╱             │
                 ╱              │           X
   0          M    M1
        Demand for liril
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Conclusion:-

1. In case of perfect substitute co-efficient of cross elasticity of demand would be infinity. Cross ed = α

2. In case of close substitute co-efficient of cross elasticity demand would be more than unit. Cross ed>1
   (One) ed>1

3. In case of far substitute co-efficient of cross elasticity demand would be less than unit. Cross ed<1

2. Negative cross Elasticity:-

In case of complementary commodity, the cross elasticity will be negative. Take the case of Car and Petrol-A fall in the price of car, demand for car rises-Petrol being a complementary of car, the demand for Petrol also rise. Therefore the demand for Petrol would rise in response to the fall in the price of Car.we can put it as follow:-

Y

D

P

Price of car

P1　　　　　　　　　　　　D

0　　　　M　　　M1　　　X

Demand for petrol

In diagram, we can see that there is an inverse relationship between price of car and demand for Petrol. Therefore the co-efficient of cross elasticity demand would be negative.