

CH - 4

1) Define elasticity of demand.

→ It refers to the percentage change in demand for a commodity due to change in any of the factors affecting the demand for that commodity like price, price of related commodities and income.

OR

It refers to the degree of responsiveness of quantity demanded of a commodity to a change in any of its determinants like price of the commodity, price of other commodities and income of the consumers.

2) Define price elasticity of demand.

→ It refers to the percentage change in Price.
 $\text{ep} = \frac{\text{percentage change in Quantity demanded}}{\text{percentage change in price}}$

$$\text{ep} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

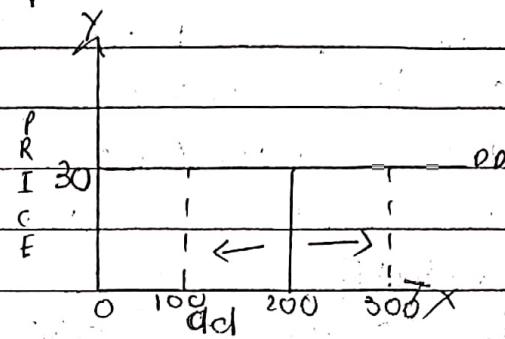
3) Explain the classification / degrees / types of price elasticity of demand.

i) Perfectly elastic demand: $ed = \infty$
when there is an infinite demand at a particular price and demand becomes zero with a slight rise in the price, then demand for such a commodity is said to be perfectly elastic.

In such a case, $ed = \infty$ and demand curve is a horizontal

Straight straight line parallel to X-axis.

P	D
30	100
30	200
30	300

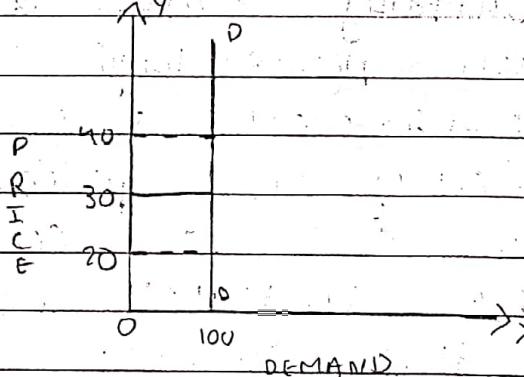


ii) Perfectly Inelastic demand ($ed = 0$)

when there is no change in demand with change in price, then demand for such a commodity is said to be Perfectly Inelastic.

In such a case $ed = 0$ and the demand curve $d-d$ is a vertical straight line parallel to Y-axis.

P	D
20	100
30	100
40	100

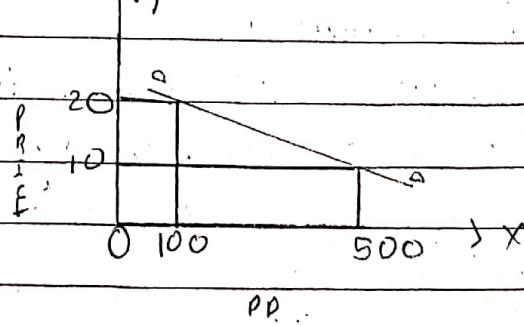


iii) Relatively elastic demand ($ed > 1$)

when percentage change in quantity demanded is more than percentage change in price, then demand for such a commodity is said to be Relatively elastic demand.

In such a case $ed > 1$ and demand curve $d-d$ is flatter and its slope is inclined more towards X-axis.

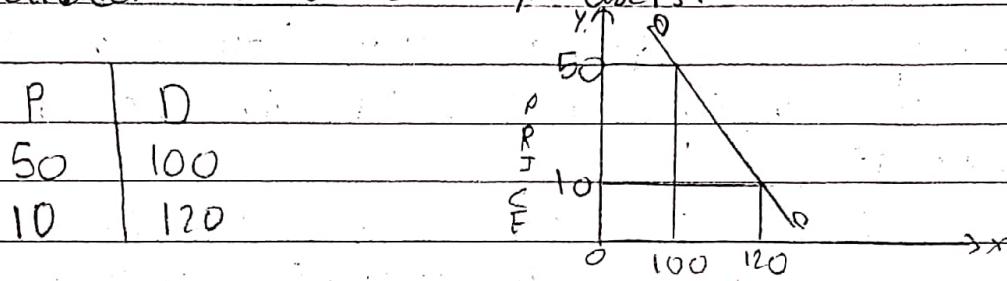
P	D
20	100
10	500



iv) Relatively Inelastic demand:

when percentage change in quantity demanded is less than percentage change in price, then demand for such a commodity is said to be less elastic or relatively inelastic.

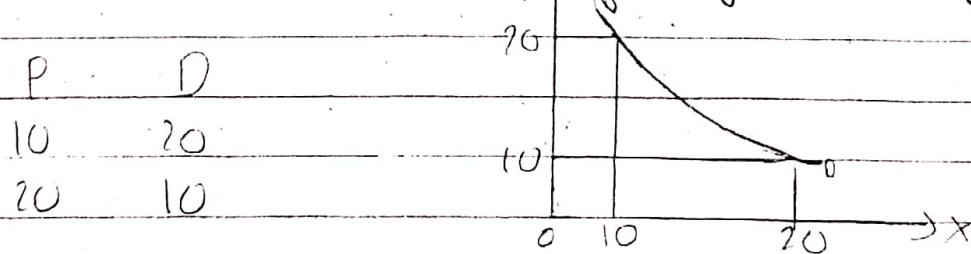
In such a case $ed < 1$ and demand curve is steeper and its slope is more inclined towards Y-axis.



v) Unitary elastic demand ($ed = 1$):

when percentage change in quantity demanded is equal to percentage change in price, then demand for such a commodity is said to be unitely elastic demand.

In this case $ed = 1$ and the demand curve is a rectangular hyperbola.



| Explain the factors affecting price elasticity of demand.

i) Nature of commodity:

When a commodity is necessity like foodgrain, tea, vegetables, etc. its demand is generally inelastic as it is required

for survival and it's demand does not face change much with change in price

- when a commodity is a comfort like fan, TV, etc its demand is generally elastic as consumer can postpone its consumption

- when a commodity is luxuries like Gold, diamond, etc its demand is generally more elastic as compared to demand for comforts

ii) Availability of substitutes:

Demand for a commodity with large number of substitutes will be more elastic because even a small rise in its price will induce the buyers to go for its substitutes. On the other hand, commodities with few or no substitutes like wheat and salt will have less elastic demand.

iii) habit

commodities which have become habitual necessities for the consumers, have inelastic demand. It's happens because such a commodity becomes a necessity for the consumer and he continues to purchase it even if its price rises.

e.g. cigarettes, alcohol, tobacco, etc

iv) Income level :

Elasticity of a demand for any commodity is generally inelastic for higher income level groups in comparison to people

with low incomes.

- It happens because rich people are not influenced much by change in the price of goods but, poor people are highly affected by increase or decrease of the price of goods. As a result demand for lower income group is highly elastic.

v) Price level :

Costly goods like laptop, AC, etc have highly elastic demand as their demand is very ~~sensi~~ sensitive to changes in their prices.

However, demand for inexpensive goods like needle, matchbox, etc. is inelastic as change in price of such a commodity do not change their demand by a considerable amount.

vi) Proportion of Income spent :

Greater the proportion of income spent on the commodity comm. more is the elasticity of demand for it. and vice versa.

Demand for goods like salt, matchbox, etc tends to be inelastic as consumer spends a small proportion of their income on such goods. When the price of such goods changes, consumer can cont. to purchase almost the same quantity of this goods.

However, if the proportion of income spent on a commodity is large, then demand for such a comm. will be elastic.

5) What is Income elasticity of demand? Explain various types.

→ Income elasticity of demand refers to the percentage change in demand of a commodity with respect to percentage change in the income of consumer.

$$E_Y = \frac{\% \Delta \text{ in } \text{dem}}{\% \Delta \text{ in } Y}$$

Types of Income elasticity of demand:

1) Positive Income elasticity:

Income elasticity is positive in case of Normal goods. With increase in income demand for the normal good increases and with decrease in income demand for the normal good decreases. This shows that there is direct relationship between income and demand for Normal goods.

We can classify income elasticity for normal goods into 3 ~~other~~ types categories:

A) Income Elastic:

If the percentage change in quantity demanded of a commodity is greater than the percentage change in income, the income elasticity is greater than 1.

e.g. generally luxury cars, jewellery have high income elasticity of demand.

B) Income Inelastic:

If the percent change in quantity demanded is less than percent change in income, then income elasticity is less than 1.

e.g.: necessities like food, clothes, etc., have low income elasticity of demand.

1) Unitary income elasticity:

If the percent change in quantity demand is equal to percent change in income, then income elasticity is equal to one.

2) Negative income Elasticity of Demand:

Income elasticity is negative in case of inferior inferior good with increase in income, demand for inferior good decreases and decrease in income demand for inferior good increases.

This shows that there is a inverse relation between income and inferior goods.

Eg: Income elasticity of inferior goods:

food grain like maize and bajra is negative when income increases,

consumer will switch from

inferior food grain to superior food grain like rice and wheat.

3) Zero income Elasticity of Demand:

It will be zero in case of necessity goods/ inexpensive essential goods, it means

implies that a change in income ~~will affect~~ quantity unchanged. Eg: income elasticity of salt may be zero because increase in income beyond a certain level

may not bring about any change in demand for salt.

a) Explain what is cross elasticity of demand?
Explain its types.

Cross elasticity of demand refers to the percentage change in demand for a commodity X units respect to percentage change in price of a related goods Y.

~~Cross~~ ^{Cross} elasticity of Demand:

$$e_{xy} = \frac{\text{Percent change in demand for } x}{\text{Percent change in price of } y}$$

Types of cross elasticity of demand:

a) Positive cross elasticity of demand:

It will in case of substitute goods. It is said to be positive when with increase in price of one commodity leads to an increase in the demand for other commodity (coffee) and decrease in price of Tea leads to a decrease in demand for coffee.

b) Negative cross elasticity of demand:

It will be in case of complementary goods. It is said to be negative when fall in the price of X (petrol) leads to an increase in the demand for Y (car) and increase in price of X (petrol) leads to a fall in the demand for Y (car).

c) Zero cross elasticity of demand:

Zero cross elasticity of demand will be in case of unrelated goods.

It is said to be zero when a change in price of a commodity does not affect the demand for another commodity.

Eg. Tea and Tk.

Explain the percentage or proportionate measure method for measuring price elasticity of demand.

It is the most common method of measuring the price elasticity of demand. The method was introduced by professor Marshall.

According to this method elasticity is measured as the ratio of percentage change in quantity demand to percentage change in price.

$$\text{Elasticity of demand} = \frac{\% \Delta \text{ in Quantity demanded}}{\% \Delta \text{ in Price}}$$

$$ed = \frac{\text{Change in quantity demand} \times 100}{\text{Initial quantity}}$$

$$ed = \frac{\text{change in Price} \times 100}{\text{Initial Price}}$$

$$= \frac{\Delta Q}{Q} \times 100$$

$$\frac{\Delta P}{P} \times 100$$

$$\Rightarrow \frac{\Delta Q}{Q} : \frac{\Delta P}{P}$$

$$= \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$\text{Thus: } e_d = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Eg: calculate the price elasticity of demand if demand increase from 4 units to 5 due to fall in price from 10 to 8.

P	10		Q	4	↑
To P,	8		Q, ₁	5	↑
By ΔP	2	↓	ΔQ	1	

$$e_d = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$= \frac{1}{2} \times \frac{10}{4} - \frac{10}{8} = \frac{5}{4} = 1.25$$

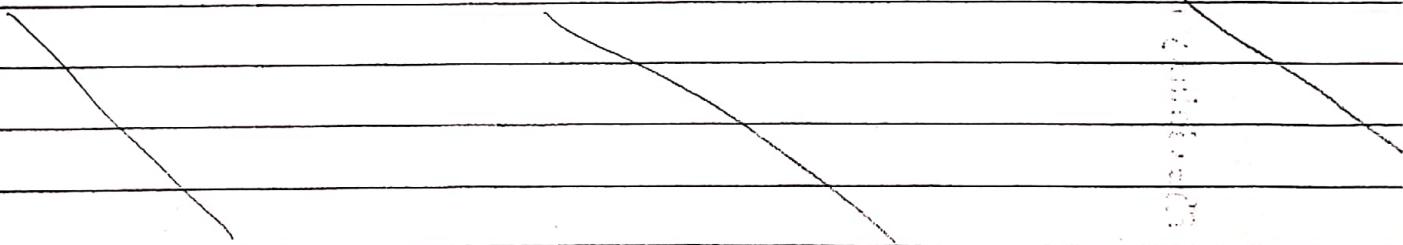
$$= (-) 1.25$$

8) Explain the point or geometric method of measuring the price elasticity of demand.

- Geometric method was suggested by Professor Marshall and is used to measure the elasticity of a point at a demand curve.

When method is called geometric / point / arc method.

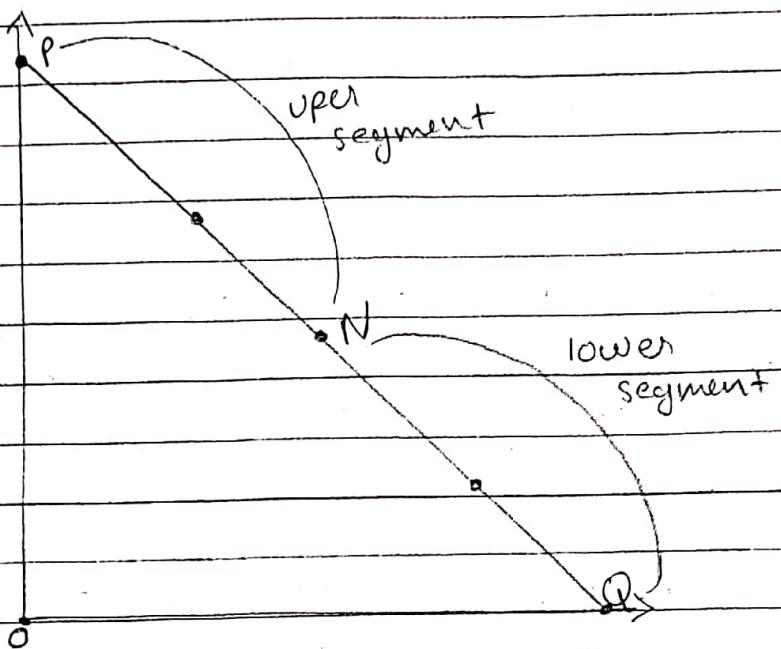
Elasticity of demand is different at different points on the same straight line demand curve.



In order to measure elasticity of demand at any particular point, lower portion of the curve from that point is divided by the upper portion of the curve from the same point.

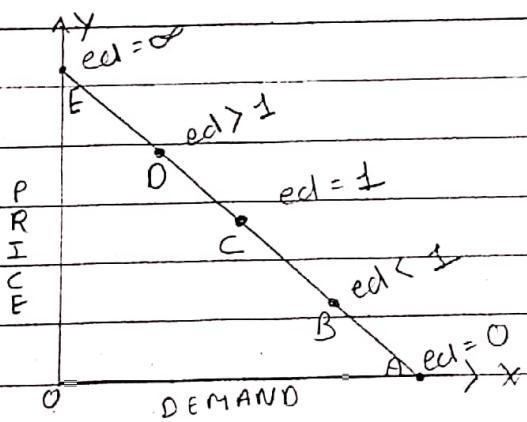
$$E_d = \frac{\text{lower segment}}{\text{upper segment}}$$

As seen in the figure below, elasticity at particular point N is calculated as $\frac{NQ}{NP}$



Similarly, elasticity of demand on different points of a straight line demand curve is shown below.

(i) Unitary elastic demand



1) Unitary elastic Demand :

At the mid point of the demand curve i.e. at point C, the lower and the upper segment are exactly equal. Thus, elasticity at point C = $\frac{CA}{CE} = 1$

2) Elastic Demand :

At every point above the mid point C but below E, the elasticity will be greater than 1. It happens because

lower segment is greater than upper segment
so, ed at point D = $\frac{DA}{DE}$, $DA > DE$

$$So, ed > 1$$

3) Inelastic Demand :

At any point below the Mid point C but above A, the elasticity will be less than 1. It happens because lower segment is less than upper segment.

$$So, ed \text{ at point } B = \frac{BA}{BE}, BA < BE$$

$$So, ed < 1$$

4) Perfectly elastic demand :

At any point on Y-axis i.e. at point E, elasticity is equal to ∞ . Because at this point, there is no upper segment of demand curve.

$$So ed \text{ at point } E = \frac{EA}{O} = \infty$$

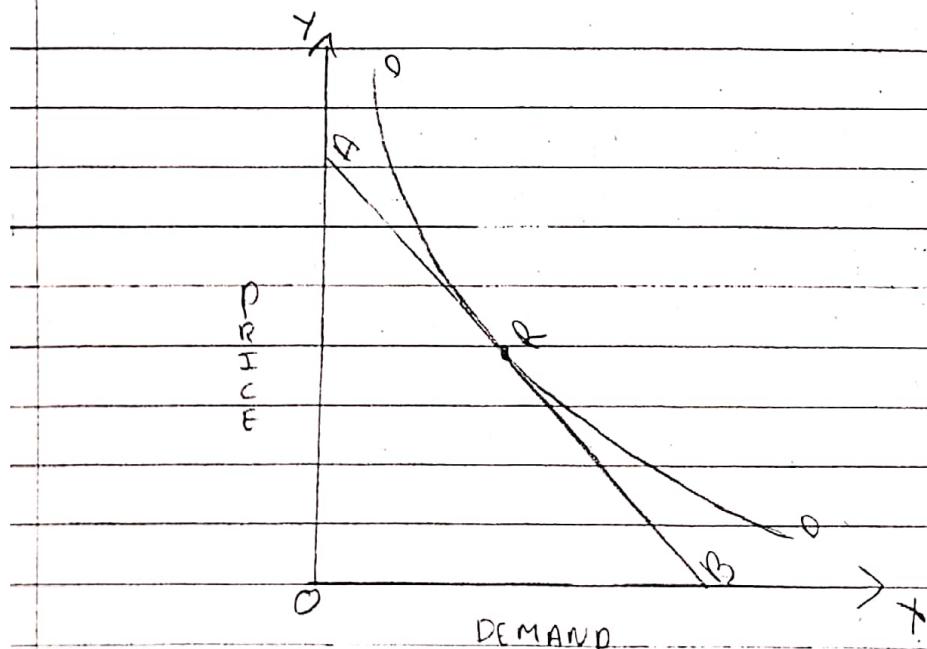
5) Perfectly Inelastic demand :

At any point on X-axis i.e. at point A, elasticity is equal to 0 because at this point, there is no lower segment of demand curve.

$$So, ed \text{ at point } A = \frac{OA}{AE} = 0$$

3) On the Non-linear demand curve.

In order to calculate price elasticity of demand at any point on a convex demand curve, we have to draw a tangent to the demand curve through the chosen point and measure the elasticity of tangent at this point as the ratio of lower line segment to the upper line segment. This gives the price elasticity of demand curve at that particular point on the demand curve.



If we want to measure price elasticity at point R on the demand curve at ~~cl-cl withdrawal~~, we draw a line A-B tangent to the demand curve cl-cl at point R.

Slope of the demand curve at R equals the slope of tangent at same point. That

$$\text{Thus, } \epsilon_p \text{ at } R = \frac{\text{lower segment}}{\text{upper segment}} = \frac{RB}{RA} = 1$$