

Unit 03 :- Price - Output Determination Under Different Market Form

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3.0 Perfect Competition → Characteristics

(i) Large no. of buyer & seller & $\left[\begin{array}{l} \text{total supply} + \text{total demand} \\ \downarrow \text{Share of each seller} \quad \downarrow \text{Share of each Buyer} \end{array} \right] \rightarrow \text{Too small} \rightarrow \times \text{ Buyer or seller in position to influence the price}$

(ii) Product supplied by all firms $\left\{ \begin{array}{l} \text{identical} \checkmark \\ \text{Homogeneous} \checkmark \end{array} \right. + \text{Goods sold} \rightarrow \text{at a single Market price} + \text{Perfect substitute}$

(iii) Every firm is free to $\left\{ \begin{array}{l} \text{enter the market} \\ \text{to go out of it} \end{array} \right. \rightarrow \text{no legal or market related barriers}$

* Above 3 condition are fulfilled \rightarrow **Pure competition** \checkmark
nature of product & price etc

(iv) Buyer or seller \rightarrow Perfect knowledge of the market conditions.

(v) PCM \rightarrow very low transaction costs

(vi) All firms individuals are price takers \rightarrow $\left\{ \begin{array}{l} \text{Firm} \text{ price accept} \\ \text{H.F.} \text{ Determined} \end{array} \right.$
Industry Price maker
hva hai.

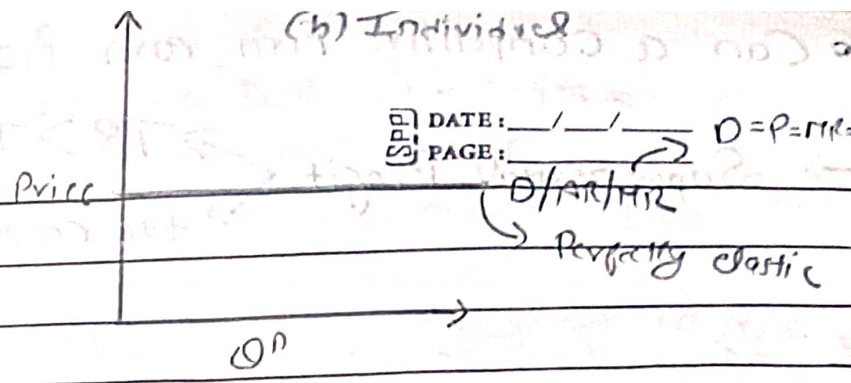
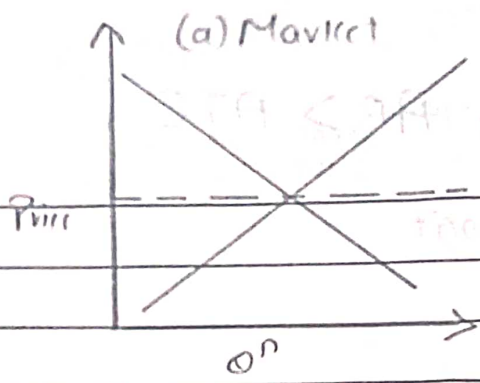
Ex of PCM \rightarrow $\left\{ \begin{array}{l} \text{Financial Instrument} \\ \text{Stoic} \end{array} \right. \text{ or } \left\{ \begin{array}{l} \text{Precious Metals} \\ \text{Gold, Silver, Platinum} \end{array} \right. \text{ or } \left\{ \begin{array}{l} \text{Agricultural Product} \end{array} \right.$

* ~~Price Discrimination~~ \times \rightarrow $\left\{ \begin{array}{l} \text{Buyer has no influence over Market Price} \end{array} \right.$

3.0.1 Price Determination Under Perfect Competition

• Equilibrium of the Industry $\rightarrow \left[\begin{array}{l} \text{total supply of Industry} = \text{total Demand} \end{array} \right. \rightarrow \left\{ \begin{array}{l} \text{Industry is in equilibrium} \checkmark \\ \text{equilibrium Price} \checkmark \end{array} \right.$
 $\rightarrow \text{Eqi. Output} = \text{Total Supply} = \text{Total Demand}$

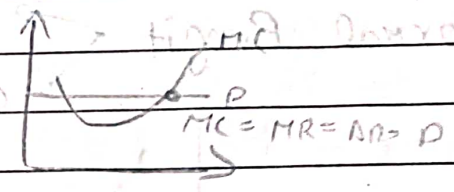
• Equilibrium of Individual firm \rightarrow when $\left\{ \begin{array}{l} \text{Maximising its profits} \checkmark \\ \times \text{ incentive to expand Prod} \text{ or contract} \end{array} \right.$
 $\rightarrow \text{Eqi Output} \rightarrow \text{Output which gives Max. Profit to the firm.}$



★ Conditions for equilibrium of firm In Short Run

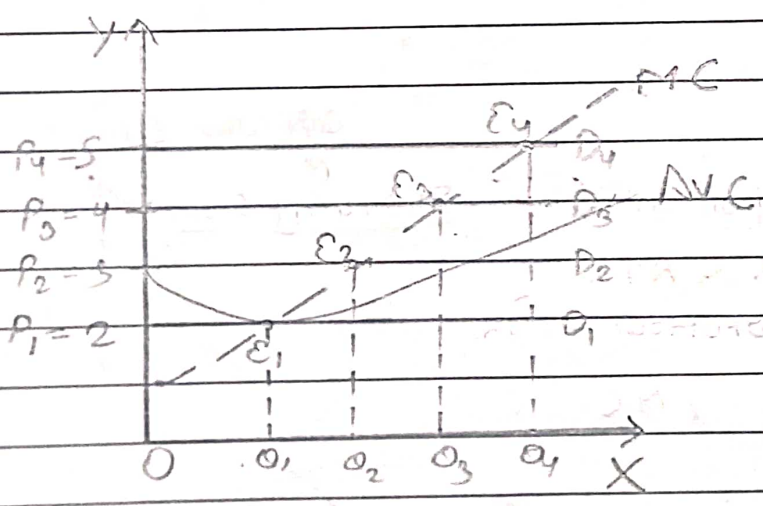
(i) Firm Profit Maximize when $\rightarrow MR = MC$ Normally
 But under PCM $\rightarrow MC = P$
 $\hookrightarrow MR = AR = P$ Baat ek hi hai

(ii) MC Curve should cut MR Curve from Below. In other words, MC should have a +ve slope.



★ Short Run Supply Curve of the firm in a competitive market

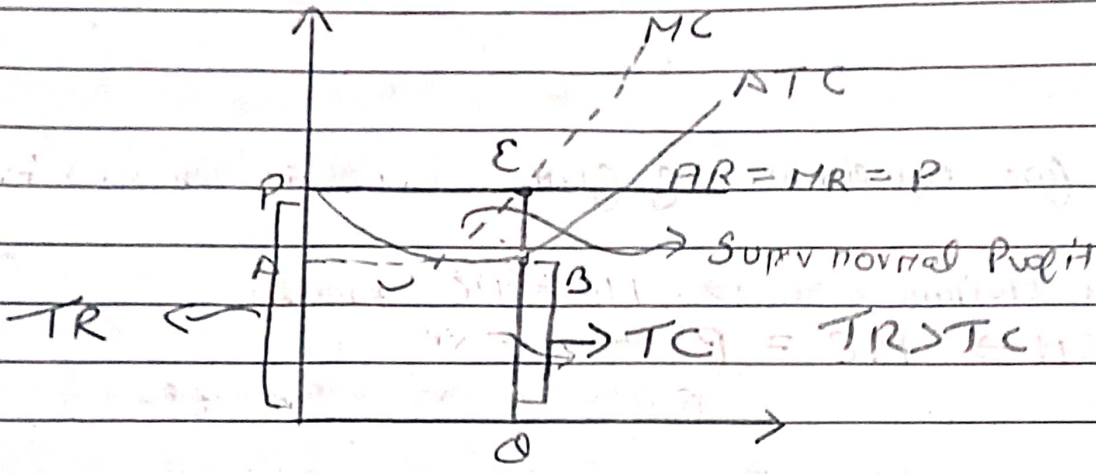
$\rightarrow MC \text{ curve} = \text{Firm's Supply Curve}$
 \hookrightarrow When MC, above AVC



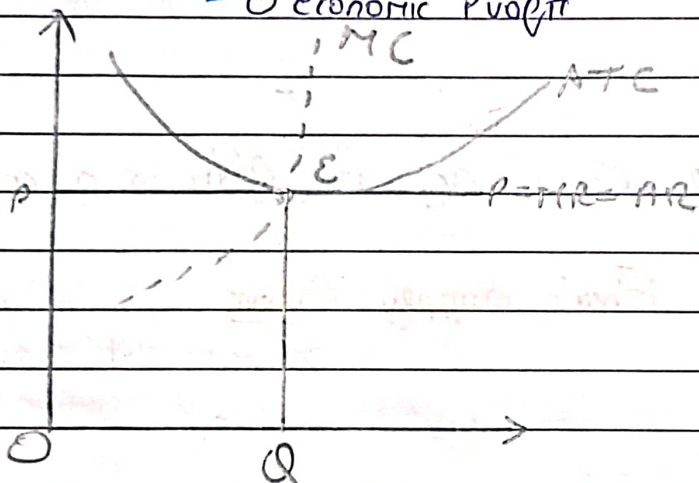
• Can a competitive firm earn profits? In short run

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→ Supernormal Profit $\left\{ \begin{array}{l} TR > TC \text{ or } AR > ATC \\ +ve \text{ economic profit} \end{array} \right.$

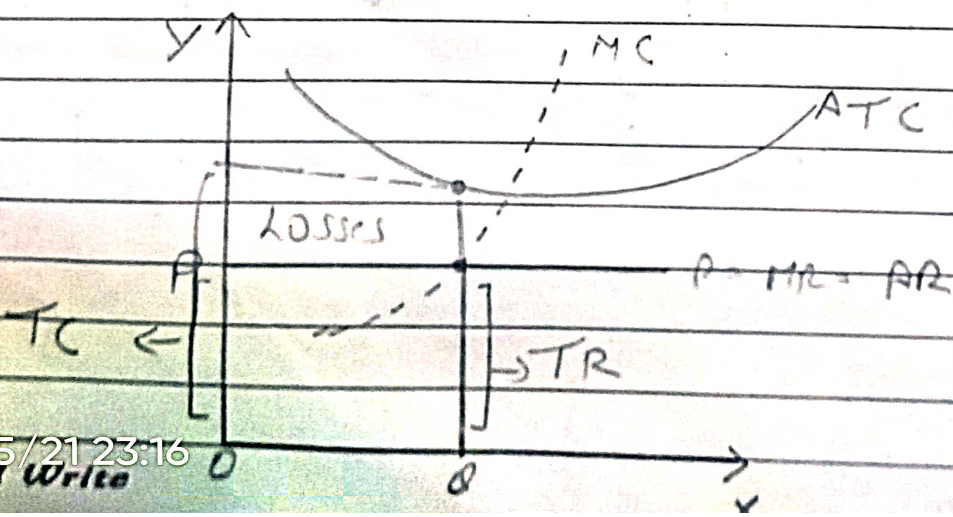


→ Normal Profit $\left\{ \begin{array}{l} TR = TC \text{ or } AR = ATC \\ 0 \text{ economic profit} \end{array} \right.$



only when $AR > AVC$

→ Losses $\left\{ \begin{array}{l} \text{Firm} \rightarrow \text{equilibrium position} \checkmark + \text{Still making losses} \checkmark \\ TR < TC \text{ or } AR < ATC \\ \text{But } AR < AVC \sim \text{Shutdown firm देना चाहिए} \end{array} \right.$



★ Long Run equilibrium of a Competitive Firm

• Firm equilibrium → They have adjusted their plant → To produce at the min. point of their long run ATC curve.

जब मैं उस plant पे आ रहा हूँ जो जहाँ पर मेरी Min. Cost होती है, Prodⁿ करती हूँ।

→ In long Run, Firm will be earning → Just Normal Profit

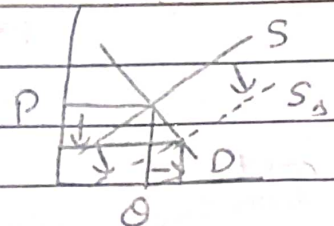
• If Firm making Supernormal Profit in Short Run

→ New Firm attracted into the industry

① Inc. in Supply → Existing Firm में inc. करती है, Demand में कोई change नहीं है

② Demand में कोई change नहीं है

③ Inc. in the cost of Factor of Prodⁿ → Demand of Factor of Prodⁿ ↑ → Firm Cost ↑ → Profit ↓



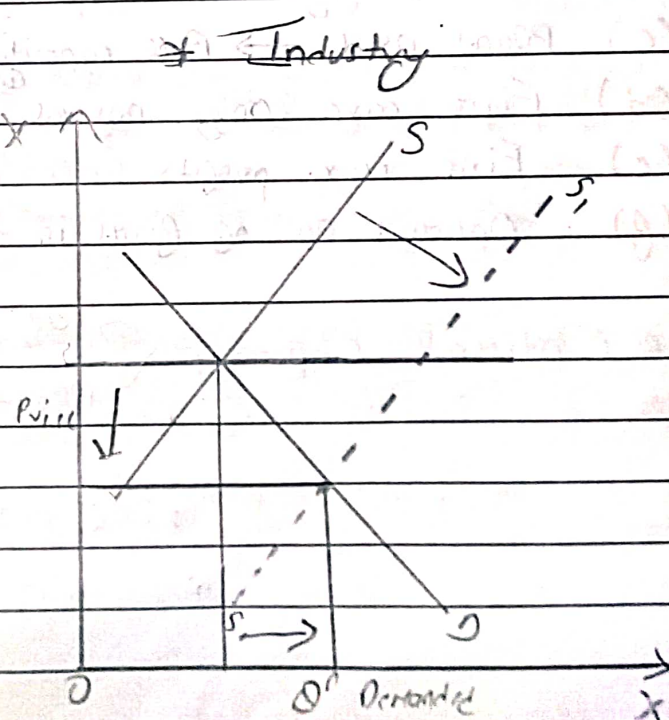
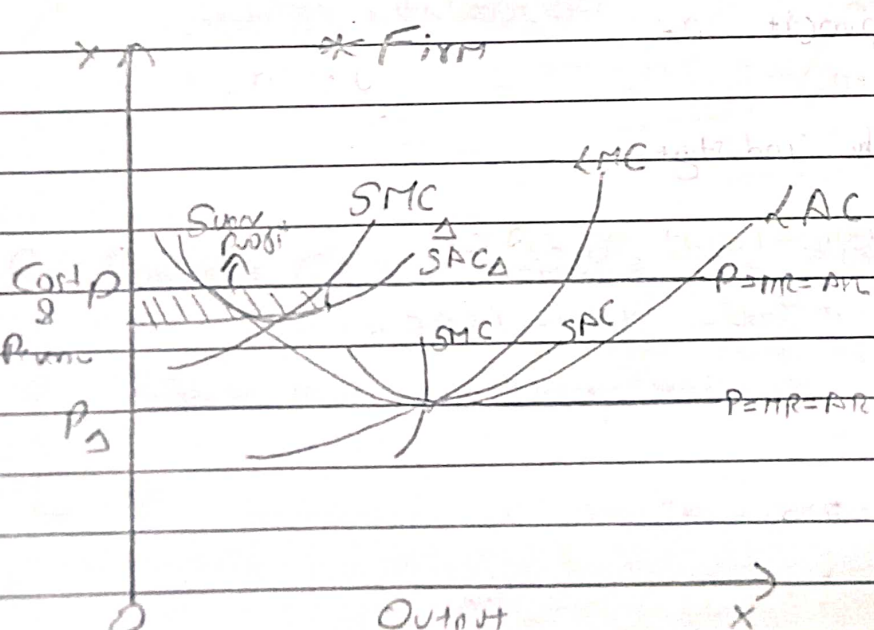
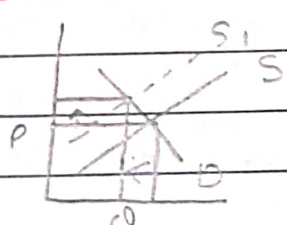
• If Firm Making Losses in SR

→ They will leave the industry in the LR

→ Dec. in supply

→ Demand no change

→ Dec. in cost of Factor of Prodⁿ → Demand of Factor of Prodⁿ ↓ → Firm Cost ↓ → Profit ↑



- Observation :-
- 1) $LMC = LAC$, Cost is Min.
 - 2) $SMC = SAC$, Cost, Min
 - 3) $SMC = SMR$, Max Profit

* Condition of LR Equilibrium of the Firm (Profit Max.) \Rightarrow Tangent \propto to the Demand Curve (Price)

$LMC = LAC = P$ $\begin{cases} \rightarrow LMC = P \\ \rightarrow LMC = LAC \end{cases}$ (AC Curve)

OR

$LMC = LAC = P = SMC = SAC = MR$

★ Long Run Equilibrium of the industry Conditions :-

- \rightarrow All firms in the industry \rightarrow Equilibrium \leftarrow \Rightarrow means all firms are maximising profit
- \rightarrow ~~X~~ Firm has incentive $\begin{cases} \rightarrow$ entry \rightarrow the industry \rightarrow all firms earning normal profit or 0 Economic profit \\ \rightarrow exit \leftarrow the industry \rightarrow all firms earning normal profit or 0 Economic profit \end{cases}
- \rightarrow Total q^n supplied $=$ Total q^n Demanded

• Optimum Firm \rightarrow Firm producing output at optimum cost
 \hookrightarrow In long run, all firms under PCM

■ The optimality is shown by the following outcomes associated with the long run equilibrium of the industry:

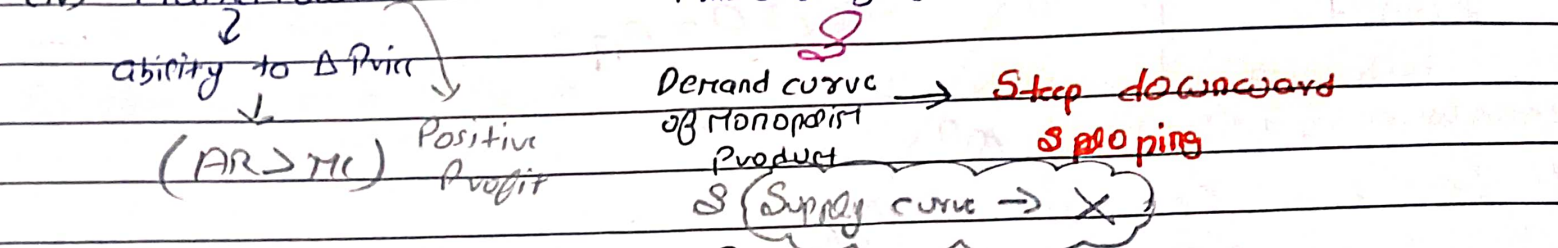
- (a) Output produced \rightarrow Min. Possible cost \leftarrow Allocative efficiency \leftarrow at $MC = P$
- (b) Consumer pay the min. possible price \rightarrow which just cover the MC
- (c) Plant used \rightarrow Full capacity in LR ($MC = AC$) \leftarrow Productive efficiency
- (d) Firms earn only normal profit ($AR = AC$)
- (e) Firm max. profits ($MC = MR$)
- (f) Optimum no. of firms in the industry

• Optimal Capacity $\begin{cases} \rightarrow$ at min. point of LAC \\ \rightarrow Plant is fully utilised (SAC is min.) \end{cases}

★ **Monopoly** \Rightarrow Means "Alone to sell" & Absence of competition
 \Rightarrow No comp. bet Firms Industry

\rightarrow Features :- Δ Seller = Industry

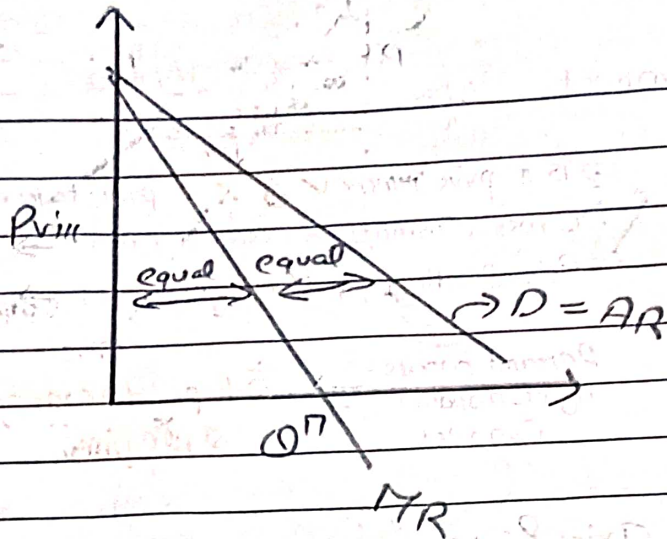
- (i) Single Seller of the Product
- (ii) Barrier to Entry \rightarrow Economic Barrier, Legal Barrier etc.
- (iii) No close substitutes \rightarrow is a price maker \checkmark & \times a price taker
- (iv) Market Power \rightarrow Cross elasticity of Monopolist product \rightarrow 0 or very small



\therefore How do monopolies arise?

1. Strategic Control over $\left\{ \begin{array}{l} \text{Scarc resources} \\ \text{Input} \\ \text{Technology} \end{array} \right\}$ by a single firm.
2. Through $\left\{ \begin{array}{l} \text{developing} \\ \text{acquiring control} \end{array} \right\}$ over a unique & Oth. comp. \rightarrow Difficult to copy.
3. Govt. granting exclusive rights to produce & sell C&S.
4. Patent & Copyright given by govt. \rightarrow To protect intellectual prop. encourage innovations
5. Biz combinations or cartels \rightarrow Ex: - Jio, Airtel, Vi
6. Extremely large start-up cost \rightarrow To entry the market
7. Natural Monopoly \rightarrow (When there are very large economies of scale) \rightarrow Means A single firm can produce the industry's whole output at a lower unit cost so that any other firm's entry would be unprofitable. eg. PW
8. Enormous Goodwill enjoyed by firm \rightarrow For long period
9. Stringent legal & regulatory requirements \rightarrow Discourage entry of new firms
10. Firm use various anti competition practices \rightarrow ex: - Predatory tactics

★ Monopolist's Revenue Curves



IMP = Relationship Between AR & MR of a monopoly firm

(i) AR + MR → Negatively by sloped [Downward Sloping] Curves.

(ii) Slope of MR Curve = 2 × Slope of AR Curve

→ MR curve lies half way between Y Axis and AR curve
 (Mean cut horizontal line into two equal parts)

(iii) $AR \neq 0$ & $MR \rightarrow 0$
 (at VC)

★ Monopolies are 2 Types

- Simple → Uniform price from all buyers
- Discriminating → charging diff. prices from different buyers of same goods

Ex: - Dynamic fare charged by Indian Railways in specific trains.

★ Short Run Equilibrium

→ Conditions for equilibrium

- $MC = MR$
- MC Curve should cut MR curve from below

(Same as Profit Condition)

• Monopolised Market can incur

- Supernormal profit ✓
- Normal profit ✓
- Losses ✓

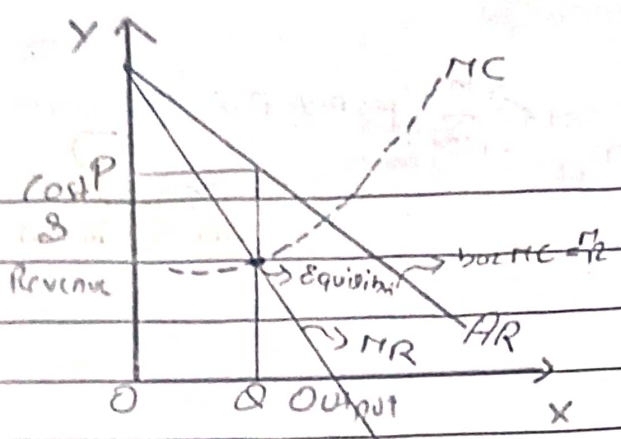


Fig: Equilibrium of a monopolist (Short Run)

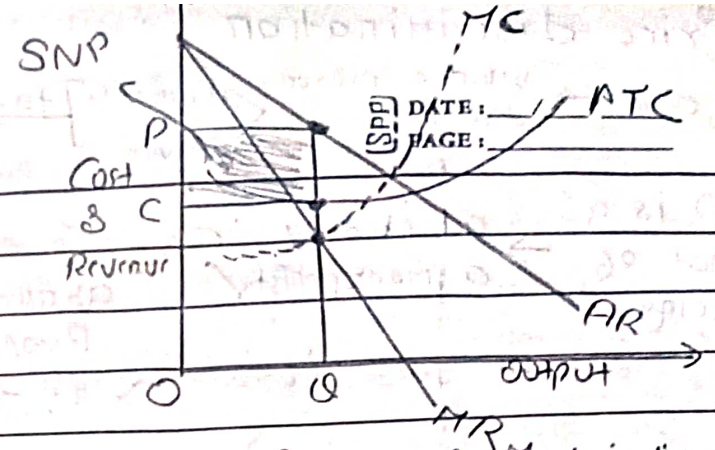


Fig: Equilibrium & Maximisation of Profit (Supernormal profit)

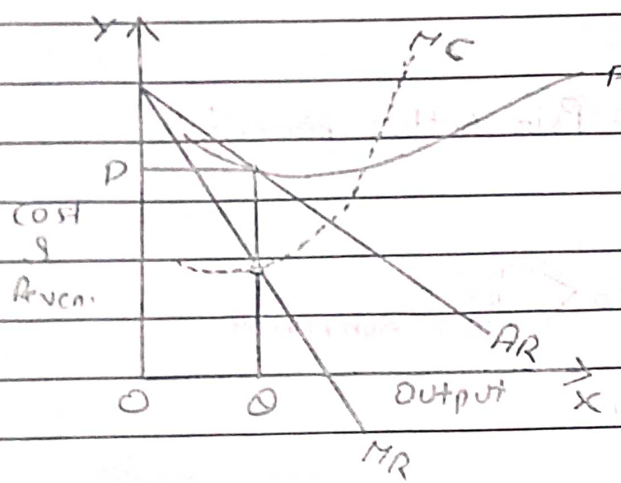


Fig: Equilibrium & Normal profit.

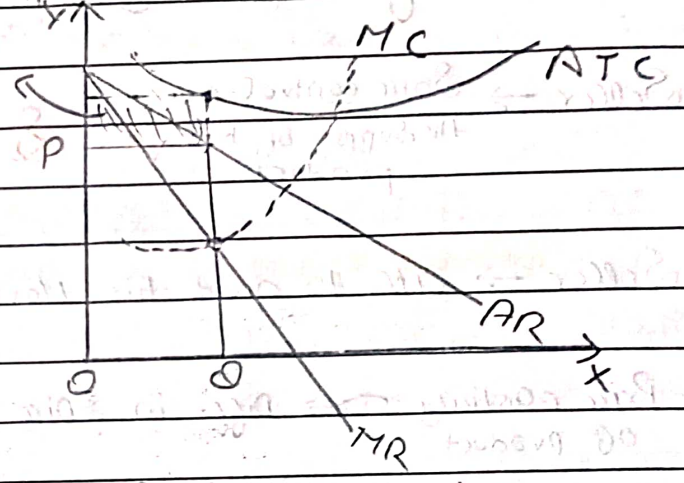


Fig: Equilibrium & Loss in SR

AVC covers \rightarrow Continue
 AVC cover $\times \rightarrow$ Shut down
 Some \times

Graph start as \rightarrow SR (Supernormal profit)

★ Long Run Equilibrium

He can chose any point on the LAC where his profit are maximum.
 Monopolist need \times produce at its optimum level.

Monopoly \rightarrow Monopolist किता सी He can produce at a sub-optimum level scale also. ✓
 है लेकिन उसे Profit maximisation होना चाहिए LAC curve के SAC पर जो जो choose गिरे Profit के शकत

- * ये Supernormal profit का कम पर शकत है
- * Losses $\checkmark \rightarrow$ continue NA कोता
- * Pure profit कम शकत है \rightarrow Bar entry of outside firm is blocked.

★ Price discrimination

→ PD occurs → When a producer sell a specific Commodity or Service to Diff. buyers at two or more DATE: _____ PAGE: _____ Diff. Prices Gov reasons.

→ PD is a Method of pricing adopted by a monopolist ✓ to earn abnormal Profit.
 eg Monopolist जल्दा बिक्री करता है और वो देखा है Rich बनता है।
 eg Transport cost → associated with diff in cost.
 cost की अन्तर से अलग Price set है तो उसे PD कहा जाता है।

Conditions for Price discrimination :

1. Seller → Some control over the supply of his product ✓ & Firm → Price setting power ✓
2. Seller → able to divide his market ✓ into two or more sub market
3. Price elasticity of product → Diff. in ϵ Diff. sub market
- Monopolist fixes a high price → For those buyer Demand inelastic ($\epsilon_p < 1$) V.V
4. ~~X~~ Market Arbitrage → Means अलग-अलग market में अलग अलग Price है जो लोग अलग बाजार खोलते हैं।

IB Assume 2 Market

Market A Market B

Case 1 $MR_A < MR_B$ → Market B में MR ज्यादा है तो में उस case में PD नहीं करता।
 B में ज्यादा profit मिले है so में Market A में Goods Market B में ही करता। V.V

Case 2 $MR_A = MR_B$ → अब मुझे clear है कि same MR मिल रहा है तो उस में उस case में PD करता और Higher Price उस Market में जहाँ जहाँ elasticity lower है Means inelastic demand है V.V

Good Write

Objectives of Price discrimination :

- (b) to dispose off surplus stocks
- (c) to enjoy economies of scale
- (d) to capture foreign market
- (e) to secure equity through planning

★ Degree of Price Discrimination

→ by A.C. Pigou

→ **First Degree Price Discrimination**

Monopolist separates market into each individual consumer
 + change their price according to their willingness to pay
 → extract the entire consumer surplus

Means selling at different prices to individual consumers in the same market.

→ **Second Degree Price Discrimination**

Different price charged → different quantity sold
 Monopolist will take away only a part of CS.

Two possibilities:

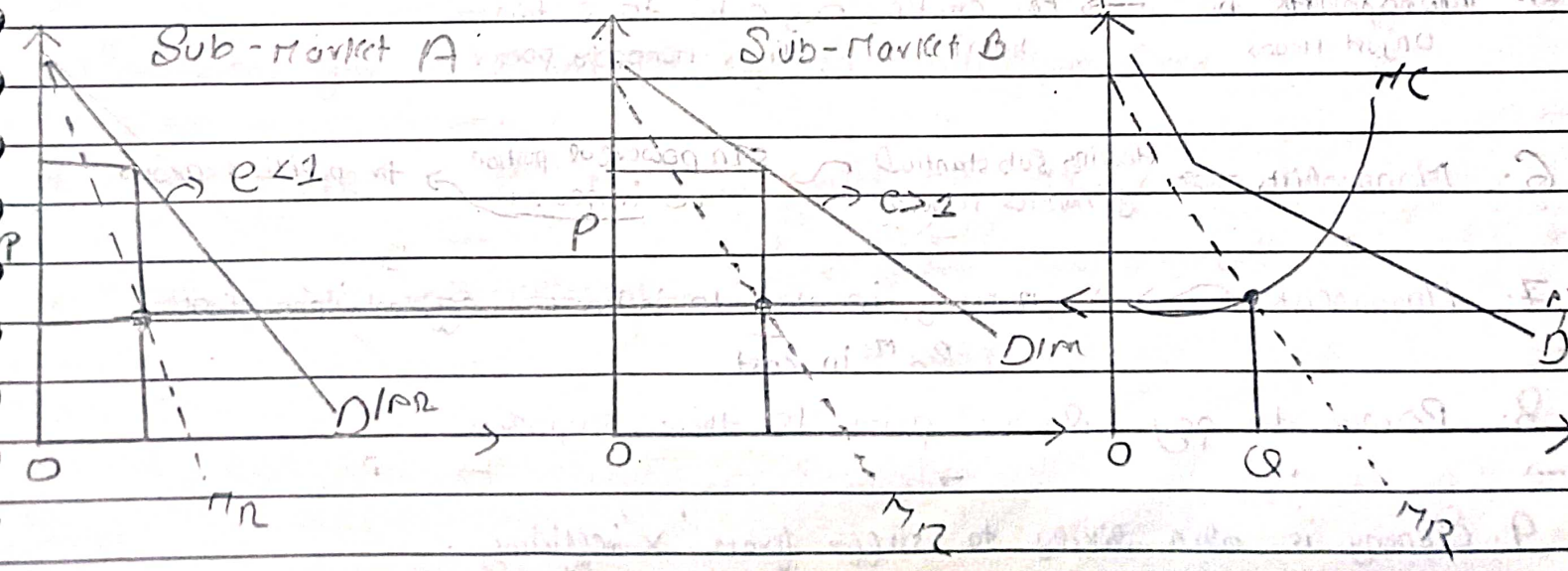
- Different consumers pay different price (e.g., Family pack of soap)
- If they buy larger quantity available at lower unit price

Each consumer pays different price for consecutive purchase
 (Consumption exceeds a particular limit)

→ **Third Degree Price Discrimination**

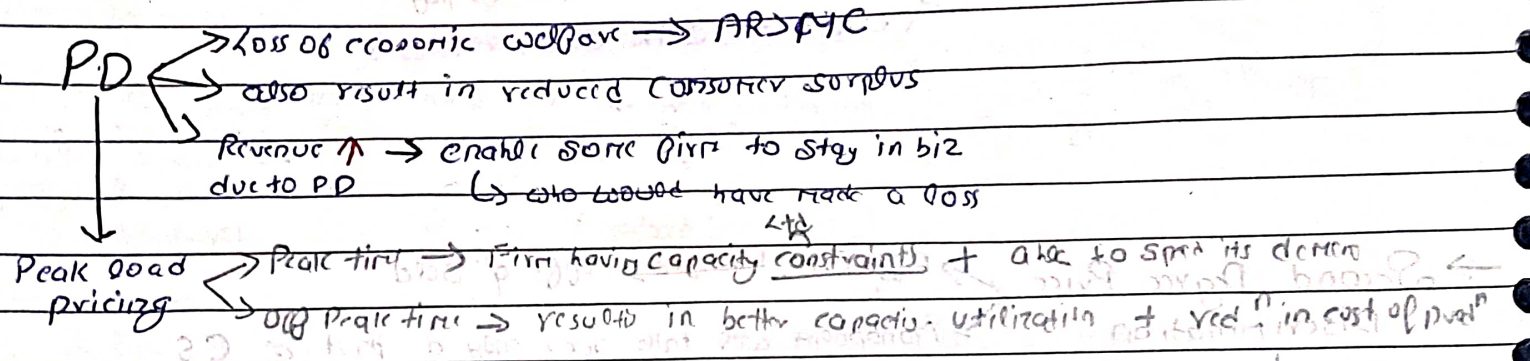
Location / Customer segment
 Monopolist divides consumer into different sub-markets in different sub-markets.
 (e.g., Market → Different price)

★ Equilibrium under PD → 3rd Degree PD ✓



→ To reach the equilibrium position, the Monopolist has to make 3 Decisions:

1. How much total output should be produced?
↳ Monopolist will compare the MC & MR of the output in Total Market / Aggregate Market
2. How the total output should be distributed between the two sub-markets?
↳ First MR + MC → equal
↳ of 2 sub-markets
3. What prices he should charge in the two sub-markets?



Economic effects of Monopoly

1. Monopoly is often criticized → it reduce aggregate economic welfare
2. Monopolists charge
 - ↳ Substantially higher prices
 - ↳ produce lower level of output
3. Monopolists earn → Economic profit in LR → unjustifiable ✓
4. Monopoly restricts consumer
 - ↳ sovereignty
 - ↳ opportunities
 - ↳ to choose what they desire.
5. Monopolists use unjust means → For creating barriers → entry to sustain their monopoly power
6. Monopolists → Having substantial financial resources → in powerful position to influence the political process
7. Monopolists → X necessary incentive to introduce efficient innovations
Redⁿ in cost
8. Power to pay lower prices to their supplier
9. Economy is also likely to suffer from 'X' inefficiency.

3.2 Imperfect Competition - Monopolistic Competition

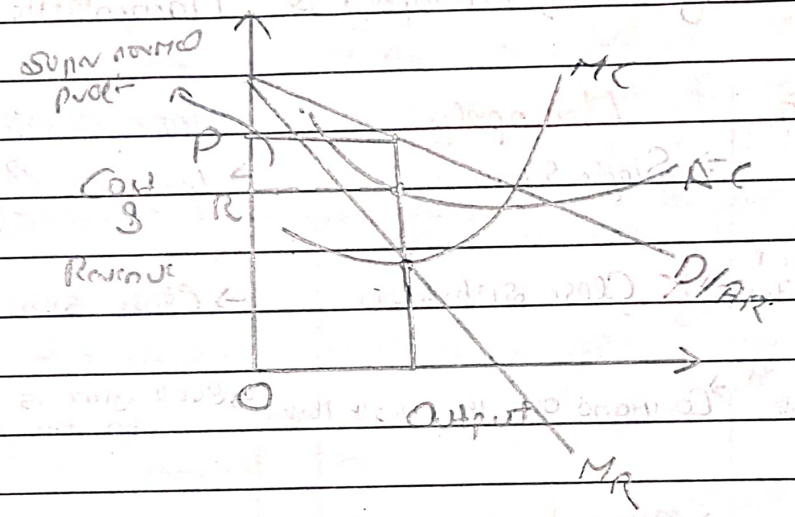
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→ Features Excess capacity always exists

- (i) Large no of Seller
- (ii) Product Differentiation → Product of diff. Sellers → Differentiated on the basis of brands → Competing products → Close substitutes → Demand relative elastic
- (iii) Freedom of entry & exist MC Theory architect → Chamberlin
- (iv) Non-price Competition Distinction bet. Selling cost & Production cost

★ Price-Output Determination Under Monopolistic Competition: Equilibrium of a firm

→ Each firm Price Makers + less differentiated the product → more elastic



Conditions for the Equilibrium of an Individual firm:

1. $MC = MR$
2. MC curve must cut MR curve just below

• Monopolistic competitive firm incur → Supra normal profit ✓
Normal profit ✓
Losses ✓

→ Demand curve → Infinite elastic	→ Downward sloping & highly inelastic → Demand curve	→ Downward sloping & more elastic demand curve
→ MR + AR → Same curve	→ MR is twice steep when compared to AR	→ =
→ TR → Straight line positively sloping through the origin	→ TR inverted U Shaped	→ =
→ X PD	→ ✓ PD	→ Depends on the extent of monopoly power the firm
→ X SP in LR	→ SP in Both → LR ✓ / SR ✓	→ X SP in LR
→ X Selling costs	→ Generally low selling costs	→ High selling cost → reason advertisement
→ Price being given, decide only q^n of output	→ decides both → Price & q^n of output	→ =
→ Product is produced at the Min. Average cost	→ Produced at the declining portion of AC	→ =
→ Equilibrium q^n is highest + Produced at least cost	→ Equilibrium $q^n <$ other market forms	→ Equilibrium $q^n >$ optimal → excess capacity
→ X Consumer exploitation	→ Consumer exploited → Change in price	→ Consumer influenced through → Price + Non-price competition
→ Efficient allocation of resource	→ Inefficient allocation of resource	→ =
→ Wastage of resource	→ Wastage of resource	→ Huge wastage of resource → Advertisement

★ **Oligopoly** → Imperfect Competition
 Limited No. of Sellers [2-10] + Product → Homogeneous ✓
 Differentiated ✓
 Strategic Interdependence → means Big Firms
 Prof. Stigler

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→ **Types of Oligopoly:**

• **Pure oligopoly or Perfect oligopoly** → product is homogeneous in nature
 tends to process raw materials → intermediate goods → produce
 ex: petroleum, steel & Aluminium
 eg. Iron and steel industry

• **Differentiated or Imperfect oligopoly** → Goods sold is based on product differentiation
 ex: Talcum powder

• **Open oligopoly** → Free entry & **Closed oligopoly** → Entry is restricted

• **Collusive oligopoly** → When few firms of the oligopoly market comes to common understanding or act in collusion with each other either
 Fixing Prices, Output, both
 Means that few firm oligopoly at time in market

• **Competitive oligopoly** → Absence of such an understanding among the firms + compete with each other

• **Partial oligopoly** → Industry dominated by one large firm + dominating firm → Price leader ✓
 Leader of the group

• **Full oligopoly** → Market will be conspira by absence of price leadership.

• **Syndicated oligopoly** → Firm sell their products through a centralized syndicate
 with common interest with firm oligo. At 2nd 2nd group break

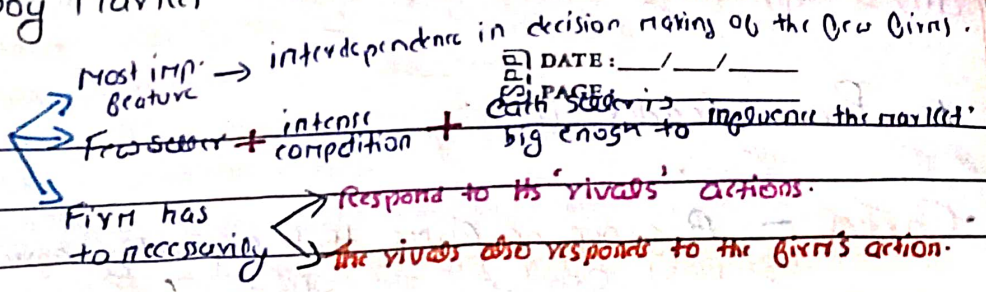
• **Organized Oligopoly** → Firm organize themselves → central association for fixing price, output, quantity etc

• **Cartel** :- A group of firm eg **OPEC**

Organization of Petroleum exporting countries act as monopoly

Characteristics of Oligopoly Market -

→ Strategic Interdependence



Oligopoly में कुछ कम firms
 एक-दूसरे के कार्रवाई से
 प्रभावित होते हैं।

→ Importance of Advertising & Selling Cost - Great importance

→ Firm employ various aggressive + defensive marketing weapons → To gain greater share in the market / maintain their share

* Note ~ That firm in such type of market avoid price cutting

→ Group Behaviour

Price and Output Decisions in an oligopolistic Market

→ Oligopolistic firm → X have sure + Determinate Demand curve

Demand curve slightly as the rival Δ their price in relation to the price made by it

∴ Imp. Oligopoly models are:

(i) It is assumed → Oligopolistic firms ignore their interdependence & make their decisions independently → DC definite

by some economists

(ii) Some economist assume → Oligopolist is able to predict the reaction pattern of his competitors

ON the basis of his prediction → He makes decisions relating to price & q.

• Cournot Model

Cournot model में control variable होता है Output। हर firm Output का decision लेता है और दूसरे firm को यह पता है।

• Stackelberg's Model → STH model में leader है Output Decide करता है और follower है वो बाद में Output Decide करता है।

• Bertrand Model

→ In this model price is the main variable and output is determined by the price.

(iii) 3rd approach → Oligopolists enter into agreement + try to pursue their common interest

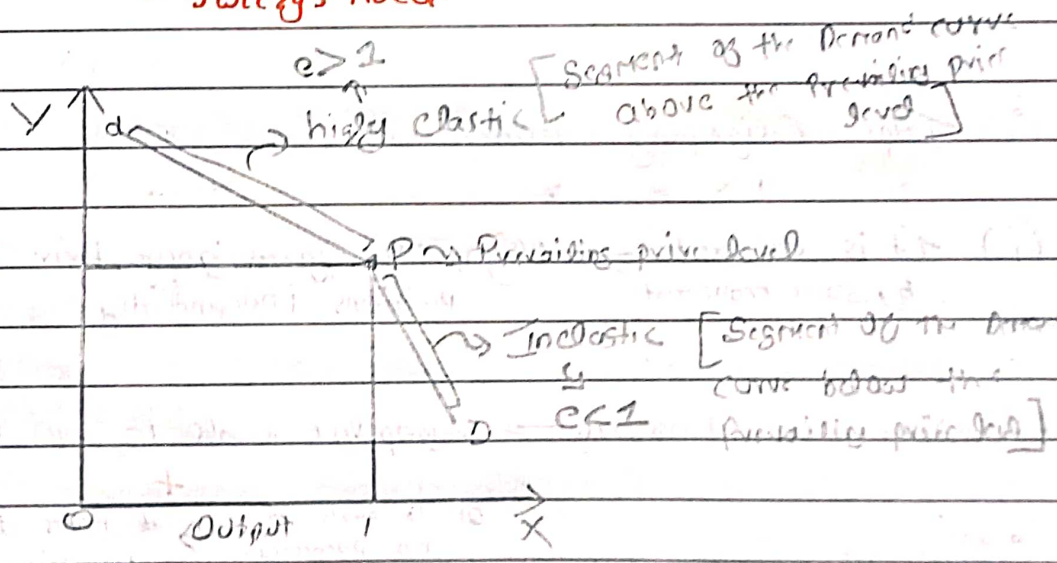
★ Price Leadership

• **Cartel** → A group of firms that explicitly agree → Coordinate their activities
 → Most cartel have only → Subject of Producers
 → Price leadership by dominant firm → One strategy adopt → Give a lot of philosophy
 → Dominant Firm → accept the price of fringe firms
 → Set prices to max its profit
 → Taking into account → Firms Firm behaviour

→ Price leadership by low cost firm → Price leader set the price in such a manner
 → It allows some profits to the followers also

→ Barometric price leadership → Firm → old experienced largest or most repeated → Act as a leader
 → Leader makes Δ in price → Which are best from the view point of all firms in industry

★ Kinked Demand Curve → Given by → An American Economist Paul A. Sweezy
 → Sweezy's Model



★ Rigid or sticky prices explained → by kinked demand curve theory

★ Explain also → why oligopolistic price might change only infrequently

Good Write

- When oligopolist lower the price below the prevailing price
 - ↳ Its competitors will follow
 - ↳ Little Increase in sales.
- When oligopolist Increase the price of product
 - ↳ Competitors will not follow
 - ↳ Massive Demand in sales
- Response to a price ↑ is less than the response to a price ↓

→ Other Imp. Market Forms

* Sony ~ Buyer market

1) Duopoly → Subject of oligopoly
Only 2 Firms in a market

2) Monopsony → Single buyer in market
Applicable to factor market

3) Oligopsony → Small no. of large buyers
Applicable to factor market

4) Bilateral Monopoly → 1 Buyer + 1 Seller
Combination of Monopoly + Monopsony

Imp MCQ →

Q Monopolists are collectively inefficient because → They restrict the output to keep the price higher than under PC
+ $BR > MC$

Q PC → Making min. losses (In short run) ⇒ $MR > MC$

Q Product Differentiation is most imp. feature ⇒ Monopolistic competition

Q Unique supply curve in monopoly is Not due to ⇒ $P > MC$

Q In long run, Normal profit are included in → LAC
which curve

Q Dilemma faced by a Monopolistic is setting $\left. \begin{matrix} \text{Price} \\ \text{or} \\ \text{Output} \end{matrix} \right\}$ either

Q Product under Pure Monopoly → Homogeneous

Q LR Period → Normal Price → competitive firm will be ⇒ Equal AC & MC of Prod

Q Normal Profit included in → Implicit cost