Elasticity of Demand

EXERCISE [PAGES 34 - 36]

Exercise | Q 1.1 | Page 34

Complete the following statement:

Price elasticity of demand on a linear demand curve at the X-axis is _____.

1. **zero**
2. one
3. infinity
4. less than one

Solution: Price elasticity of demand on a linear demand curve at the X-axis is **zero.**

Exercise | Q 1.2 | Page 34

Complete the following statement:

Price elasticity of demand on a linear demand curve at the Y-axis is _____.

1. zero
2. one
3. **infinity**
4. greater than one

Solution: Price elasticity of demand on a linear demand curve at the Y-axis is **infinity.**

Exercise | Q 1.3 | Page 34

Complete the following statement:

Demand curve is parallel to X-axis, in the case of _____.

1. **perfectly elastic demand**
2. perfectly inelastic demand
3. relatively elastic demand
4. relatively inelastic demand

Solution: Demand curve is parallel to X-axis, in case of **perfectly elastic demand.**

Exercise | Q 1.4 | Page 34

Complete the following statement:

When the percentage change in quantity demanded is more than the percentage change in price, the demand curve is _____.

1. **flatter**

2. steeper

3. rectangular

4. horizontal

Solution: When the percentage change in quantity demanded is more than the percentage change in price, the demand curve is **flatter.**

Exercise | Q 1.5 | Page 35

Complete the following statement:

Ed = 0 in case of _____.

1. luxuries

2. normal goods

3. necessities

4. comforts

Solution: Ed = 0 in case of **necessities.**

Exercise | Q 2.1 | Page 35

Give economic term:

Degree of responsiveness of quantity demanded to change in income only.

Solution: Income elasticity

Exercise | Q 2.2 | Page 35

Give economic term:

Degree of responsiveness of a change in quantity demanded of one commodity due to change in the price of another commodity.

Solution: Cross elasticity

Exercise | Q 2.3 | Page 35

Give economic term:

Degree of responsiveness of a change of quantity demanded of a good to a change in its price.

Solution: Elasticity of demand

Exercise | Q 2.4 | Page 35

Give economic term:

Elasticity resulting from infinite change in quantity demanded.

Solution: Perfectly elasticity demand

Exercise | Q 2.5 | Page 35

Give economic term:

Elasticity resulting from a proportionate change in quantity demanded due to a proportionate change in price.

Solution: Price elasticity

Exercise | Q 3.1 | Page 35

Complete the correlation:

Perfectly elastic demand : Ed = ∞ :: _____ : Ed = 0

Solution: Perfectly elastic demand : Ed = ∞ :: **perfectly inelastic** : Ed = 0

Exercise | Q 3.2 | Page 35

Complete the correlation:

Rectangular hyperbola : _____ : Steeper demand curve : Relatively inelastic demand.

Solution: Rectangular hyperbola : **Unitary elastic** : Steeper demand curve : Relatively inelastic demand.

Exercise | Q 3.3 | Page 35

Complete the correlation:

Straight line demand curve : Linear demandcurve :: _____ : non linear demand curve.

Solution: Straight line demand curve : Linear demand curve :: **demand curve is convex to the origin** : non-linear demand curve.

Exercise | Q 3.4 | Page 35

Complete the correlation:

Pen and ink : _____ :: Tea and Coffee : Substitutes.

Solution: Pen and ink : **Complementary** :: Tea and Coffee : Substitutes.

Exercise | Q 3.5 | Page 35
Complete the correlation:

$$\text{Ratio method} : Ed = \frac{\% \triangle Q}{\% \triangle P} :: \_\_\_\_\_ : Ed = \frac{\text{Lower segment}}{\text{Upper segment}}$$

Solution:

$$\text{Ratio method} : Ed = \frac{\% \triangle Q}{\% \triangle P} :: \textbf{Percentage change in quantity}$$

$$\textbf{demanded/Percentge change in price} : Ed = \frac{\text{Lower segment}}{\text{Upper segment}}$$

Exercise | Q 4.1 | Page 35

Assertion and Reasoning type of question:

Assertion (A): Elasticity of demand explains that one variable is influenced by another variable.

Reasoning (R): The concept of elasticity of demand indicates the effect of price and changes in other factors on demand.

1. (A) is true, but (R) is false
2. (A) is false, but (R) is true
3. Both (A) and (R) are true and (R) is the correct explanation of (A)
4. **Both (A) and (R) are true and (R) is not the correct explanation of (A)**

Solution: Both (A) and (R) are true and (R) is not the correct explanation of (A)

Exercise | Q 4.2 | Page 35

Assertion and Reasoning type of question:

Assertion (A): A change in quantity demanded of one commodity due to a change in the price of other commodity is cross elasticity

Reasoning (R): Changes in consumer income leads to a change in the quantity demanded.

1. (A) is true, but (R) is false
2. (A) is false, but (R) is true
3. Both (A) and (R) are true and (R) is the correct explanation of (A)
4. **Both (A) and (R) are true and (R) is not the correct explanation of (A)**

Solution: Both (A) and (R) are true and (R) is not the correct explanation of (A)

Exercise | Q 4.3 | Page 35

Assertion and Reasoning type of question:

Assertion (A): Degree of price elasticity is less than one in case of relatively inelastic demand.

Reasoning (R): Change in demand is less then the change in price.

1. (A) is true, but (R) is false
2. (A) is false, but (R) is true
3. **Both (A) and (R) are true and (R) is the correct explanation of (A)**
4. Both (A) and (R) are true and (R) is not the correct explanation of (A)

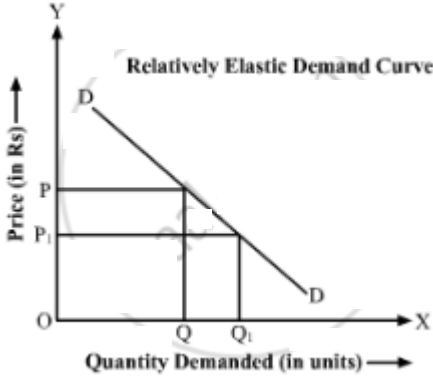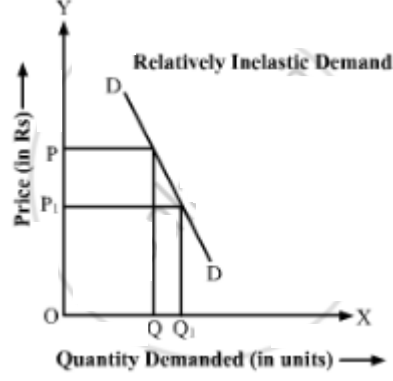**Solution:** Both (A) and (R) are true and (R) is the correct explanation of (A)

Distinguish between:

Relatively elastic demand and relatively inelastic demand.

Solution:

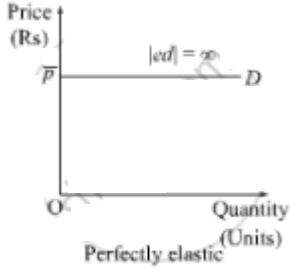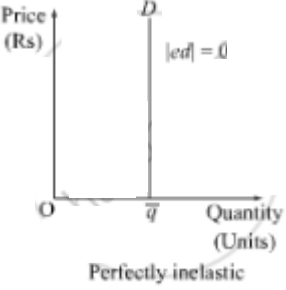| Relatively elastic demand	Relatively inelastic demand
In this case, the change in price leads to a proportionately large change in the quantity demanded.	In this case, the change in price leads to a proportionately less change in the quantity demanded.
It represents a flatter demand curve.	It represents a steeper demand curve.
Symbolically it is represented as $E_d > 1$	Symbolically it is represented as $E_d < 1$
For example- 50% fall in price leads to 100% rise in quantity demanded.	For example- 50% fall in price leads to 25% rise in quantity demanded.

Distinguish between:

Perfectly elastic demand and perfectly inelastic demand.

Solution:

Perfectly elastic demand	Perfectly inelastic demand
It implies that the demand is infinitely responsive to any change in the price of the good.	It implies that the demand is completely unresponsive to any change in the price of the good.

The perfectly elastic demand curve is parallel to the OX axis.	The perfectly elastic demand curve is parallel to the OY axis.
Price (Rs) $|ed| = \infty$ $\overline{P}$ ————— D O Quantity (Units) Perfectly elastic	Price (Rs) D $|ed| = 0$ O $\overline{q}$ Quantity (Units) Perfectly inelastic
Symbolically it is represented as $E_d = \infty$	Symbolically it is represented as $E_d = 0$
For example- 10% fall in price may lead to an infinite rise in demand.	For example- 20% fall in price will have no effect on quantity demanded.

Exercise | Q 6.1 | Page 35

What is 'elasticity of demand'? Explain the factors determining elasticity of demand.

Solution1:

Factors Determining Elasticity of Demand:-

Meaning:- There are several factors that influence the price elasticity of demand. The factors make the demand for a commodity either elastic or inelastic.

Factors are as follows:-

1. **Nature of the commodity:-** Demand tends to be relatively elastic for luxuries and comforts such as "Air Conditioners". And demand is inelastic for necessary items such as Salt.

2. **Availability of substitutes:-** the greater the number of substitutes available for a commodity, the greater would be the elasticity of demand for that commodity. In other words, the demand for a product that has close substitutes is relatively elastic. However, salt has no substitute and therefore, its demand is always inelastic.

3. **Composite Commodities:-** Commodity having several uses tends to be more elastic in demand. For example; electricity can be used for several uses such as lighting, cooking, heating, etc however, a dingle use commodity has inelastic demand.

4. **Urgency:-** If wants are more urgent, demand becomes relatively inelastic. If wants can be postponed, demand becomes relatively elastic.

5. **Habits:-** Habits make a demand for certain goods inelastic, for examples; cigarettes, drugs, liquor.

6. **Income:-** Demand for goods is usually inelastic if the consumer has high income.

7. **Postponement of Consumption:-** The demand is elastic if we could postpone the purchase of goods and services such as in the case of electronic goods. But purchase of essential items like food grains, salt, etc., cannot be postponed, and therefore, the demand for such goods is inelastic.

8. **Complementary Goods:-** When a good is linked with the use of other goods, demand may be inelastic or elastic depending on the demand for complementary goods. For example, the demand for petrol or diesel depends on the use of automobiles, agricultural equipment like water pumps, etc.

9. **Durability:** The demand for durable goods is relatively elastic. For example, furniture, washing machine, etc. Demand for perishable goods is inelastic. For example, milk, vegetables, etc.

Solution2:

Elasticity of Demand: Elasticity of demand means responsiveness of demand due to change in the price of the commodity, income of the consumer and price of the related goods.

Three factors/determinants of elasticity of demand are:

1. **Own price of the commodity:** Other things being equal, with a rise in own price of the commodity, its demand contracts, and with a fall in price, its demand extends. This inverse relationship between the own price of the commodity and its demand is called the law of demand.

2. **Income of the consumer:** Change in the income of the consumer also influences his demand for different goods, the demand for normal goods tends to increase with an increase in income and vice versa. On the other hand, the demand for inferior goods like Coarse grain tends to decrease with an increase in income and vice versa.

3. **Expectations:** If the consumer expects a significant change in the availability of the concerned commodity in the near future, he may decide to change his present demand

for the commodity. If he expects a rise in price in the future, he will purchase today and if he expects a fall in price in the future he postpones his demand.

Exercise | Q 6.2 | Page 35

Answer the following question:

Explain the total outlay method of measuring elasticity of demand?

Solution:

The total outlay method is also known as "Total expenditure method". This method was developed by Prof. Marshall. In this method, the total amount of expenditure before and after the price change is compared.
Here the total expenditure refers to the product of price and quantity demanded.

Total expenditure = Price × Quantity demanded

In this connection, Marshall has given the following propositions:

A. **Relatively elastic demand (Ed >1):** When with a given change in the price of a commodity total outlay increases, the elasticity of demand is greater than one.
B. **Unitary elastic demand (Ed = 1):** When the price falls or rises, the total outlay does not change or remains constant, the elasticity of demand is equal to one.
C. **Relatively inelastic demand (Ed <1):** When with a given change in the price of a commodity total outlay decreases, the elasticity of demand is less than one.

This can be explained with the help of the following example.

Total outlay method

Price in ₹ (P)		Quantity demanded in units (Q)	Total outlay (P × Q)	Elasticity of demand
A	10	6	60	Ed > 1
	20	5	100	
B	30	4	120	Ed = 1
	40	3	120	
C	50	2	100	Ed < 1
	60	1	60	

In the above table example 'A' original price is ₹ 10 per unit and the quantity demanded is 6 units. Therefore, total expenditure incurred is ₹ 60. When price rises to ₹ 20 quantity demanded fall to 5 units, the total expenditure incurred is ₹ 100. In this case, total outlay is greater than the original expenditure. Hence, in this example elasticity of demand is greater than one. (Ed >1) that is relatively elastic demand.

In example 'B', original price is ₹ 30 per unit and the quantity demanded is 4 units. Therefore total expenditure is ₹ 120. When price rises to ₹ 40 quantity demanded fall to '3' units. Total expenditure incurred is ₹ 120. In this case total outlay is the same (equal) to original expenditure. Hence, in this example, elasticity of demand is equal to one (Ed = 1) which is unitary elastic demand.

In example 'C', original price is ₹ per unit and the quantity demanded is 2 units. Therefore total expenditure is ₹ 100. When price rises to ₹ 60, quantity demand falls to 1 unit and total expenditure incurred is ` 60. In this case total outlay is less than original expenditure. Hence, elasticity of demand is less than one (Ed <1) that is relatively inelastic demand.

Exercise | Q 6.3 | Page 35

Answer the following question:

Explain the importance of elasticity of demand.

Solution:

The term elasticity indicates the responsiveness of one variable to a change in the other variable. The elasticity of demand refers to the degree of responsiveness of quantity demanded to a change in its price or any other factor.

The concept of elasticity of demand is of great importance to producers, farmers, workers, and the Government. Lord Keynes considered this concept to be the most important contribution of Alfred Marshall. Significance of the concept becomes clear from the following applications:

1. **Importance to a Producer:** Every producer has to decide the price of his product at which he has to sell it. For this purpose, the elasticity of demand becomes important. If the demand for a product is relatively inelastic, he will fix up a higher price and vice-versa. The concept of elasticity of demand is also useful to a monopolist to practice price discrimination.
2. **Importance to Government:** The taxation policy of the Government is based on the concept of elasticity of demand. Those commodities whose demand is relatively inelastic will be taxed more because it will not affect their demand much and vice-versa.
3. **Important in Factor Pricing:** The concept of elasticity of demand is useful in the determination of factor prices. The factor of production for which demand is relatively inelastic can command a higher price as compared to those having elastic demand. For example, workers can ask for higher wages, if the demand for the product produced by them is relatively inelastic.
4. **Importance in Foreign Trade:** The concept of elasticity of demand is useful to determine terms and conditions in foreign trade. The countries exporting commodities for which demand is relatively inelastic can raise their prices. For example, the Organization of Petroleum Exporting Countries (OPEC) has increased the price of oil several times. The concept is also useful in formulating export and import policy of a country.

5. **Public Utilities:** In the case of public utilities like railways which have inelastic demand, the Government can either subsidize or nationalize them to avoid consumer's exploitation.

6. **Proportion of expenditure:** If the proportion of expenditure in a person's income is small, then demand for the product is relatively inelastic. For example, newspapers. If the proportion of expenditure is large, then demand for the product is relatively elastic.
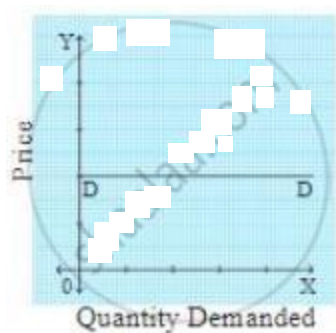
Exercise | Q 7.1 | Page 36

Identify and define the degrees of elasticity of demand from the following demand curve.

Quantity Demanded

Solution: Perfectly inelastic demand

Exercise | Q 7.1 | Page 36

Identify and define the degrees of elasticity of demand from the following demand curve.

Quantity Demanded

Solution: Perfectly elastic demand

Exercise | Q 7.1 | Page 36

Identify and define the degrees of elasticity of demand from the following demand curve.

Quantity Demanded
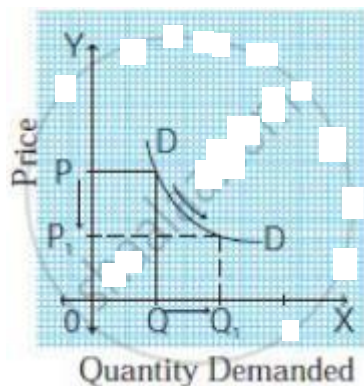
Solution: Unitary elastic demand

Exercise | Q 7.1 | Page 36

Identify and define the degrees of elasticity of demand from the following demand curve.

Quantity Demanded

Solution: Relatively elastic demand

Exercise | Q 7.2 | Page 36

In the following diagram, AE is the linear demand curve of a commodity. On the basis of the given diagram state whether the following statement is True or False. Give a reason for your answer.

Quantity Demanded
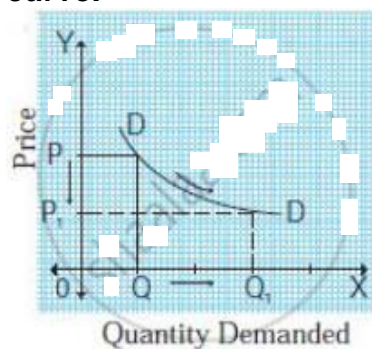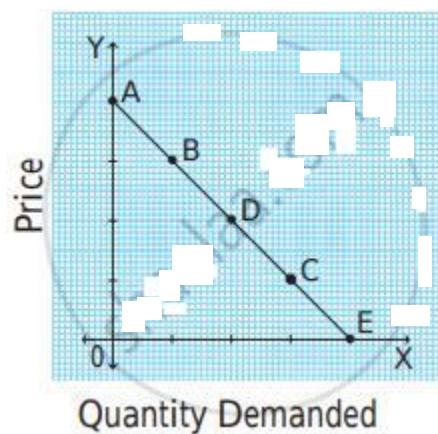
Demand at point 'C' is relatively elastic demand.
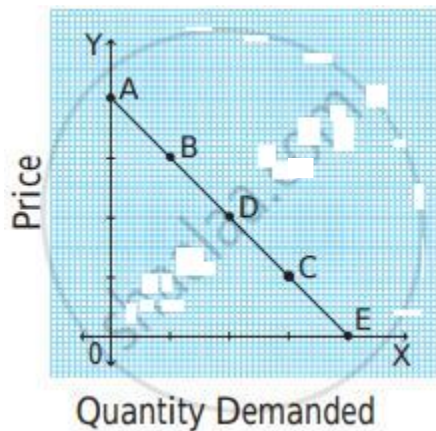
1. True
2. **False**

   Solution: False.

   Demand at point 'C' is **relatively inelastic**.

   Exercise | Q 7.2 | Page 36

   In the following diagram, AE is the linear demand curve of a commodity. On the basis of the given diagram state whether the following statement is True or False. Give a reason for your answer.

   Quantity Demanded

   Demand at point 'B' is unitary elastic demand.
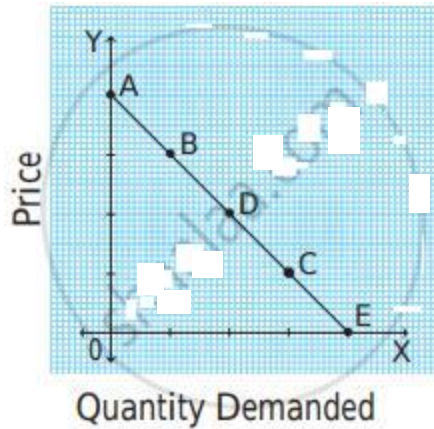
1. True
2. **False**

   Solution: False.

   Demand at point 'B' is **relatively elastic**.

   In the following diagram, AE is the linear demand curve of a commodity. On the basis of the given diagram state whether the following statement is True or False. Give a reason for your answer.

Quantity Demanded

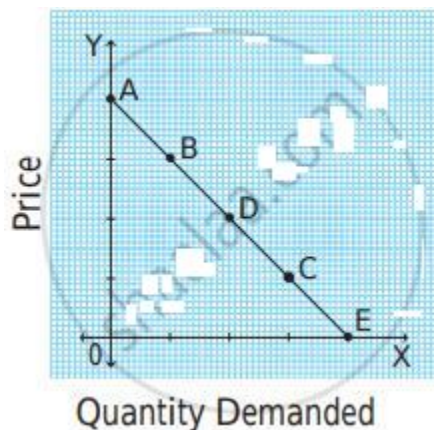Demand at point 'D' is perfectly inelastic demand.

1. True

2. False

Solution: False.

Demand at point 'D' is **unitary elastic demand.**

Exercise | Q 7.2 | Page 36

In the following diagram, AE is the linear demand curve of a commodity. On the basis of the given diagram state whether the following statement is True or False. Give a reason for your answer.

Quantity Demanded

Demand at point 'D' is perfectly inelastic demand.

1. True

2. False

Solution: True.