

affected because of it. The demand of those commodity rises whose excessive advertising is done by the business persons. In case of low advertising, there is low demand for such commodity.

14. Government Policy : In democratic countries govt. policy is an important factor affecting demand. If the government levies taxes on any commodity its price rises and demand get hampered whereas govt. subsidy, monetary help and discounting is assistance and tax relief encourage the demand. Govt. takes help of rationing also to ban the demand of some commodities.

KINDS OF DEMAND

Following are the main types of demand :

(1) Producers' Goods and Consumers' Goods Demand :

which help in the production of other goods, the demand for these commodities is called Producers' Goods Demand. The demand for these commodities are not by the consumers for direct consumption but for manufacturing in factories or for resiling such as raw material, machinery, tool's demand etc. The main features found in this type of demand are :

1. Business buyers are having professional ability who are very sensitive to price and quality for choosing alternative goods.

2. Buyers mainly consider the economic factors while purchasing goods and they are not very much influenced by the advertising and social factors. Professionals buy commodity to maximise profit earning.

3. Demand of producers' goods depends on the demand for the commodities manufactured by such buyer.

The goods which are used for consumption of end user consumer, its demand is called Consumers' Goods Demand. For example, demand for watch, cycle, radio, soap etc. The number of consumers to demand for consumer goods is large and market is wide. It's demand is affected by economic and uneconomic factors.

The difference between Producers' Goods and Consumer Goods are following :

1. The buyer of producers' goods is the business manufacturer or profession list whereas buyers of consumers' goods are end user consumers.

2. The number of buyers of producers' goods is small whereas the number of consumers' goods is large.

3. The market for producers' goods is less wider in comparison to consumers' goods market.

4. Seller of producers' goods maintains a personal relationship with buyers of producer goods whereas in case of consumers' goods advertisement and promotional activities are carried on.

5. The buyers of producers' goods deeply analyze the price and quality of goods to be purchased but the buyers of consumers' goods take decision without deep thought, if they have proper income.

Actually the difference between consumers' goods and producers' goods depends on the fact that who is the buyer and what is the purpose of such

(5) Price and Income Demand : Price demand is the demand which a customer is ready to buy at different imagined prices in a particular time. Price and demand have inverse relationship. Less demand on more price and more demand on less price is found. Income demand means the quantity demanded of any commodity which a customer is ready to buy at different stages of income. Income demand curve is also called **Engel curve** in the name of famous German economist **Engel**. Some commodities are such whose demand increases with increase in income, they are called superior commodities. These are commonly comfort giving and luxurious commodities. Some other commodities are such whose demand decreases with increase in income. These goods are called inferior commodity. In case of maize, the demand by consumer decreases with rise in income.

(6) Substitution and Complimentary Demand : Substitution demand are of those items which are used in place of other commodities like tea and coffee, cooking gas and kerosine oil etc. There is a direct relationship between price of substitute goods and demand of original goods. Increase or decrease in price of one commodity results in increase or decrease in quantity demanded of other item. Complimentary demand are demand of those goods which are used with other commodities and not independently, like bike and petrol, pen and ink, bat and boll, milk and sugar etc. In case of complimentary goods, if there is an increase in the price of one commodity, the quantity demanded of another commodity automatically decreases and if price of one commodity decreases, the demand for other commodity rises. The price of complimentary goods and quantity demanded has inverse relationship.

(7) Short Run and Long Run Demand : Short run demand is that which has immediate effect of change on price or income. Long run demand is that which has long run effect on demand due to change in price, income, population, advertisement, taste etc. For example, in the case of reduction in electricity price, people will use it as heater in addition to light in short run, but, in long run, people may use it for coolar, refrigerator, air condition, washing machine etc.

IMPORTANCE OF DEMAND ANALYSIS

Demand analysis plays an important role in economics. Thus, it is very important to know that what is the demand for commodity and what are determinates of demand. In demand analysis, the study of determinants of demand, types of demand and demand forecasting is included. The importance of demand analysis are given, briefly as below :

1. It forecasts about sales so that organisation produces according to demand only. This helps in co-ordination between sales and production. Therefore, the problem of over or under production may be controlled.
2. It brings efficient change in demand. Management can give appropriate direction to demand by controlled effect on determinants of demand.

The importance of advertisement regarding demand of any commodity, can be predicted by demand analysis.

3. Demand analysis is helpful in price determination. Through demand schedule the quantity demanded at different prices can be known. As a result, appropriate price can be chosen on which profit amount will be maximum.

4. Demand analysis is helpful in planning and decision making. Management decides the future policies according to the nature of demand.

5. Demand analysis is also helpful for government, finance minister and international economists. The price policy of public sector industries and taxation policies are based on demand analysis.

Essay Type Questions

1. Explain the Law of demand. Why does a demand curve generally slope downwards to the right ? Explain the circumstances in which demand curves slope upwards. Give suitable diagrams also.
2. Analyse clearly the law of demand and explain the Giffen's Paradox in this connection.
3. What is the importance of demand analysis in Business Economics ? Discuss the important factors determining the demand.
4. "Law of Demand is qualitative not quantitative." Comment and discuss the reasons of exceptional demand curve.
5. Explain with the help of suitable diagram the Law of Demand. Are there some exceptions of this law ? Discuss.
6. What is the implication of demand ? Nearly everyone desires a Car. Does it mean that the demand for Car is very large ?
7. What do you understand by demand schedule and demand curve ? "The demand curve slopes downwards to the right." Explain.
8. Write a detailed note on 'Cardinal Utility Analysis of Demand'.

Short Type Questions

1. What is the difference between demand and wants ?
2. State the meaning and kinds of demand schedule.
3. What is the implication of $D = f(P)$?
4. How has Robert Giffen explained the exception of law of demand ?
5. Distinguish between change in demand and change in quantity of demand.
6. Enumerate any five factors effecting the demand.
7. How does derived demand differ from autonomous demand ?
8. Why do some demand curves slope upwards to the right ?
9. Nearly everyone desires a coloured television. Does it mean that demand for coloured television is very large in India ?
10. What are the assumptions of the law of demand ?
11. How is demand analysis useful in business economics ?
12. State the differences of individual and market demand schedules.

13. Describe the conditions in which price and demand have direct and positive relation.

Objective Questions

1. Which of these is not an element of demand ?

(a) Desire	(b) Purchasing power
(c) Rent	(d) Willingness to use the money
2. This statement is.....that law of demand is quantitative.

(a) True	(b) False
(c) Uncertain	(c) Certain
3. In which condition normally there would be exceptional demand curve ?

(a) Prestige goods	(b) Small commodities
(c) Giffen goods	(d) All of these
4. Due to change in price if quantity of demand is changed it will be called....

(a) Expansion or contraction of demand	
(b) Increase or decrease in demand	
(c) (a) and (b) both	(d) Neither (a) nor (b)
5. Engel curve is also called as.....

(a) Income demand curve	(b) Price demand curve
(c) Derived demand curve	(d) Autonomous demand curve
6. Giffen goods are also called as.....

(a) Superior goods	(b) Complimentary goods
(c) Inferior goods	(d) All above

Ans. 1. (c), 2. (b), 3. (d), 4. (a), 5. (a), 6. (c)



ELASTICITY OF DEMAND

The law of demand states that the quantity demanded of a commodity is dependent or influenced by the price of the commodity. It states that as price of a commodity changes, the quantity demanded also changes in opposite direction. This way, the law of demand tells us only the direction of the change but does not state the rate of change. The extent to which different demand for various commodities changes as per respective change in price may not be same. In other words, the law of demand does not tell us by what amount the quantity demanded of a commodity will change in response to change in its price. To overcome this problem economists have presented the technical concept of elasticity of demand.

CONCEPT OF ELASTICITY OF DEMAND

The elasticity of demand means the measurement of rate of change in the quantity demanded due to change in price of commodity, income of consumers, price of related commodities and change in advertisement expenditure. This depicts the quantitative relationship between quantity demanded and (i) price of commodity, or (ii) income of consumers, or (iii) price of related commodities, or (iv) advertisement expenditure. That is why, elasticity of demand has been divided into four categories :

- (1) Price elasticity of demand,
- (2) Income elasticity of demand,
- (3) Cross/substitution elasticity of demand (for related commodities), and
- (4) Advertisement elasticity of demand.

Out of these types of elasticity, price elasticity of demand is the most important. All of them are discussed later in this chapter.

PRICE ELASTICITY OF DEMAND

The most important factor affecting quantity demanded is price of commodity. Due to which most of the economists called price elasticity of demand as synonym of elasticity of demand. Price elasticity of demand has been defined by various economists in different ways. Some of them are as below :

According to **Benham**, “The concept of elasticity of demand relates to the effect of a small change in price upon the amount demanded.”

As per **Marshall**, “The elasticity of demand in a market is great or small according to the amount demanded increases much or little for a given fall in price or diminishes much or little for a given rise in price.”

~~✓~~ According to **Boulding**, "The elasticity of demand may be defined as the percentage change in quantity demanded which would result from one per cent change in price."

According to **Mrs. Joan Robinson**, "The elasticity of demand at any price or any output is the proportional change of amount purchased in response to a small change in price divided by the proportional change of price."

Thus price elasticity of demand may be defined as the degree or the rate of change of responsiveness of quantity demanded of a commodity in response to change in its price.

In brief, it can be explained with following way :

Price elasticity of demand =

$$\frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in price}}$$

This formula can be clarified by an example. Suppose, the quantity demanded of any commodity is 80 units when its price is ₹ 10. If its price is reduced to ₹ 8, its quantity demanded increases to 100 units. In this case, price elasticity of demand will be computed as follows :

Condition	Price	Demand
I	₹ 10 per unit	80 units
II	₹ 8 per unit	100 units

(a) Proportionate change in demand = $\frac{\text{Change in demand}}{\text{Previous demand}}$

$$= \frac{20}{80} = \frac{1}{4}$$

(b) Proportionate change in price = $\frac{\text{Change in demand}}{\text{Previous demand}}$

$$= \frac{2}{10} = \frac{1}{5}$$

(c) Price elasticity of demand = $\frac{\text{Proportionate change in demand}}{\text{Proportionate change in price}}$

$$= \frac{1}{4} \div \frac{1}{5}$$

$$= \frac{1}{4} \times \frac{5}{1} = 1.25$$

In simple words, price elasticity of demand is the measurement of change in the quantity demand of any commodity due to change in its price. It symbolises the degree of correlation between demand and price. The price

elasticity is negative due to inverse relationship between demand and price but this negative sign is generally ignored and not written.

DEGREES OF PRICE ELASTICITY OF DEMAND

The price elasticity of demand is different for different commodities. The effect of change in price is not same on all the commodities. Some are more affected in comparison to others. That is why, the value of price elasticity of demand may be from zero to infinity. The price elasticity of demand is classified in following five categories :

1. Perfectly Elastic Demand ($e = \infty$) : When there is a very small change or no change in price of any commodity, but it gives rise to infinite increase or decrease in its demand, it is called perfectly elastic demand. In other words, a slight increase in price of commodity results to decrease in its quantity demanded and a nominal reduction in price of commodity results to rise in quantity demanded to infinity. This kind of situation is called perfectly elastic demand. In mathematical expression, it is termed as infinite ($e = \infty$). It is shown in diagram 1 :

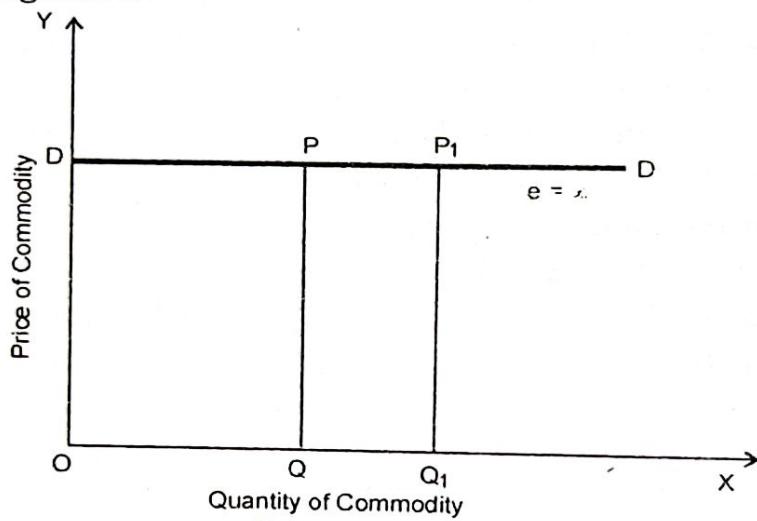
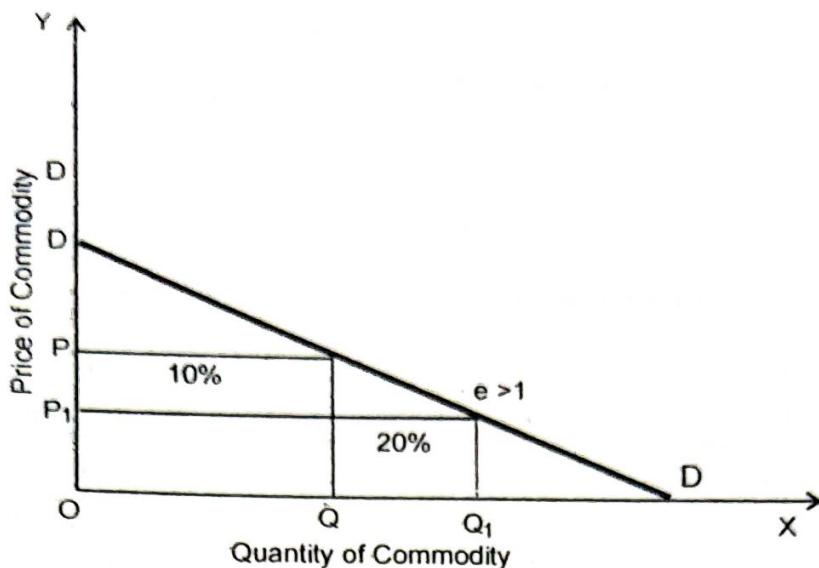


Diagram-1

In diagram, units of quantity demanded are shown on x-axis and price of commodity on y-axis. In case of perfectly elastic demand, curve is parallel to x-axis. In diagram, at price of OD or PQ, demand of commodity is OQ, But in second condition, when price OD or PQ are unaffected, demand increases to OQ₁. This way, there is a change in quantity demanded at unaffected price also. Generally, the perfectly elastic demand is not found in practical life and it is an imaginary concept.

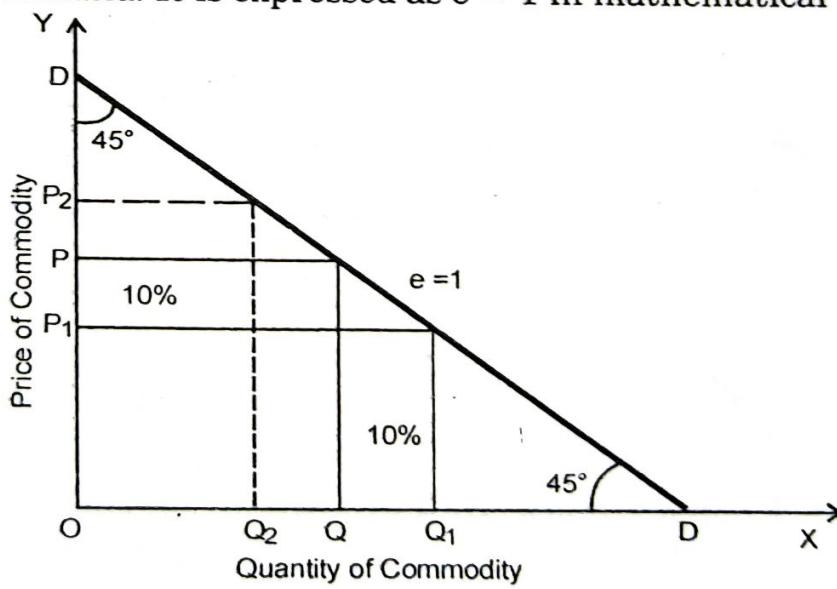
2. Highly Elastic Demand/Relatively Elastic Demand ($e > 1$) :

When change in price of any commodity is more in comparison of change in its quantity demanded, it is called highly elastic demand. For example, if there is an increase of 20% in the quantity demanded of any commodity due to 10% reduction in the price of that commodity, this condition is of highly elastic demand. Mathematically it is expressed as $e > 1$. In diagram 2, DD is demand curve which states that when price is OP the quantity demanded is OQ but when price reduced to OP₁, its demand increases to OQ₁.

**Diagram-2**

The increase in demand QQ_1 , is more in comparison of reduction in price PP_1 . Generally, in case of luxurious items this kind of flat demand curve is found.

3. Unit Elastic Demand ($e = 1$) : When the change in price of commodity is equal to the resulted change in quantity demanded of that commodity, it is called unit elastic demand. For example, when there is a reduction of 10% in price of any commodity and due to this there is increment of 10% in the quantity demanded of that commodity, the demand for such commodity is called unit elastic demand. It is expressed as $e = 1$ in mathematical way.

**Diagram-3**

In diagram 3, DD is elastic demand curve. At price OP, quantity of OQ is purchased. If there is a decrease of PP_1 in price, its quantity demanded increases by QQ_1 and difference of PP_1 and QQ_1 is same. This way, at increase by PP_2 in price and resultant decrease by QQ_2 in quantity demanded, the difference in the change is same. Thus, it is called unit elastic demand.

4. Highly Inelastic Demand/Relatively Inelastic Demand ($e < 1$) : Highly inelastic demand or relatively inelastic demand is also called as inelas-

tic demand when proportionate change in quantity of any commodity is less than the proportionate change in price of commodity, then the demand for commodity is called highly inelastic demand. In mathematical way, it is expressed as $e < 1$. For example. If the change in quantity demanded is 8% due to change in commodity's price of 10%, such demand is called highly inelastic demand. Such demand is found in case of necessary items (as grain and cloth). In diagram 4, the quantity demanded is OQ at OP price. On decrease in price of PP_1 , there is comparatively less increase in the quantity which is QQ_1 . QQ_1 is comparatively less than PP_1 . This way the elasticity of demand is less than a unit.

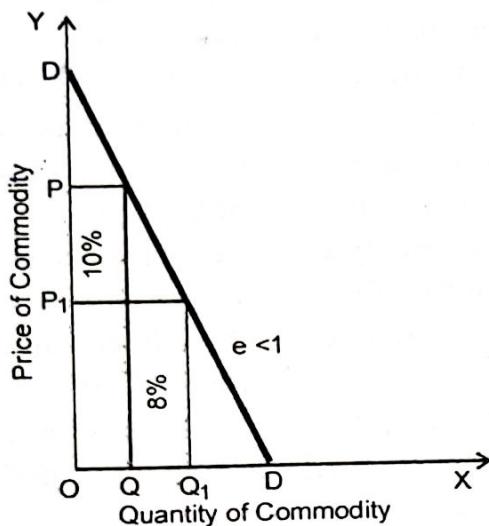


Diagram-4

5. Perfectly Inelastic Demand ($e = 0$) : When there is no change in demand of any commodity even at sufficient change in its price, the demand for such case is called perfectly inelastic demand. Mathematically, it is expressed as zero i.e. $e = 0$. It is an imaginarily situation. There is no example of such situation in real life. In diagram 5 demand curve is perpendicular to X axis. It is clear that at price OP , demand is OQ and where price reduces to OP_1 , demand remains unaffected as OQ .

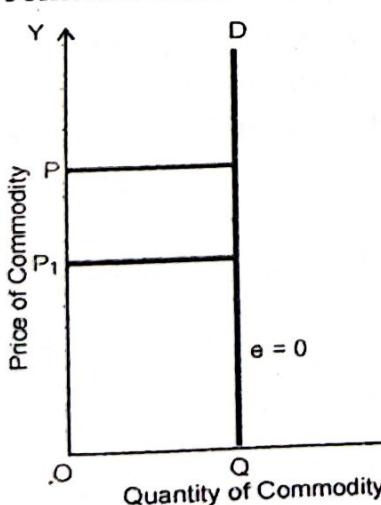


Diagram-5

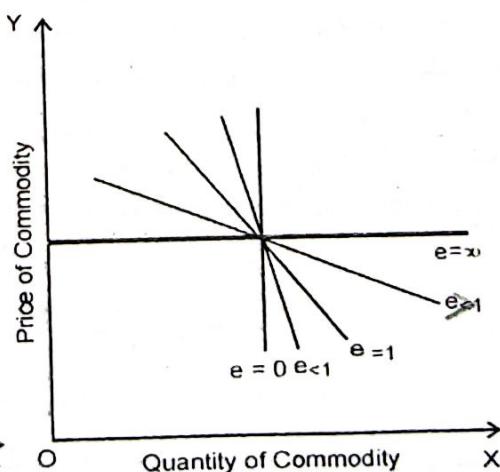


Diagram-6

The different categories of price elasticity of demand can be shown as diagram 6.

METHODS OF MEASURING PRICE ELASTICITY OF DEMAND

The categories of price elasticity of demand tell us that elasticity of demand is less or more. So, for specific knowledge of increase or decrease, measurement of elasticity of demand is made. Economists have suggested following methods of elasticity of demand measurement :

1. Total Outlay Method,
2. Proportionate or Percentage Method, and
3. Point Method.

1. Total Outlay Method : In this method which was propounded by **Prof. Marshall**, the relative comparison is done between total expenditure of price prior to change and price after change. Elasticity of demand can be measured by considering the change in total outlay as a result of change in the price of the commodity. Due to change in price, there is a change in total quantity of commodity purchased, that is why there is a change in total expenditure also. This way it is found out that total quantity of expenditure is more or less or equal to quantity prior. As per total outlay method three categories are there for elasticity of demand. [$e = 1$, $e > 1$, $e < 1$]

(a) More than unit ($e > 1$) : Where the effects of changes in price of commodity is such, that due to increase in price there is decrease in total expenditure and in its opposite, at decrease in price, there is an increase in total expenditure, the elasticity of demand is called greater than unit.

It can be illustrated as below :

Price (In ₹ per unit)	Quantity demanded (units)	Total Expenditure (In ₹)	Elasticity of demand
6 (Basic Price)	100	600	
8 (Increase in Price)	60	480	$e > 1$
4 (Decrease in Price)	175	700	

It is clear from above table that at increase in price of commodity total expenditure reduces whereas at decrease in price there is increase in total expenditure. Thus, elasticity of demand is more than unit.

(b) Equal to unit ($e = 1$) : When there is no change in total expenditure due to change in price, the elasticity of demand is equal to unit. In this case, the proportionate change in price of commodity is equal to the proportionate change in quantity demanded in inverse direction.

Illustration regarding this fact is as below :

Price (In ₹ per unit)	Demand (In units)	Total Expenditure (In ₹)	Elasticity of demand
6	100	600	
8	75	600	$e = 1$
4	150	600	

It is clear from above table that at all three prices of commodity, total quantity of expenditure is same.

(c) Less than unit ($e < 1$) : When the effect of changes in the price of commodity is such that total expenditure reduces due to decrease in price and total expenditure increases with price increase, such elasticity of demand is less than unit.

For example :

Price (In ₹ per unit)	Demand (In units)	Total Expenditure (In ₹)	Elasticity of demand
6	100	600	
8	90	720	
4	125	500	$e < 1$

It is clear from above that at increase in price of commodity total expenditure on it increases and at reduction in price total expenditure decreases. The three categories of total outlay method for measuring price elasticity of demand can also be shown through diagram. In given diagram 7, in first part, when price OP_1 reduces then total expenditure increases, thus elasticity of demand is greater than unit i.e. $e > 1$.

In second part, when price reduced to OP_2 from OP , then total expenditure is unaffected, thus elasticity of demand is equal to unit ($e = 1$).

In third part, when price is reduced to OP_2 then the quantity of total expenditure is reduced, thus elasticity of demand is less than unit i.e. ($e < 1$).

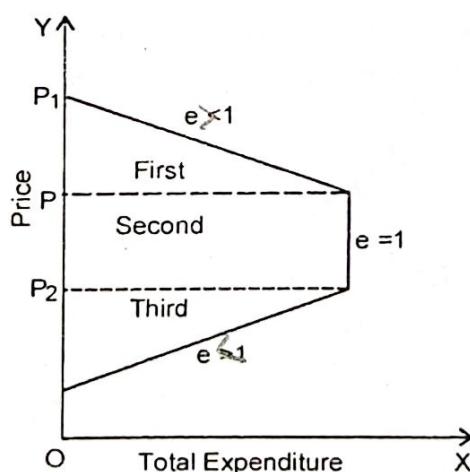


Diagram-7

2. Proportionate or Percentage Method : This method was propounded by Prof. Flux so it is also called **Flux method**. In this method elasticity of demand is measured by dividing proportionate change in demand by proportionate change in price. In the form of formula it is :

$$\text{Elasticity of demand} =$$

$$\frac{\text{Proportionate or Percentage Change in Demand}}{\text{Proportionate or Percentage Change in Price}}$$

OR

Elasticity of demand

$$= \frac{\text{Increase/Decrease in Demand}}{\text{Initial Demand}} + \frac{\text{Increase/Decrease in Price}}{\text{Initial Price}}$$

The elasticity of demand can be analyzed on the basis of this method that if it is equal to or less than or greater than unit. For example, the demand for a commodity was 400 units when its price is as ₹ 5. If the price increases to ₹ 6 its demand reduced to 380 units then;

$$\text{Elasticity of demand} = \frac{20}{400} \div \frac{1}{5} = \frac{20}{400} \times \frac{5}{1} = 0.25$$

In this example, the demand elasticity is less than unit.

It should be noted that relationship between demand and price is generally negative and so the sign of (-) is not placed in the formula. Whenever sign of negative is not clearly stated it means it is hidden. In this method, the initial or new demand and price are used for calculating elasticity of demand. Some economists calculate elasticity of demand by average of initial and new both.

3. Point or Geometrical Method : This method was firstly used by **Prof. Boulding**. As per this method, elasticity of demand is calculated by dividing lower sector of tangent of any demand curve at a particular point by the upper sector. It has following formula for calculation :

$$\text{Elasticity of demand} = \frac{\text{Lower sector of Tangent}}{\text{Upper sector of Tangent}}$$

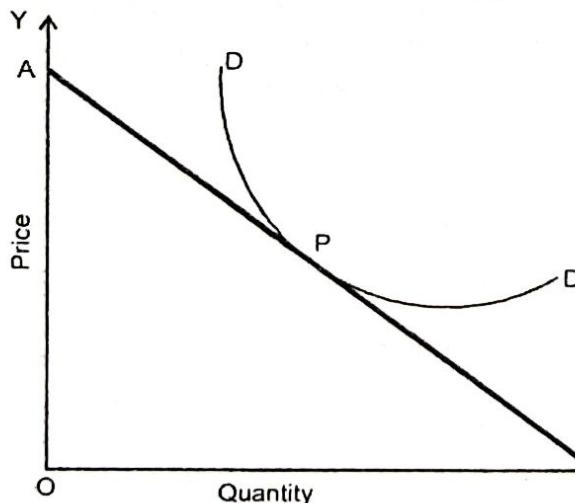


Diagram-8

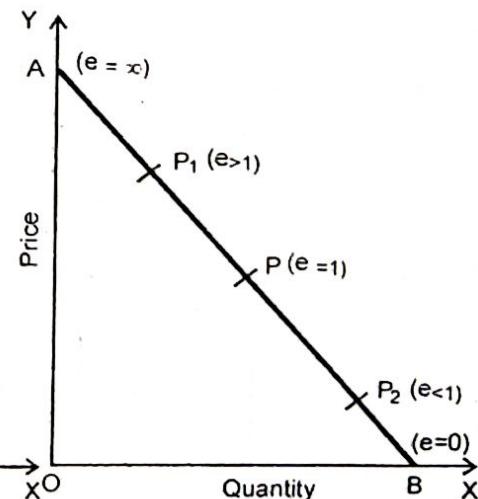


Diagram-9

In diagram 8, DD is demand curve and at point P elasticity of demand is to be calculated. At this point tangent AB is drawn which meets to x and y axis.

$$\text{The elasticity of demand at point P} = \frac{PB}{PA}$$

If the quotient is 1 then elasticity of demand is equal to unit. If the quotient is more than 1, the elasticity of demand will be greater than unit and when quotient is less than 1, elasticity of demand will be less than unit. It can

be zero and infinite also. The geometrical method of measuring elasticity of demand is very practical as it clarifies that elasticity of demand at different points of demand curve is uneven.

In diagram 9, possible five conditions are shown by point method. AB is a straight tangent line. At the middle point P of AB,

$$\text{Elasticity of demand} = \frac{PB}{PA} = 1$$

$$\text{At point } P_1, \text{ elasticity of demand} = \frac{P_1B}{P_1A} = \text{More than unit}$$

$$\text{At point } P_2, \text{ elasticity of demand} = \frac{P_2B}{P_2A} = \text{Less than unit}$$

$$\text{At Point A, elasticity of demand} = \frac{AB}{O} = \text{Infinity}$$

$$\text{Whereas, at point B, elasticity of demand} = \frac{O}{AB} = \text{Zero}$$

This way :

If Lower sector > upper sector then $e > 1$

If Lower sector < upper sector then $e < 1$

If Lower sector = upper sector then $e = 1$

If Lower sector is complete then $e = \infty$

If Upper sector is complete then $e = 0$

INCOME ELASTICITY OF DEMAND

The consumer's income is another important element affecting the demand. So, the magnitude of change in demand due to change in income is studied in income elasticity of demand. It states the quantitative relationship between income of individual and demand of commodity. The demand for goods and services increases with increase in consumer's income and vice versa. As per Prof. Boulding, "Income elasticity of demand is that change in quantity demanded which is originated due to one percentage change of monetary income, other quantities and prices remaining constant."

Income elasticity of demand is calculated by dividing proportionate change in demand by proportionate change in income or it is explained as :

$$\text{Income Elasticity of Demand} = \frac{\text{Proportionate change in Demand}}{\text{Proportionate change in income}}$$

For example, if there is an increase of 30% in the demand of a commodity due to 20% increase in income, in this case :

$$\text{Income Elasticity of Demand} = \frac{30\%}{20\%} = 1.5$$

Following alternative formula can also be used to measure income elasticity of demand, which is more authentic and practical :

$$e = \frac{Q - Q_1}{Q} \div \frac{I - I_1}{I}$$

e = Income elasticity of demand, Q = Initial quantity of demand

Q_1 = New quantity of demand, I = Initial Income

I_1 = New Income

For example, if at consumer's income of ₹ 2,000 quantity demanded is 100 units and when income increases to ₹ 3,000, quantity demanded increases to 125 units, then elasticity of demand

$$= \frac{100 - 125}{100} \cdot \frac{2,000 - 3,000}{2,000}$$

$$= \frac{-25}{100} \div \frac{-1,000}{2,000}$$

$$= \frac{-25}{100} \cdot \frac{2,000}{-1,000} = \frac{1}{2}$$

Types of income elasticity of demand : Income elasticity of demand is of 3 types as shown in Diagram 10.

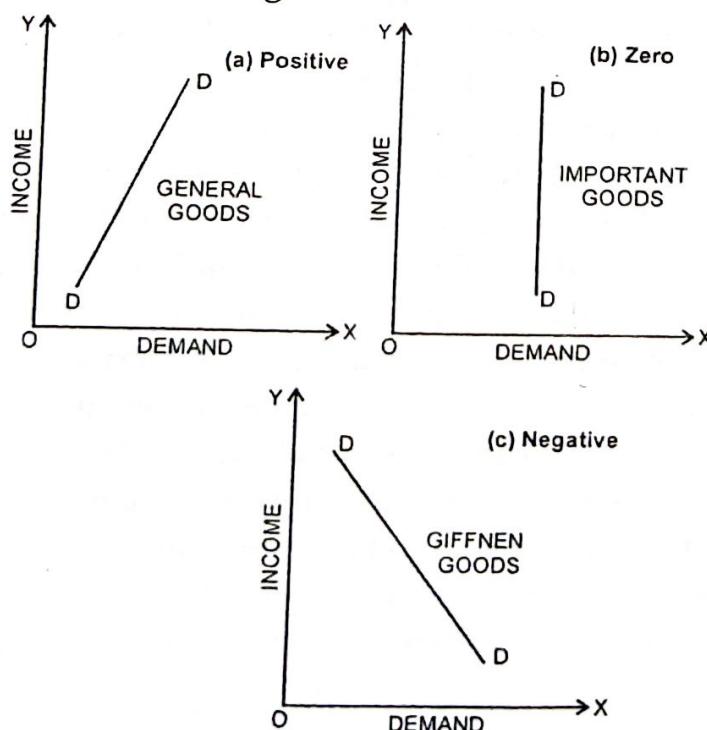


Diagram-10

1. Positive : In general types of commodities, the relationship of income and demand found to be positive. In these cases the demand for particular

item increases with increase in income and decreases with decrease in income. Positive income elasticity of demand can be of 3 kinds : equal to unit, more than unit and less than unit.

2. Zero : In case of items of necessities (like, salt, kerosene oil, postcard), there is no effect of increase or decrease of income on its demand, and thus income elasticity of demand is zero. In this case, demand curve is straight and vertical as shown in diagram 10 (b).

3. Negative : Inferior goods (like maize etc.) have negative income elasticity of demand or demand for these items reduces with increase in income.

For practical importance, income elasticity of demand is divided into positive (equal to unit, more than unit and less than unit), negative and zero. Managerial economists may forecast whether there is possibility of growth or contraction of business. In case of positive income elasticity of demand, with rise in income of consumers the demand for commodity will rise and in its opposite, when income elasticity of demand is negative, in case of rise in income demand will fall.

Income elasticity of demand plays a crucial role in planning and management. Managers may take its help in production planning and demand forecasting.

CROSS ELASTICITY OF DEMAND

The concept of cross elasticity of demand was firstly given by Moore in his book '**Synthetic Economics**' and this concept was developed by Robert Tiffen. The quantity demanded of any commodity is influenced by change in prices of other related items also. Related commodities can be of two types :

(a) Substitutes : Like tea and coffee, pen and ball pen etc. They can be used in place of each other. Demand for tea may increase not because, its own price has fallen but because the price of coffee has gone up.

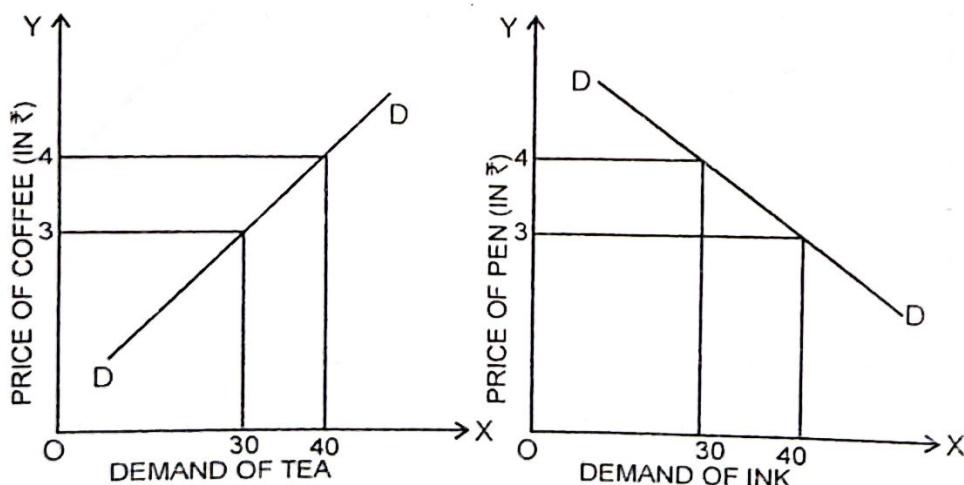


Diagram-11

(b) Complementaries : Like pen and ink, car and petrol etc. They are used together to satisfy a particular want. In case of such goods, when the price of one commodity increases, the demand for other will decline and vice-

78 | Business and Managerial Economics

versa. That is why, when price of pen increases demand for ink decrease and when price for pen reduces demand for ink increases.

Cross elasticity of demand can be defined as, "The degree of change of quantity demanded of one commodity to change in the price of another related commodity is called cross elasticity of demand."

Thus;

Cross elasticity of demand =

$$\frac{\text{Proportionate change in the quantity demanded of } x \text{ commodity}}{\text{Proportionate change in price of } y \text{ commodity}}$$

In diagram 11, the cross elasticity of demand for substitute goods is positive. The relation between price and quantity demanded for substitute goods is direct because increase in price of one commodity leads to increase in demand for another commodity. Like at rise in price of coffee people will start consuming more of tea in place of coffee and thus demand for tea will rise.

In case of complementary goods relationship between price and quantity demand is inverse and demand curve slope is negative. If price of pen increases then demand for it will reduce and there will also be decrease in demand for ink. This way when cross elasticity of demand is positive then goods are substitute to each other and if it is negative, goods are complementary.

ADVERTISING ELASTICITY OF DEMAND

In present competitive business world, advertisement is very significant to increase the demand for commodities. Advertisement expenditure's effect on demand for commodities is known as advertisement elasticity of demand. It clarifies the relationship between advertisement expenditure and quantity demanded of any commodity. It may also be clarified as :

Advertisement elasticity of demand

$$= \frac{\text{Proportionate change in demand}}{\text{Proportionate change in advertisement expenditure}}$$

Or $e = \frac{Q - Q_1}{Q} \div \frac{A - A_1}{A}$

where;

Q = Initial demand,

Q_1 = Changed demand after advertisement expenses,

A = Initial advertisement expenses,

A_1 = Advertisement expenses afterwards.

CHARACTERISTICS :

Following are the important facts about advertisement and demand of commodity :

1. When price, quantity, distribution channel etc. are constant, advertisement leads to rise in demand.

2. A particular quantity of commodity can be demanded without advertisement also. In diagram 12, OD quantity demanded is given at zero advertisement expenditure.

3. In starting, with increase in advertisement, quantity demanded increases then it rises with slow rate and after a point there is no increase in quantity demanded with increase in advertisement expenses.

4. If advertisement is done by unfair means it leads to decrease in quantity demanded in place of increase.

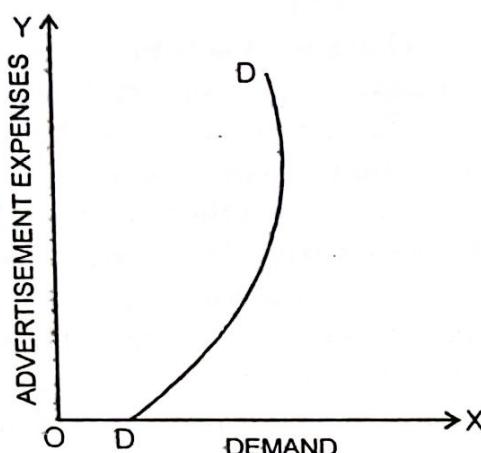


Diagram-12

FACTORS AFFECTING ADVERTISING ELASTICITY OF DEMAND

Advertisement elasticity of demand is affected by following factors :

1. Product Stage : Advertisement for new products give fast growth in demand and advertisement elasticity of demand is more, whereas in case of old products advertisement elasticity of demand is less or inelastic.

2. Competitors Reaction : If the advertisement by producer attracts the rivals for more advertisement on their part then, the effect of advertisement will be less or else it will be high.

3. Quality of Advertisement : If the present advertisement is better in quality in comparison to the past advertisements, then the elasticity of demand will be more and more quantity will be demanded by customers.

4. Effects of Non-Advertising Factors : Demand for commodity is also affected by non-advertising factors like price, income, growing intensity, fashion etc. Thus, for accurate measurement of advertisement elasticity of demand, these effects should also be studied.

5. Time Interval : Mostly the effect of advertisement expenditure on demand is seen after a certain time interval. Even the past advertisements also affect the present demand. In addition to this, present advertisement affects future sales, which is difficult to calculate.

Importance : The study of advertisement elasticity of demand is important for economists and marketing managers. Through its analysis, it can be easily decided whether to increase advertisement expense or not. At one side

it is helpful in controlling growth of advertisement expenses and on another hand proper utilisation of advertisement expenses is possible. Advertisement elasticity of demand analysis helps every business firm for achieving its primary objective of profit earning.

FACTORS AFFECTING ELASTICITY OF DEMAND

Different commodities have different elasticity of demand, more or less elastic etc., depending on various economic and non-economic determinants. The main factors affecting elasticity of demand are following :

1. Nature of commodity : Elasticity of demand of any commodity depends on its nature. The elasticity of necessity items like flour, salt etc. is inelastic. Due to their importance, these items are demanded by customer at whatever given price. There is no substantial effect of price change on these demand. Elasticity of demand for comfort items are of average category. For example, demand for milk, ghee is mostly neither very elastic nor inelastic but is elastic. Demand for luxurious goods is more elastic. Demand for television, car and beauty product is greatly affected by price.

2. Presence of substitutes : Demand for commodities which have various substitutes available are more elastic. Its reason is that, at increase in price of commodity people will start using other alternative substitutes. For example, when coffee becomes expensive people will start using tea. In its opposite, if there is no substitutes available its demand will be inelastic.

3. Alternative use of commodities : There are different items which are used in various alternative ways. Demand for such commodities is more elastic. If the price of commodity rises, consumers will purchase that commodity for most important use only and hence, demand will be very small. Like electricity can be used for lighting, cooking, heating etc. If price of electricity increases it would be used only for urgent uses such as lighting.

4. Postponement of the use of commodity : Demand for a commodity is elastic, if its consumption can be postponed, for example, television, refrigerator etc. In its opposite, if consumption can not be postponed for future its demand would be inelastic like food grain, medicine etc.

5. Joint Demand : Some items are used with other commodities jointly, like bread and butter, pen and ink, petrol and car etc. Elasticity of demand of such commodities are related to main article's elasticity of demand.

6. Income Group : Commodities used by richer class have inelastic demand. In its opposite, commodities used by poorer section have elastic demand. Price effect is more on demand on poor persons and less on rich people.

7. Habits of the Customer : If customer is habitual of any commodity, the demand for such goods will be inelastic as in case of liquor and cigarettes etc. On the other hand, commodities used very occasionally have elastic demand.

8. Ratio of Income and Expenditure of the Customer : Commodities on which consumer spends a very small proportion of his income have highly inelastic demand. On other side, commodities on which, consumers

spend a large fraction of his income, have elastic demand. For example, consumer spends smaller proportion of income on needle, thread, match box etc.

Thus, these items have inelastic demand. Whereas consumer spends larger proportion on cloth, cycle and radio etc., hence these items have elastic demand.

9. Government Policy : When consumption of commodities is made limited by Government through distribution control system and rationing system there is no effect of price change on demand. Demand for such items are inelastic, on the other side, commodities in free market have elastic demand.

10. Discipline : Sometimes, political parties, educational and social institutions make compulsory provisions for using particular uniform and articles by their members, students and social workers, at that time demand for such items becomes inelastic.

IMPORTANCE OF ELASTICITY OF DEMAND

The concept of elasticity of demand is not only important in theoretical life but also in practical life of modern economic world. Elasticity of demand assists the economists in taking decisions. According to Keynes, "Marshall's most important contribution is principle of elasticity of demand and description for theory of price and distribution is impossible without its study." Generally, businessman is interested in knowing results prior to price change, it can be predicted with help of elasticity of demand. Actually importance of elasticity of demand is more practical than theoretical. Some of the importance of elasticity of demand are as follows :

1. Helpful in Price Determination : Elasticity of demand is base for price determination for a producer. Main aim of any manufacturer or producer is to earn profit. How far demand will increase with lowering price of commodity or how much demand will decline with increasing its price, can only be known by observing elasticity of demand. Sales for commodities which have elastic demand, can be increased by lowering their price, on the other hand for commodities, which have inelastic demand it is better to price them at high price to earn profit.

2. For Monopolist : Monopolist has total control on supply of commodity. Thus, for maximising profit, he prices them according to its elasticity of demand. If demand for commodity is inelastic then he would earn more profit by charging high price. On other side, he would charge lower price from the customers for the commodities having elastic demand.

3. Price Discrimination : Price discrimination means charging different prices from different customer or classes. It happens due to inequality in elasticity of demand. Seller will charge high price from customer where demand is inelastic and charge low price where elasticity of demand is more.

4. Dumping : In dumping, businessman has to analyze the elasticity of demand of commodity in foreign market. In order to compete with foreign competitors or sellers at market of elastic demand businessman will price the commodity at lower level in foreign market as compared to local market. This way he will able to enter in foreign market.

5. Joint Supply : When two or more commodities are produced together, it is difficult to measure different cost individually, like wheat and sugar. In this case, price of the commodity whose demand is more elastic is kept low and price of the commodity whose demand is inelastic is kept high.

6. Determination of the reward of production factors : Remuneration or reward of various factors of productions is determined by elasticity of demand. Factors of inelastic demand are paid more reward and factors of elastic demand are paid less reward. For example, when demand for labour is inelastic, more wages is given by owner.

7. For Government : Government and finance minister have to take care about elasticity of demand of commodities while imposing the taxes, granting subsidies to industries, determining prices of public utilities etc. Government imposes less tax on commodities which have elastic demand or else demand for such commodities will decline due to price rise and government will receive less tax revenue. Elasticity of demand helps Government to have greater effectiveness of incidence of taxation, economic and financial policy formulation. It also helps government in controlling inflation rate and trade cycle effects.

8. Significance in International Trade : Terms of trade between two countries depend on elasticity of demand. If commodities which are to export, are of inelastic nature, we would be able to sell it at higher prices to foreign market. On the contrary, if demand for import is inelastic for us we would buy it at higher price also. Thus, elasticity of demand is helpful in determining terms of trade and balance of payment. It is also helpful in deciding about devaluation of currencies. For example, the policy of devaluation will be effective if demand for country's exports is elastic.

9. Helpful in Determination of Transport Rate : Freight rate for transports whose demand is inelastic would be higher in comparison to case where demand are elastic. If goods can not be sent by road transport apart from railways then rate of railways will be high as its demand is inelastic.

DIFFERENCE BETWEEN LAW OF DEMAND & ELASTICITY OF DEMAND

Both law of demand and elasticity of demand give explanation about price and demand relationship but they have following differences :

1. Law of demand is a qualitative statement whereas elasticity of demand is a quantitative statement. Law of demand tells only about the direction of change in demand or it states that price will change inversely as quantity

demanded change. But, it does not tell what amount the quantity demanded will change due to the change in its price. Elasticity of demand gives information about the extent of change in price due to change in quantity demanded.

2. Law of demand clarifies relationship between price and demand whereas elasticity of demand includes study of effect of income, advertisement, price of related goods along with price on quantity demanded.

3. Law of demand states that there is an inverse relationship between quantity demand and price whereas elasticity of demand can be both positive and negative.

ESSAY TYPE QUESTIONS

1. Define Price Elasticity of Demand and explain its various degrees. How can it be measured?
2. Explain the degrees of price elasticity of demand. Discuss the main methods of measuring it.
3. Explain the factors on which elasticity of demand depends. State the practical importance of elasticity of demand.
4. Explain the role of elasticity of demand in business decisions and what factors govern the elasticity of demand?
5. What are meant by cross and advertising elasticities of demand? How is price elasticity of demand measured? Give suitable diagrams to illustrate your answer.
6. Explain briefly any two of the following with the help of diagrams:
 - (a) Income elasticity of Demand,
 - (b) Advertising elasticity of Demand, and
 - (c) Cross elasticity of Demand.
7. Define price elasticity of demand and explain the Flux method of measuring it. What are its various degrees?
8. Explain the concepts of Cross Elasticity and Advertising Elasticity of Demand with suitable examples.
9. State the meaning and characteristics of Advertising Elasticity of Demand. Describe briefly the factors affecting it.

SHORT TYPE QUESTIONS

1. What are the fundamental differences between Law and Elasticity of Demand?
2. What is the concept of perfectly inelastic and elastic demand?
3. How has Prof. Boulding measured the price elasticity of demand?
4. "Cross elasticity of demand is concerned with substitutes and complements." Explain
5. State the meaning and characteristics of advertising elasticity of demand.
6. State any five determinants of elasticity of demand.
7. Calculate price elasticity of demand by proportionate method if -

$$Q_1 = 4,000 \text{ Kgs.}$$

$$P_1 = ₹ 20$$

$$Q_2 = 5,000 \text{ Kgs.}$$

$$P_2 = ₹ 19$$

(Ans : $e = -5$)

8. Calculate price elasticity of demand for expected years from the following data -

Years	Proportionate change in Quantity	Proportionate change in Price
2011	+ 9	- 35
2012	- 10	- 40
2013	- 20	0
2014	+ 31	- 22
2015	+ 21	+ 45
2016	+ 23	- 8
2017	0	- 10

VERY SHORT ANSWER QUESTIONS

1. Whether the price elasticity of demand is positive or negative ?
2. Who has propounded the proportionate method of elasticity of demand measurement ?
3. Write the formulae of estimating cross elasticity of demand.
4. State the meaning of income elasticity of demand.
5. What is the difference between law and elasticity of demand ?

OBJECTIVE QUESTIONS

1. The demand for a commodity is said to be elastic if the total amount spent for the commodity is :
 - (a) Less when the price is low and more when price is high.
 - (b) The same whether the price is high or low.
 - (c) More when the price is low and less when the price is high.
 - (d) All above
2. What should be price elasticity of demand by proportionate method if : $Q_1 = 20,000; Q_2 = 25,000; P_1 = ₹ 10; P_2 = ₹ 8$?

(a) 1.20	(b) 1.00
(c) 1.25	(c) 1.50
3. State whether the following statements are true or false :
 - (i) Elasticity of demand is a qualitative statement.
 - (ii) Total outlay method of measuring price elasticity of demand was propounded by Boulding.
 - (iii) The income elasticity of demand for inferior goods use to be negative.
 - (iv) The cross elasticity of demand for substitutes use to be positive.
 - (v) The proportionate method of elasticity of demand measment was propounded by Marshall.
4. Which of the following should be normally most inelastic demand ?

(a) Soap	(b) Salt
(c) Cigarettes	(d) Television

Ans. 1. (c), 2. (c), 3. (i) False, (ii) False, (iii) True, (iv) True, (v) False 4. (b)