Chapter-2

Theory of Demand and Supply

* i) Concept of Demand:

Quantity with → Consumers are ready to buy
and → also has the ability to pay.

ii) Individual Demand → Deals with individual

For example, Mr. X buys 100 units of product at ₹ 50

iii) Market Demand → Deals with multiple persons

For example, When price falls Mr. A buys 20 units, When price rises Ms. B sell 35 units, When price remains constant Mr. D and Mr. E buys 80 units.

* Types of Demand

i) Complementary goods: When there is no use without the presence of other goods.

For example: Car + Petrol

ii) Composite Demand: When there is multipurpose with one product

For example: Milk

iii) Substitute goods : Enemy

For example : Tea Vs Coffee

* Factors affecting demand :

i) Price ii) Income of Consumers iii) Price of substitutes

iv) Price of Complements v) Changes in taste/fashion vi) Seasonal

vii) Advertising.

* Law of Demand ⟶ Alfred Marshall

P↑ Q_d↓ | P↓ Q_d↑ ⟶ Other factors

↳ deals with normal goods ↳ Ceteris Paribus

* Exceptions of Law of Demand

i) Snob appeal

Conspicious goods :- Rich people ⟶ High Status

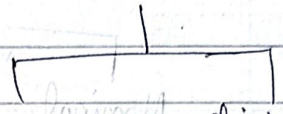
Ex Diamond ring ↑ ⟶ demand ↑

ii) Griffen goods:

Robert giffen

One of a category of Inferior goods

World War (British)



Bread ↑P (necessity) Chicken × (Party)

iii) Conspicious goods: Necessaries

Covid 19 P↑ Laptop ↑, P↑ Mobile ↑ → Q↑

iv) Future Expectations:

If it will be costly at future, people will buy them a lot in current.

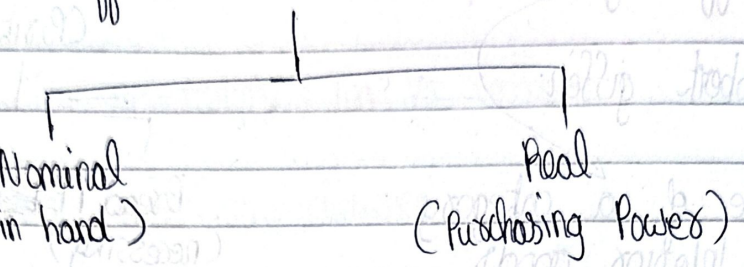
v) Speculative goods: → Shares

Government P↑ Reliance ↑, Q Reliance ↑

* Rationale of law of Demand
(Why is Demand Curve downward slope)

i) Price effect = Income effect + Substitution effect

a) Income effect:



b) Substitution effect:

P ↗ Tea ↑ → Q Coffee ↑

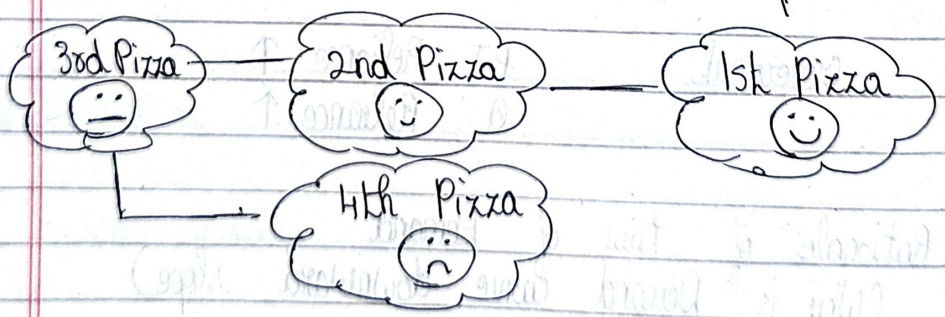
Q Tea ↓ → Because comparatively Cheaper

ii)

* Law of DMU / Utility Maximum

Behaviour → Alfred Marshall

Eg: Studied hard — Food — Pizza



P ↓ Q ↑

iii)

* Arrival of new customers:

When price decreases we can gain new customers.

iv)

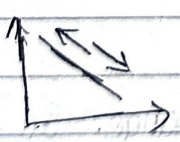
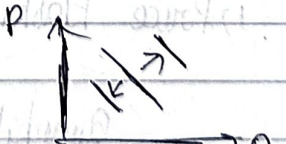
* Different usage of a commodity:

Milk → Main use → Drink

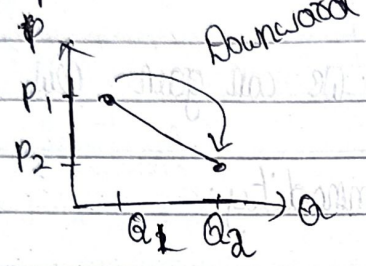
→ Other use → Butter, Cheese, curd, cream, panneer, etc.

When ↑P we only use milk for main purpose, when ↓P we use it for others also.

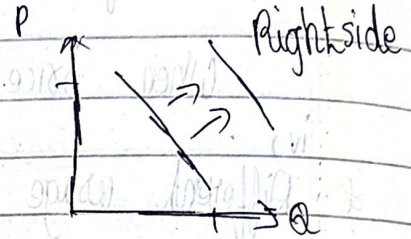
* Movement Vs Shift

	Movement	Shift
i)	Change in Q demanded	Change in demand
ii)	Rise/Fall in demand → due to price → other factors remains constant	Rise/Fall in demand → due to other factors → own price remains constant.
iii)	 Along same curve	 Change in curve
iv)	Movement → Expansion / Contraction	Shift → Increase / Decrease

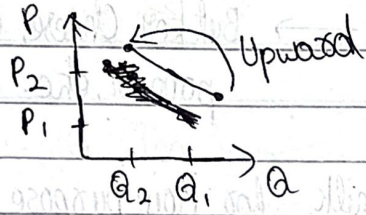
v) Expansion



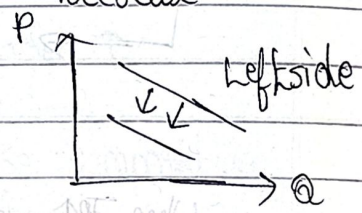
Increase



vi) Contraction



Decrease



* Elasticity of Demand

↳ By how much

Types → Price Elasticity Demand
→ Income Elasticity Demand
→ Cross Elasticity Demand

i) Price Elasticity of Demand

Quantity demanded to change in our price of commodity

- Percentage Method
- Total Expenditure Method
- Point elasticity method

*Percentage method:

$$ep = \frac{\%\text{ change in } QD}{\%\text{ change in price}}$$

$P_1 = ₹10$ $\quad Q_1 = 100$ units

$P_2 = ₹15$ $\quad Q_2 = 40$ units

$$\%\text{ change in } QD = \frac{Q_2 - Q_1}{Q_1} \times 100 = \frac{40-100}{100} \times 100 = -60\%$$

$$\%\text{ change in price} = \frac{P_2 - P_1}{P_1} \times 100 = \frac{15-10}{10} \times 100 = 50\%$$

$$ep = \frac{-60\%}{50\%} = -1.2 \longrightarrow P \& Q \text{ are inverse related}$$

If price changes by 1%, QD will change by $1\% \times (-1.2) = -1.2\%$

If Price $\longrightarrow$ ~~10%~~ Δ 10%.

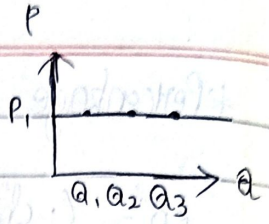
$(10\% \times -1.2) = -12\% \longrightarrow$ In opposite direction

$ep = -1.2$

$|ep| = 1.2$

*[Default Assumption] Types of Price Elasticity of Demand

i) Perfectly Elastic Demand



P	Q
10	100
10	80
10	70

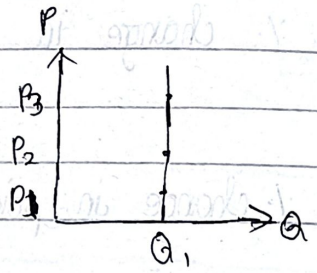
% Δ P = 0
% Δ Q = Change

$ep = \alpha$ or ∞

ii) Perfectly Inelastic Demand

P	Q
10	100
20	100
50	100

$ep = 0$



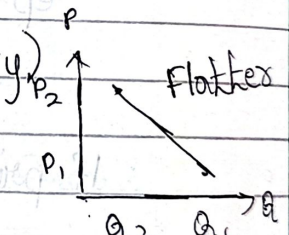
iii) Relatively Elastic Demand

% Δ in QD > % Δ in price (luxury)

P	Q
10	100
11	70

% Δ Q = 30
% Δ P = 10

$|ep| > 1$



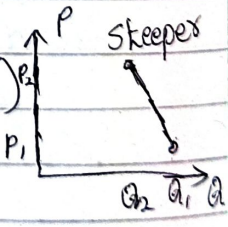
iv) Relatively Inelastic Demand

% Δ in QD < % Δ in price (necessities)

P	Q
10	50
15	40

$|ep| = \frac{20\%}{50\%} = 0.4$

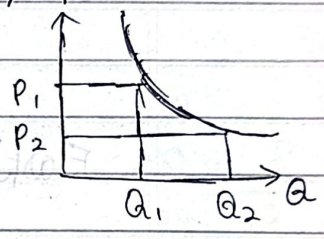
$|ep| < 1$



v) Unitary Elastic Demand:

% Δ in QD = % Δ in price lep | = 1

P	Q	ΔP = 50%	ΔQ = 50%
10	100	~~ΔP = 50%~~	
15	~~100~~ 50	~~ΔQ = 50%~~	



* Total Expenditure Method

Total Expenditure = P × Q

eg- P_1 = ₹5 Q_1 = 100 unit TE_1 = 5 × 100 = ₹500.

Types of Price Elasticity of Demand under TE Method:

Elastic Inelastic Unitary Elastic

Eg- P_1 = ₹5 Q_1 = 100 unit TE_1 = 500

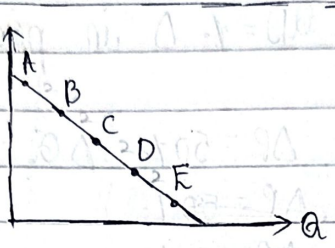
C I	C II	C III
P_2 = ₹2 Q_2 = 300 units TE_2 = 600	P_2 = ₹2 Q_2 = 200 units TE_2 = 400	P_2 = ₹2 Q_2 = 250 TE_2 = 500
P↓ TE↑ [Elastic Demand]	P↓ TE↓ [Inelastic Demand]	P↓↑ TE (same) [Unitary Elastic Demand]
|ep| > 1	|ep| < 1	|ep| = 1

P↑ or TE↓ / P↓ TE↑ :- Elastic

P↑ or TE↑ / P↓ TE↓ :- Inelastic

P↑↓ TE :- Unitary

Point Method [Geometric Method]:



Assume 2 in btwn

$$\text{Ep} = \frac{\text{lower segment}}{\text{Upper segment}}$$

Elasticity at A $= \frac{AE}{0} = \frac{8}{0} = \infty$ PE [Perfectly elastic]

Elasticity at B $= \frac{BE}{AB} = \frac{8}{2} = 4$ RE [Relatively Elastic Demand]

Elasticity at C $= \frac{CE}{CA} = \frac{5}{5} = 1$ UE [Unitary Elastic]

Elasticity at D $= \frac{DE}{DA} = \frac{2}{8} = \frac{1}{4} = 0.25$ RI [Relatively Inelastic]

Elasticity at E $= \frac{0}{AE} = 0$ PI [Perfectly Inelastic Demand]

Factors Affecting Elasticity of Demand:

1. Availability of substitutes:
   - Available - Elastic
   - Unavailable - Inelastic

2. Nature of commodity:
   - Necessities - Inelastic
   - Comforts - Elastic

3. Proportion of Income spent:

- High - Elastic
- Low - Inelastic

4. Postponement of consumption:

- Postponed - Elastic
- Can't be postponed - Inelastic

5. Time Period:

- Long run - Elastic
- Short run - Inelastic

6. Price range

- High - Elastic
- Low - Inelastic

7. Habits of Customer

- Habit - Inelastic
- Not habit - Elastic

Income elasticity of Demand

QD to Δ in Income of the consumers.

$$e_I = \frac{\% \Delta \text{ in QD}}{\% \Delta \text{ in Income}}$$

- → Positive Income elasticity [Normal goods]
- → Negative Income elasticity [Inferior goods]
- → Zero Income elasticity [Inexpensive necessities]

i) Positive Income elasticity

- Elastic if $IED > 1$
- Inelastic if $0 < IED < 1$
- Unitary if $IED = 1$

Cross Elasticity of Demand

QD Δ in due to price of other goods

$$e_C = \frac{\% \Delta \text{ in QD of } x}{\% \Delta \text{ in price of } y}$$

Types:

1. Positive Cross Elasticity :- Substitute goods

P Tea ↑ ⇒ D Coffee ↑ $e_C > 0$

2. Negative Cross elasticity :- Complementary goods

P Car ↑ @ Petrol ↓ $e_c < 0$

3. Zero - Cross Elasticity :- $e_c = 0$

Unrelated goods. eg : TV and Salt.

* Unit - 2

Theory of Consumer Behaviour
↳ Consumers POV

Meaning and types of Wants

Wants = DE = W

Desire + Effort = Want

* Features:
i) Unlimited
ii) Wants differ in urgency
iii) Wants are satiable [all wants can't satisfied]
iv) Particular Want — A1, A2
v) Wants → affected by income, taste, function
vi) Wants may become habits and custom
vii) Wants vary with place, time.

* Types of Wants:

- Necessities : Food, cloth, shelter
- Comfort : Furniture
- Luxury : luxury car, Iphone

* Law of Diminishing Marginal Utility:

Units of Apple	TU	MU
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5
7	35	-10

TU rises, MU falls

TU max, MU = 0

TU falls, MU negative

* Assumptions of Law of DMU

i) Rationality
ii) Constant MU of money
iii) DMU
iv) Utility is additive

a) rationality b) Cardinal
c) Continuity in consumption
d) Constant utility of money
e) Units should be standard size
f) other factors: Price, Taste, Income

* Utility:

Want satisfying power of a commodity.

utility ≠ Usefulness

* Arriving at Equilibrium:

↳ Point of max satisfaction for consumer [Consumer not willing to shift]

MU Analysis/ Cardinal → Alfred Marshall → Utility can be quantified (numbers)

Ordinal Utility Analysis → Hicks & Allen

Consumer Surplus = 30 - 10
= ₹20

where,
Utility = 30
Price = 10

Limitations and Exception for Law of DMU

i) Unrealistic assumption (✗)
→ Rational
→ Income, taste & Preferences

Exception i) Gold / Diamond
ii) Hobbies → art → Utility ↑
iii) Habits → Smoking
iv) Money

ii) It is dependent (✗)

Tea + Sugar

Law of DMU

Conditions for Equilibrium

[MU Analysis / Cardinal]

One Commodity World

$$P_x = MU_x$$

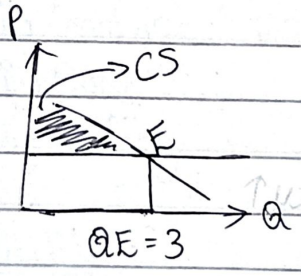
Two Commodity World

$$\frac{MU_x}{P_x} = \frac{MU_4}{P_4}$$

One Commodity World

$MU_x = P_x$ $\quad$ Σ Shirt = 600

No. of shirts = 3



Q	P	MU	CS
1	600	800	200
2	600	700	100
3	600	600	0
4	600	500	-
5	600	400	-
6	600	300	-

CS is always positive

Applications

i) Setting prices
ii) Large scale investment
iii) Consumer welfare
iv) Consumer surplus → Raisy P

* Ordinal Approach → Hicks + Allen

↓ Order

→ Indifference Curve
→ Budget line

Based on Two Commodity World

* Assumptions of IC Analysis of Consumers Equilibrium

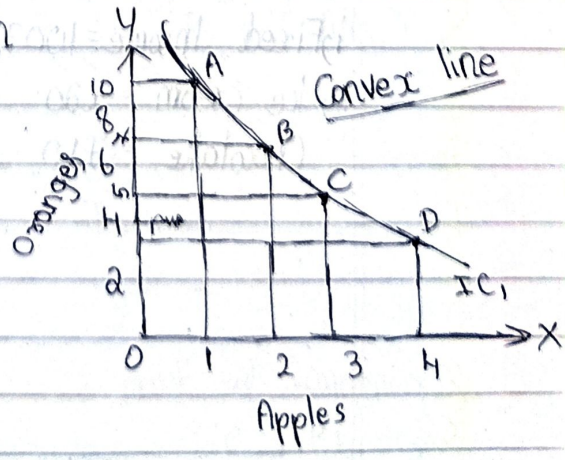
i) Consumers know tastes & preferences [Rational]
ii) Utility is ordinal
iii) Tranitivity of choice (ordinally expressible (Ranking))
iv) Mondonic preferences (Not satiety) more is better

* Indifference Curve Analysis

Marginal rate of substitution

Combination	No. of apples	No. of oranges	MRS
A	1	10	-
B	2	7	3
C	3	5	2
D	4	4	1

IC shows various combination of 2 commodities that give some level of satisfaction



* IC analysis properties

Indifference map: When there is set of ICs

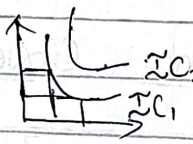
i) Sloper → downwards to the right [Inverse relation]

ii) Convex to origin → Declining MRS

MRS :- Marginal Rate of Substitution
↳ Additional

iii) Higher IC higher gives:

$IC_2 > IC_1$



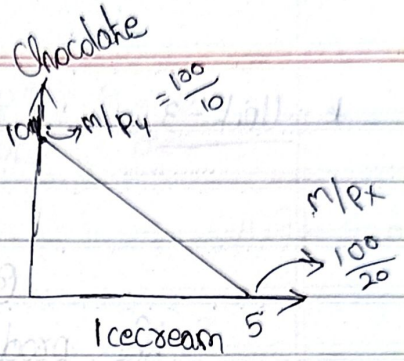
iv) Two ICs can never intersect another

* Budget line:
↳ Combination of two commodities ~~mask~~ cost the same

i) Fixed Income = 100₹
ii) Ice cream = ₹20
Chocolate = ₹10

Combo	ICe Cream	Chocolate	₹
A	0	10	100
B	1	8	100
C	2	6	100
D	3	4	100
E	4	2	100
F	5	0	100

$P_x Q_x + P_y Q_y = M$ (Monetary Income)



Downward sloping
↳ $Q_x \uparrow$ $Q_y \downarrow$ [Inverse]

At Equalibrium point

MRS_{xy}

MRS of X for Y = $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$ → $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

Slope of Budget line = $\frac{P_x}{P_y}$ = MRS

MRS → Slope of IC

Summary

- Cardinal Approach (Alfred Marshall)
  - OC → $P_x = MU_x$
  - TC → $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$
- Ordinal Approach (Hicks and Allen)
  - IC
  - BL
  - EQL → Point of tangency IC & BL

* Unit-3

Supplier - POV

Supply

Quantity of a commodity which the producers are willing to bring to market for sale at a particular Price(PP) at a particular Time(PT).

* Stock Vs Supply

i) Mr. A produces 1000 bags → Stock ☺

ii) He is willing 800 units to market for sale → Supply

* Supply:

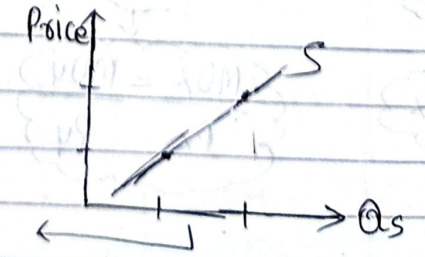
→ Readiness to sell
→ Willingness + ability
→ Supply is a flow concept.

* Determinants of Supply:

i) Price of own commodity :- Direct

↑P ↑ Profit ↑ Qs ↑

Upward sloping, Positive curve



Other factors remain constant ⇒ "Ceteris Paribus"

ii) Price of other goods: $\uparrow P$ Belts $\rightarrow Q_s \downarrow$ Bags

$Q_s \downarrow$ Bags Leather → Belts Leather $\uparrow P$

iii) Price of Input / Factors of production:

Input price ↑ leads to Profit ↓ Therefore, Q_s will ↓

iv) Statement of Technology: Advanced $Q_s \uparrow$

v) Government Policy:

Tax ↑ → Cost ↑ → $Q_s \downarrow$

Subsidy ↑ → Cost ↓ → $Q_s \uparrow$

Manufacturing

vi) Nature of size of industry:

Competition ↑ $Q_s \uparrow$

Monopoly $Q_s \downarrow$

vii) Expectation:

If producer expects price to rise in future

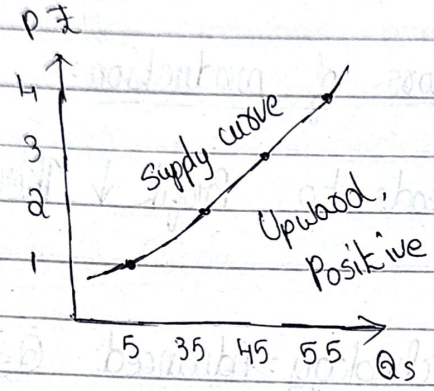
Q_s at present → $Q_s \downarrow$ ∴ In order to sell at higher price later on

If producer expects price to fall in future

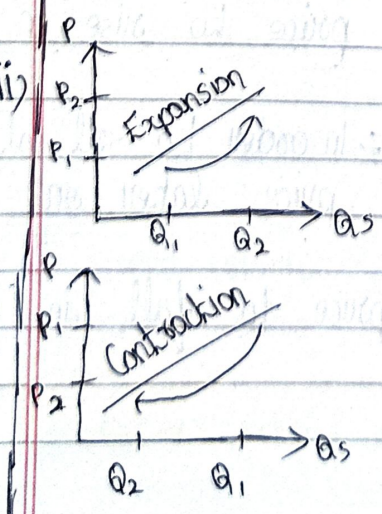
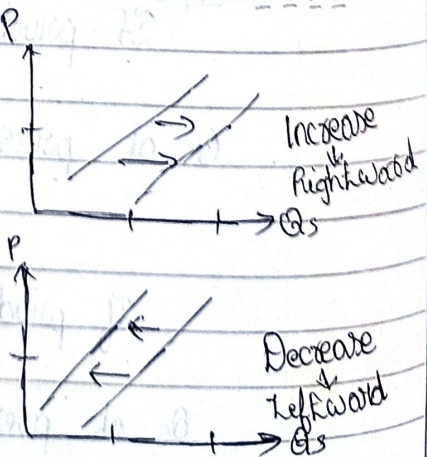
Q_s at present → $Q_s \uparrow$

Law of Supply:

Direct relationship [Price ↑ Qs ↑ ; Price ↓ Qs ↓] Other factors remain constant



P	Qs
1	5
2	35
3	45
4	55

	Movement (Change in Qs)	Shift (Change in Supply)
i)	Rise or fall in Qs due to own price of commodity other factors remain constant.	Rise or fall in Qs due to other factors, own price remains constant.
ii)	→ Expansion/Extension → P↑ Qs↑ → Contraction → P↓ Qs↓	→ Increase → Qs↑ OPRC → Decrease → Qs↓ OPRC
iii)		

* Time Period and Supply:

i) Q_s : No change	→ Very Short Period	
ii) Some change in supply	→ Short Period	→ Variable → Fixed
iii) Any change in supply	→ Long Period	→ Variable

$e_s = \frac{\%\Delta \text{ in } Q_s}{\%\Delta \text{ in Price}}$ — $\%$ Method

* Elasticity of Supply:

- $\%$ method
- Arc elasticity

* $\%$ Method

$$e_s = \frac{\%\Delta \text{ in } Q_s}{\%\Delta \text{ in Price}}$$

$$\%\Delta \text{ in } Q_s = \frac{Q_2 - Q_1}{Q_1} \times 100$$

$$\%\Delta \text{ in Price} = \frac{P_2 - P_1}{P_1} \times 100$$

Q) $P_1 = ₹20$, $P_2 = ₹25$, $Q_1 = 80$ units, $Q_2 = 120$ units, find e_s?

$\Delta P = ₹5 \quad \Delta Q = 40$

% Δ in price $= \frac{5}{20} \times 100$ % Δ in Q $= \frac{40}{80} \times 100$

$= 25\%$ $= 50\%$

$$e_s = \frac{50\%}{25\%} = 2$$

* Price elasticity of supply meaning:-

Degree of responsiveness of Q_s to change in own price of commodity.

* Arc Elasticity of Supply:

$$e_s = \frac{\frac{\Delta Q}{\left[\frac{Q_1+Q_2}{2}\right]} \times 100}{\frac{\Delta P}{\left[\frac{P_1+P_2}{2}\right]} \times 100}$$

$\left[\frac{Q_1+Q_2}{2}\right] \rightarrow$ Avg Q

$\left[\frac{P_1+P_2}{2}\right] \rightarrow$ Avg P

$$e_s = \frac{\frac{\Delta Q}{\text{Avg } Q} \times 100}{\frac{\Delta P}{\text{Avg } P} \times 100}$$

i) % Method, $e_s = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$

ii) Arc elasticity, $e_s = \frac{\Delta Q}{\Delta P} \times \left[\frac{P_1 + P_2}{Q_1 + Q_2}\right]$

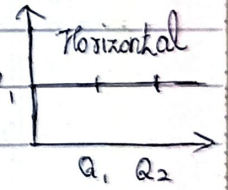
Types of Elasticity of Supply:

i) Perfectly Elastic
ii) Perfectly Inelastic
iii) Relatively Elastic
iv) Relatively Inelastic
v) Unitary Elastic Supply

i) Perfectly Elastic Supply:

ΔP - Negligible
ΔQ - Large

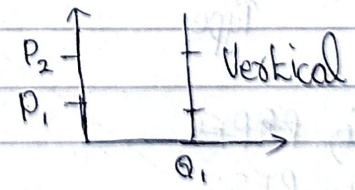
$e_s = \frac{\%\ \Delta \text{ in } Q_s}{\%\ \Delta \text{ in } P} = \frac{x}{0} = \infty$



ii) Perfectly Inelastic Supply:

$\Delta P \rightarrow$ Changing
$\Delta Q \rightarrow$ Negligible

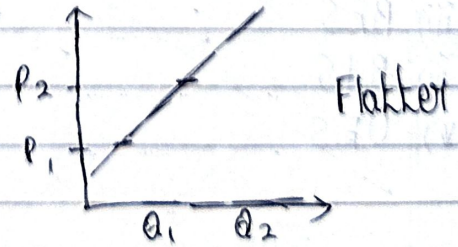
$e_s \Rightarrow \frac{0}{y} = 0$



iii) Relatively Elastic Supply:

$\%\ \Delta Q_s > \%\ \Delta P$

$e_s = \frac{\%\ \Delta Q_s}{\%\ \Delta P} \Rightarrow e_s > 1$



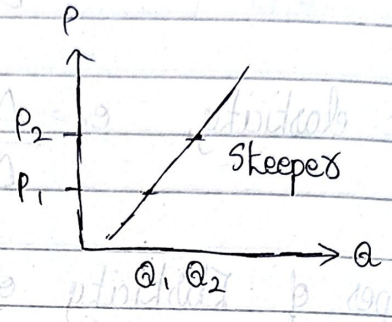
iv) Relatively Inelastic Supply:

% Δ in Q_S < % Δ in Price

$$e_S = \frac{\%\ \Delta \text{ in } Q_S}{\%\ \Delta \text{ in price}}$$

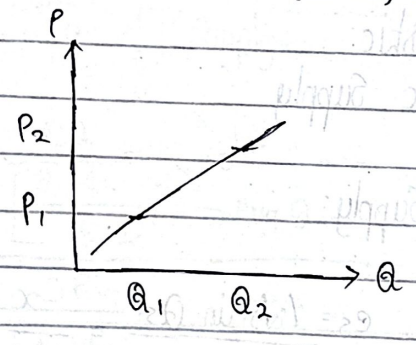
$$= \text{[redacted]}$$

$$e_S < 1$$



v) Unitary Elastic Supply:

% Δ Q_S = % Δ Price where, $e_S = 1$



Summary

Type	result	Slope
~~i) PPPES~~		
i) PES	$e_S = \infty$	
ii) PIS	~~$e_S = \infty$~~	
iii) PES	~~$e_S > 1$~~	
iv) RIS	~~$e_S <$~~	
v) UES		

Summary

	Type	Result	Slope
i)	RPES	$e_s = \infty$	Horizontal
ii)	PIS	$e_s = 0$	Vertical
iii)	RES	$e_s > 1$	Flatter
iv)	RIS	$e_s < 1$	Steeper
v)	UES	$e_s = 1$	Straight Upward

* Determinants of e_s

i) ~~Substan~~ Substantial Increase in Cost of raw materials => e_s - low

ii) Time period => Longer → e_s more
Less → e_s low

iii) No. of producers => High Competition → High e_s
Low Competition → Low e_s

iv) Capacity Utilisation => Space → e_s High
Full → e_s low

v) Availability of RM/Inputs ⇒ Easily → High es
Hard → low es

vi) Other FOP ⇒ Easy → High es
low → low es

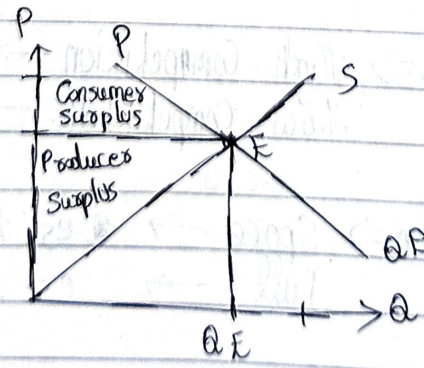
vii) Faster Mobility ⇒ Movement → es High
Not possible → es low

viii) Expectation ⇒ If producers expects there will be rise in products cost in future. es will rise in future and fall in present.

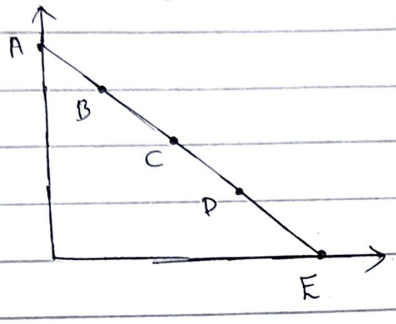
* Equilibrium Price:

Price → $Q_D = Q_S$ [Price Mechanism]

Price	Q_D	Q_S	
10	100	60	Market determined Price
15	80	80	
20	70	90	



* Point elasticity → Demand



$e_A = \frac{AE}{O} = \infty$; $e_B = \frac{BE}{AB} = e_d > 1$

$e_C = \frac{CE}{AC} = 1$; $e_D = \frac{DE}{AD} = e_d < 1$

$e_E = \frac{O}{AE} = 0$

* Consumer Surplus = 30 - 10
= 20

* Social Efficiency :- Net gain of society

↓ Producer ↓ Consumer

Ready to pay = ₹50 → [CS] 30
Selling price = ₹20
CP of produce = ₹5 → [PS] 15

Cost price

Social Efficiency

* Disposable Income = Income - Taxes