The reasons for L-shaped LAC:

1) Technical progress: As a result of continuous technical progress, LAC falls initially and then becomes almost constant; it will be L-shaped.

2) Learning by doing: Because of learning by doing, the efficiency of labourers grows on increasing and the cost decreases with the increase in the scale of output in the long run, therefore LAC becomes L-shaped.

3) Managerial cost behaviour: For producing different scale of output different appropriate technique of management is applied. The managerial cost decreases, as a result LAC decreases and then remains almost constant.

4) Economies: The LAC curve sloped downward coz with the expansion of output the firm experiences various economies of scale such as larger scope for specialization of labour & machines. Availability of cheaper raw materials & equipments improvement in skill, lower reparation & transport etc. As a result product cost decreases & LAC turns downward & then over a large range of output it remains constant. Hence, LAC become constant.

Chapter 7 - Theory of Product Pricing

Equilibrium of the firm in the long-run under perfect competition: 
TR-TC approach: According to this approach, the firm will be in equilibrium when it gets maximum profit. It occurs at the maximum difference between TR & TC.
In the fig., TR originates from the origin O & slope upward to the right 'coz of the constancy of AR/price. TR starts from some point F on Y-axis as it is equal to TFC when the output is 0. And OQ1 level of output TR=TC at the point A. It is the break-even point which is not a 0 profit point but a normal profit. Before the point A & after the point B the firm has loss of \( TC > TR \).

In order to determine the equilibrium point that is maximum profit point or Ste. line has to be drawn tangent to TR \( 2 \) parallel to TR at OQ2 level of output the distance be\( 1 \). TR \( 2 \) TC is the highest \( \pi = TR-TC = OQ2-\pi_2C = CD \). Therefore, firm will be in equilibrium, the profit CD is maximum. Here, the slope of \( \pi \) \( = TC (MR) \) \& the slope of TC (MC) are equal. Therefore, \( MR = MC \). Total profit curve can be drawn on the same fig. at the output \( Q_1 \), \( Q_2 \), \( Q_3 \) the firm is having neither gain nor loss i.e break even point farther the output \( Q_1 \) & after the output \( Q_3 \) it has loss. At the output \( OQ_2 \) it gets maximum profit equal to \( Q_2G \) or CD.
TR & TC analysis is not convenient to determine the equilibrium point of the firm. Firstly, tangent to TC has to be drawn making it parallel to TR for knowing the point of maximum profit. Secondly, the figure doesn't give us the idea of AR or price per unit. Hence, MR & MC analysis is a scientific tool to determine the equilibrium of the firm.

MR - MC Approach

According to this approach, the firm will be in equilibrium at that level of output at which MR = MC, MC cuts MR from below. Under perfect competition, price of the commodity is determined by demand & supply of an industry each firm has to sell its product at this uniform price. Thus, the firm is price taker & industry is price maker. Hence, AR or demand curve of a firm is horizontal & parallel to x-axis here, we assume identical cost condition. Under it each firm shares same condition of AC & MC curves.

In such a condition all the firms in the industry will have super-normal / abnormal / excess profit or normal profit or loss. Therefore, a firm would be in equilibrium when the following two conditions are fulfilled.

1. MR = MC (1st & necessary condition)
2. MC cuts MR from below (2nd & sufficient condition)

Price & Output Determination under Perfect Competition.

Short-Run Equilibrium of a firm:

i. AR = AC => Normal profit
ii. AR > AC => Super normal / excess profit
iii. AR < AC => Loss
In figure (a) market demand curve DD & a supply curve SS intersected with each other at point E. So, at this point E industry is in the equilibrium where the eqm. price OP & eqm. output OQ are determined.

In fig. (b) the firm is in eqm. at point E where MC & AR are equal & MC curve has cut AR from below. Here, AR > AC so firm earn excess profit. Mathematically,

\[ \pi = TR - TC = (P \times Q) - (AC \times Q) = \text{OPEQ}_1 - \text{OABB}_1 = \text{APEB}_1 \]

In fig. (c) the firm is in eqm. at point E. In this case, AR = AC. So, firm earn normal profit. Mathematically,

\[ \pi = TR - TC = \text{OPEQ}_2 - \text{OPEQ}_2 = 0 \]

In fig. (d), the firm is in eqm. at point E. In this case, AR is less than AC i.e. AR < AC. So firm faces loss. Mathematically,

\[ \pi = TR - TC = \text{OPEQ}_3 - \text{OCDO}_3 > -PCDE \]
Long-Run Equilibrium of a Firm

Under perfect competition, the following conditions should be fulfilled for a firm to be in equilibrium in the long run.

i. LMC = MR

ii. LMC curve must cut MR curve from below.

Due to free entry & exit, all the firms under perfect competition earn only normal profit in the long run. If the firms are earning super normal profit in the short run there will be the entry of new firms in the long run, no. of firms increases. In the case of loss firms will be closed down, no. of firms decreases.

In the fig. 8, the firm under perfect competition is in the long run equilibrium at the point E1 at which MR = LMC & LMC cuts MR from below. It earns only normal profit at the price OP, AR = LAC & at the price higher than OP, the firms earn super normal profit. There will be the tendency for new firms to enter the industry, attracted by super normal profit. As a result the supply increases & the price will be forced down or the other hand cost will go up as a result of more competition for factors (of production). This process continues till price will be equal to LAC & all firms earn only normal profit.
When the price is lower than \( p \) there will have loss because \( AR(p) < LAC \). To avoid the loss, some of the firms will leave the firm in long-run & supply decreases price rises, & on the other hand, demand for factor of prodl decreases. Cost of Prod\( ^n \) falls as a result of less competition for factor of Prod\( ^n \). This process goes on till the price equal to \( LAC \) & the firm earns only normal profit.

Thus, eq\( ^m \) of the firm occurs at the mini-point of LAC i.e. \( Q_{0B} \) is the optimum capacity output. At eq\( ^m \) point \( Q_{0} \)

\[
\text{mini} LAC = AR(p) = MR = NC = SUC = SAC.
\]

\( \Rightarrow \) An industry is a group of firms producing homogeneous products it will be eq\( ^m \) in the long-run when this condition are fulfilled:

1. Equality bet\( \mu \) long run supply & demand.
2. All the firms should be in eq\( ^m \) (NC cuts MR from below).
3. Normal profit (\( AR = LAC \))

**Supply curve under Perfect Competition**

The supply curve of an industry shows that various quantities of the product that it would offer to sale at various prices at a given time. The quantity that an industry offer to sale, depends mainly on the price of product in rel\( ^n \) to the cost condition of the firm.

\checkmark Derivation of Short run Supply Curve of the firm & industry

1. Derivation of Short-run Supply Curve of the firm

   In the short run the firm can increase output only by increasing variable factors as price is constant in perfect
competition. AR\(\text{C}\) curve of the firm is horizontal straight line. The short-run eqm of the firms is at the point where NR=SAC \(\text{SAC}\) cuts NR from below. A perfectly competitive firm sells that unit of output at which \(\text{MC} = \text{Price or AR}\).

In the fig. at \(\text{Op}_2\) price, \(\text{OQ}_2\) is output is produced at the eqm point \(\text{B}\), the firm is getting normal profit as AR/Price=SAC. At the higher price \(\text{Op}_3\), \(\text{OQ}_3\) output is produced at eqm point \(\text{C}\), the firm is earning supernormal profit as AR/Price>SAC. At lower price \(\text{Op}_1\), the eqm point is \(\text{A}\) \& \(\text{OQ}_1\) output is produced, the firm is having loss coz AR/Price<SAC. The price doesn't cover AFC. But it continues its prod. as it covers the mini AVC at the point \(\text{A}\). It is the shut-down point. At below \(\text{Op}_1\) price, the firm stops prod. even in the short run as it doesn't cover even the AVC.

The firm's short-run-supply-curve is the thick segment of SAC curve drawn above the minimum point of AVC.
Derivation of Short-run supply curve of an Industry

The gap of firms producing homogeneous goods is called an industry. The industry supply curve is the horizontal summation of the supply curves of the individual firms. If cost curves of the individual firms of an industry are identical, their individual supply curves are also identical.

In the fig, the Short run supply of the perfect competitive industry is derived by the horizontal / lateral/ summation of only the rising portion of SMC of all firms above the minimum AVC, the no. of firms can’t be changed in Short Run.

Let us suppose there are 100 firms producing home products as in firm 1, the amt supplied by the industry will be equal to 100 x Q1 or QN1 at the price OP1, 100 x Q2 or QN2 at the price OP2 & 100 x Q3 or QN3 at the price OP3. By joining the points KRT the Short run supply curve of the industry is derived.
Supply Curve

Short run supply always slopes upward from the lowest point of the AVC. The rising short-run-supply curve of the industry indicates that the industry supplies large qty of the output at the higher price in the short run & vice-versa.

Derivation of Long Run Supply (LRS) curve.

LRS curve indicates the qty afforded for sale at various prices in the long run. In the long run all the factors plant size & no. of firms can be change. LRS curve is not the horizontal summation of upward sloping LMCs of all firms coz of the following reasons

a) No. of firms can be change in L.R.

b) Only one point of LMC which is equal to the mini point of LAC is included in LRS

c) In the LR returns to scale operate cost curves shift upward or downward due to external economies & diseconomies. The industry will be having decrease cost or increase return to scale, constant cost/return to scale, increase cost or decrease return to scale.

1. Supply curve of the decreasing cost industry

An industry will have decreasing cost due to net external economies. Cost curve shift downward to the right.
At OP, price a firm produces OQ1 output since there are 150 firms within industry it supplies 150 x OQ1 or OQ1 output to meet the increase demand, new firms are established since the industry is enjoy external economies Cost curve LAC & LNC shift downward to the right, the firm produces OQ2 output at the lower price OP2. As the no. of firm now is 150 the total output supplied by the industry will be 150 x OQ2 or OQ2. Joining the points A to B, LRS curve is derived, it slope downward to the right. It implied that at lower price larger qty is supplied when the cost falls due to ext. economies in the decrease cost in industry.

2. Supply curve of the constant cost industry

An industry is said to be a constant cost industry if its expansion generated by the neither ext. economies nor ext. diseconomies or when they balance with each other.

In the fig. the eqm output is OQ at the price OP, if there are 150 firms in an industry the output supplied will be equal to 150 x OQ to meet the increase demand, new firms will be established. It doesn't bring any change in cost curve but as the no. of firm has increase to 150 the industry will supply 150 x OQ or OQ2 qty at the same price OP

LRS curve is horizontal & parallel to X-axis indicating larger qty is supplied at the same price due to constant cost.
3. Supply curve of the increasing cost industry

In the case of increasing cost when new firms enter into the industry to meet the increase demand cost of prod. increases due to external diseconomies.

If there are 100 firms industry will supply 100 x 0Q1 or 0N1 output at the price OP1 with the in demand the no. of firms increases to 150 due to ext. diseconomies & rise in the price of factor cost curves LAC & LMC shift upward to the left. At the higher price OP2 the firm produces less 0Q2, the industry will supply 150 x 0Q2 or 0N2 at the higher price OP2. Output of the firm decreases from 0Q1 to 0Q2 due to increase in the cost of prod. but the supply of the product produce by the industry increases due to the increase in firm. By joining the points K & T upward sloping LRS is derived. It indicates at higher price 0P2 larger qty is supplied in the increasing cost industry.
Monopoly - Mono = Single  no close substitute.
Poly = Seller

It is that market situation in which a single producer control the whole supply of product which have no close substitute.
It can adopt independent price output policy. It is a price maker. The monopoly firm itself is an industry.

Characteristics/conditions:
1. Single seller / producer (absence of competition)
2. No close Substitute
3. Strong barrier to the outlay of the new firms
4. Profit maximization
5. Full control over Price
6. Possibility of price discrimination

Monopoly (short run equilibrium of the firm)

1. TR-TC approach

\[
\text{\(\Pi = TR - TC\) (maximum point)}
\]

\[
= O_2D - O_2C
\]

\[
= OD \text{ or } O_2E
\]
The total profit curve drawn separately on the same fig shows maximum profit = CD or Q2E on CD where it produces output Q2. TR-TC approach is not convenient to find out the eqm point of the monopoly firm. By just looking at the fig price per unit can’t be determined secondly tangents on TR TC have to be drawn making them parallel to determined maximum profit or equilibrium.

2. NR-NC Approach (Short run eqm of the firm)
   Pricing / Price & output determination
   i. MR = MC (1st necessary condition)
   ii. NC cuts NR from below (2nd sufficient condition)
      Slope of MR < slope of MC

Super Normal Profit

1. Super normal profit: If the price (AR) fixed by the monopolist in equilibrium is more than his average cost (AC), then he will get super normal profits. It is shown in fig A. In this figure, the monopolist is in equilibrium at point E, where MC=MR, MR cuts MR from below. At this point, eqm output is OA. At this level, the eqm price is determined as AO, which is more than AC. Thus, in this situation the total super-normal profit of the monopolist will be ABOE, the shaded area.
2. **Normal profit**: If in the short run, eq. (MC = MR), the price (AR) is equal to its average cost (AC), i.e., AR = AC, then the monopolist will earn only normal profit. It is shown in Fig 8. In this Fig, the firm is in eqm. point E, where MC = MR & MC cuts MR from below. OB is the eqm. output. At this output, AC touches AR at point A. Thus, price (AR) OP is equal to AR (AR) of the product. Monopoly firm, therefore, earns only normal profit in eqm. situation as its AC = AR.

3. **Loss**: In the short-run, a firm under monopoly may incur loss of fixed cost. It is the minimum loss of the firm. In Fig E, it is shown that the firm is in eqm. at point E. At this point, MC = MR & MC cuts MR from below. In eqm. position, the firm will produce OB units of output. At this eqm. output, price is OP. Hence, AC of the firm is more than AR i.e. AC > AR. Hence, the firm suffers a loss equivalent to EA per unit. The total loss of the firm will be ABCP; the shaded area.

**Long Run equilibrium of the monopoly**

In the long run, the monopoly firm may not necessarily produce at the optimum scale or at the minimum point of LAC. Profit takes place generally at less than optimum scale or falling portion of LAC, as there is no entry of new firm.
In the fig, point E indicated the eqm of the monopolist. At point E, 
MR = LMC, hence OA is the eqm output & OP (i.e. aQ) is the eqm price 
BE is the long run av cost. Price (Av. revenue) aQ being more than long
run av. cost BE (AR>LAC), the monopolist will get super normal profit.
Accordingly, the monopolist earn (OQ - BE = OB) super-normal profit
per unit. His total super normal profit will be PABC as shown by
shaded area. Profit = TR-TC
= OAP - OABC
= PABC

Thus, in the long run eqm the monopoly firm earns super normal
profit because of the strong barrier to the entry of the new firms.
The long run eqm of the monopoly firm takes place at that Q
output aQ at which
1) MR = LM, & 2) LMC cuts MR from below. Besides these two essential
condition another one

Is monopoly always high? or control on monopoly?
1) Large scale economies
2) Nature of demand
3) Fear of substitute
4) Rivals/competitors
5) Consumer's boycott
6) Govt. regulation by increasing tax (price control) 
(Output control)
Monopolistic competition / Imperfect Competition

Monopolistic competition is a common market situation. Chamberlin brought our synthesis of a two market situation perfect competition & monopoly. In his book 'Theory of monopolistic competition' in 1933. M.C is a market situation in which there are large no. of firms producing differentiated product. They are close substitute, they are similar but not identical for eg: diff. firms produce diff. brands of toothpaste or so or computer. There may be different in quality, weight, color, size, design, packaging etc of the product. M.C is common in retail & service sectors of the economy. Eg: Tailoring shop, Beauty parlors, drug store, grocery, liquor store. Every firm has some monopoly control over its own differentiated product but at the same time it had to face a keen competition from other firm producing close substitute. Thus, monopolistic & competitive elements are present in M.C.

Features:

1) Large No. of firms: None of them controls a major portion of total output. There is a keen but imperfect competition among the firms. Therefore, each producer can adopt independent price & output policy.

2) Product differentiation (Product Variation): Under M.C. each firm produces a differentiated product one product is different from other in respect to quality, size, design, packing, raw mat. used, weight, etc. Brand name & trade mark also help to differentiate product. Through product differentiation each firm get a limited degree of monopoly power. A collection of firms producing differentiated product is known as group.
3. Free entry & exit of firms: Under M.C new firm can enter into the
group attracted by super normal profit & old ones suffering from
loss can leave the group in the long run. As in perfect competition
each firm earns only normal profit in long run. AR(P) = (AC normal
profit)

4. Selling cost/expenses: Under M.C. when the product is differentiated, selling
cost are necessary to increase the sell by increasing the consumers
preference for the product. Selling cost include expenses on the advertis-

ement, free service, free gift, door to door canvassing. Through adver-
tisement & sells technique real or imaginary differences of the
product can be created in the mind of consumer. Advertisement can
be informative & competitive or persuasive. The first one spreads knowled-
ge but about product while the 2nd one end push up sales & demand
curve of one firm at the cost of other.

5. Downward sloping elastic demand curve: Under M.C. the demand (AR)
curve of a firm is downward sloping & highly elastic but not perfectly
elastic. The firm has to reduce the price of the product to increase
the sales/Demand.

Suppose a Monopolist faces the following demand schedule

<table>
<thead>
<tr>
<th>Price (P)</th>
<th>qty (Q)</th>
<th>TR (P x Q)</th>
<th>MR (ΔTR/ΔQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>90</td>
<td>5</td>
<td>450</td>
<td>90</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>800</td>
<td>70</td>
</tr>
<tr>
<td>70</td>
<td>15</td>
<td>1050</td>
<td>50</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
<td>1200</td>
<td>30</td>
</tr>
<tr>
<td>50</td>
<td>25</td>
<td>1250</td>
<td>10</td>
</tr>
<tr>
<td>40</td>
<td>30</td>
<td>1200</td>
<td>-10</td>
</tr>
<tr>
<td>30</td>
<td>35</td>
<td>1050</td>
<td>-30</td>
</tr>
</tbody>
</table>
i) Calculate MR, if MC is Rs 50 what is the profit maximizing level of output & price.

ii) If price is set equal to MC what will be the output that the Monopoly will produce.

Given MC = Rs 50

i)\[
\text{Or demand is increased by blocks of 5 units, price changed by Rs 10.}
\]

Hence, \( MR = \Delta TR \) is used, instead of \( MR = \frac{TR_{n+1} - TR_n}{\Delta Q} \)

Condition: Profit maximizing = \( MR = MC \) is satisfied when output is 15 units.

Price of the product is Rs 70 per unit.

ii) If price is set = MC i.e. at Rs 50, 25 units of output will be produced & sold by the monopoly.

**Short-Run Equilibrium**

Monopolistic competition consists of a large no. of firms producing differentiated product or close substitute. A firm has a continuous downward sloping elastic demand curve. Under the M.C the main aim of the firm is to maximize profit or minimize loss. So it will like to produce that level of output at which \( MR = SMC \) & SMC cuts \( MR \) from below. At this point the firm will be in eq. So, long as \( MR > SMC \) it will find profitable to expand its output; if \( MR < SMC \) it is beneficial to firm to reduce output to the level where \( MR = SMC \).

**Short-Run is a period in which fixed factor, plant size & no. of firm can't be change.** There we assume different short run cost curves of different firms. Therefore, some firm may be having super normal profit, normal profit or loss.
1. Super-Normal profit: Fig. A shows that firm is in eqn at point E1, \(MC = MR\) & MC cuts NR from below at this point. Eqn. price is OP & eqn. output is OQ. The price OA is greater than the av. cost OB. Hence, the firm earns super-normal profit. Total S-N profit of the firm in eqn. is Pabc, the shaded area.

2. Normal profit: In the short-period, a firm under \(MC\) may earn normal profit. It is the case where \(AR = AC\). In Fig. B, firm is in eqn. at point E2 where \(MC = NR\) & MC cuts NR from below. Thus, OQ is the eqn. output & OP is the eqn. price.\(AR = AC\) hence, the firm earns normal profit.

3. Loss: In the short-period, a firm under \(MC\) may incur loss of fixed cost. It is the minimum loss of the firm. In the Fig. E3 is the eqn. point at which MR = MC & MC cuts MR from below. In eqn. position, the firm will produce OQ output at OP price. AC of the firm is more than the AR (i.e. \(AC > AR\)). Hence, the firm suffers a loss. The total loss at to firm will be Pabc, the shaded area.
Long Run Equilibrium Under Monopolistic Competition

Price & Output determination (Pricing)

The long run is a situation in which no. of firms can be change as there is a freedom of entry into the group. They earn only normal profit, when they are in eqm at point AR=LAC. If firms are earning super normal profit, more new firms will get entry into the group; the price of the product goes down due to the increase in the total output. Price of the factor goes up because of increase in their demand, cost increase as a result of these two opposite forces profit decreases then AR=LAC and the firms earn only normal profit.

If firms are having loss, they will leave the group in the long run. Thus, there will be reduction in total output as a result price of product & pushed up. On the other hand as the demand for the factors decrease, they become cheaper. As a result cost decreases. A rise in the price of product & fall in cost eliminate loss. The firm gets only normal profit.
In the fig. E is the eq. point where NR=LMC & LMC cuts NR from below. The eqn. output is $Q_0$ & eqn. price is $P_0$ & sold at $P_0$ price as price of AR=LAC at the point $k$. The firm earn only normal profit. The lowest point of LAC is M but the eqn. of the firm doesn't take place at this point or optimum capacity $Q_0$ of the downward sloping demand or AR curve. Therefore, they operate with excess capacity. The capacity equal to $Q_0 - Q_0$ is being unused in the firm.

### Comparison among different market situations

<table>
<thead>
<tr>
<th>No.</th>
<th>Heading</th>
<th>Perfect Competition</th>
<th>Monopoly</th>
<th>Monopolistic Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>No. of firms</td>
<td>Large no. of firm in an industry</td>
<td>Single firm</td>
<td>Large no of firm in a group</td>
</tr>
<tr>
<td>2.</td>
<td>Nature of the product</td>
<td>Homogenous product</td>
<td>Product having no close substitute</td>
<td>Product having close substitute</td>
</tr>
<tr>
<td>3.</td>
<td>Price &amp; output policy</td>
<td>Price taker can't influence, lower price/larger output</td>
<td>Price Maker, high price/less output</td>
<td>Can influence price/output</td>
</tr>
<tr>
<td>4.</td>
<td>AR/Demand curve</td>
<td>Perfectly elastic/Horizontal</td>
<td>Inelastic/Downward falling</td>
<td>Elastic/Downward falling</td>
</tr>
<tr>
<td>5.</td>
<td>Entry &amp; exit of firm</td>
<td>Free entry &amp; exit</td>
<td>Barrier of entry</td>
<td>Free entry &amp; exit</td>
</tr>
<tr>
<td>6.</td>
<td>Profit in long run</td>
<td>Normal profit</td>
<td>Super Normal profit</td>
<td>Normal profit</td>
</tr>
<tr>
<td>7.</td>
<td>Price discriminator</td>
<td>Prevailing market</td>
<td>Possibility of price discrimination</td>
<td>The firm may charge different prices but not much difference</td>
</tr>
<tr>
<td>8.</td>
<td>Selling cost</td>
<td>No selling cost</td>
<td>Selling cost is not necessary but for info it is used</td>
<td>Very essential it is used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>They spend much on advertisement</td>
</tr>
</tbody>
</table>
Price Discrimination

When the seller sells different units of the same product at different price to different customers at different markets, it is said to be price discrimination, it is not possible under perfect competition. Whenever there is Monopoly element the monopolist can sell different units of the same type of product at different prices, it is known as discriminating Monopoly.

According to Joan Robinson- “The art of selling the same article under a single control at different prices to different buyers is known as price discrimination.”

The perfect example of price discrimination can be found in the direct service sector such as in the profession of doctors, lawyers, beautician etc. they can charge differently for their services depending on the financial condition of their client. Likewise, in order to capture foreign market some goods are sold at low price at foreign market & at high price at home market.

The policy of price discrimination is adopted keeping in mind different objectives such as:

To maximize profit
To eliminate competition
To provide Social justice
To benefit certain group. Likewise, students, women, elderly citizens

Degree of Price discrimination

1. Price discrimination of 1st degree: Under it the monopoly charged different prices for each unit of the commodity sold. It charges the maximum that each is able & willing to pay leaving him no consumer surplus. It involves maximum exploitation of buyer. This is also known as perfect price discrimination.
2. Price discrimination of 2nd degree: It is cause when consumers are charge for 1st few units & then another price change for another units of purchase. All units with a demand price higher than P₁ & all units with a demand price lower than P₂ at a price P₂ & so on. It leads some consumer surplus.

3. Price discrimination of 3rd degree: In the 3rd degree price degree, the monopolist splits the entire market of the product in two sub market depending on the elasticity of demand. In foreign market the Com is sold at cheaper price as compare to home market in order to capture foreign market price discrimination of 3rd degree of very common.

Conditions of Price discrimination:

1. Existence of monopoly element: Under perfect competition uniform price prevail in the market, P.D is not possible. If market is imperfect having the monopoly element the seller can sell the same type of the product at diff price at diff. Sub-market.

2. Elasticity of demand: P.D can be introduce in the elasticity of demand for the commodity in diff. sub-market differs. The monopoly firm finds it profitable to charge more in the market where elasticity of demand for the product is low & low price where it is high.

3. Market segmentation: The firm should be able to separate the market into diff. submarket on the basis of the elasticity of demand. Similarly, the monopoly firm can charge diff. prices for its product in submarket are & separated by distance or tariff. It can sale its product at a higher price in the domestic market or in a country having high import duty & low price in a foreign market or in a country with no such duty.
4. No possibility of resale: The goods sold in a cheaper market should not be resold in the dearer market. Direct services provided by doctor, lawyer, etc are non-transferable. In such case P.D is possible.

ImP. Price-Output determination in discriminating monopoly

The monopolist divides the total market of its product into sub-market, on the basis of elasticity of demand for maximizing the profit. The monopoly firm finds it profitable to charge more in the market where elasticity of demand for the product is low.

Assumptions:

1. Large no of buyers/consumers
2. No possibility of resale of the product
3. Demand sloping demand curve in sub-market
4. Different elasticity in different sub-market.

Here only two sub-market A & B have been taken into consideration. Market A has high elastic demand & Market B has less elastic demand for the product. For the maximization of profit

1) The monopolist produces the amount of output at which total/combined MR of two submarkets equal to MC.
2) \( MR_A = MR_B = MC \). MR of each sub-market should be equal to MC.

If MR in sub-market 'A' is more than in sub-market 'B', the monopoly sells less in sub-market 'B' & transfers some amount to sub-market 'A'.

When MR in two sub-market are equal it will not be profitable for the monopolist to transfer from one market to another. MR of each sub-market should be equal to MC.
The above fig. shows the position of eq\textsuperscript{m} under discriminating monopoly. Supposing market is divided into two parts 'A' & 'B'. AR\textsubscript{A} curve & AR\textsubscript{B} curve are the demand curves of market 'A' & 'B' respectively. It is evident from the slopes of AR\textsubscript{A} & AR\textsubscript{B}, demand is highly elastic in market 'A' than in market 'B'. The combined eq\textsuperscript{m} position of both the markets is shown in fig. c. Obviously, the eq\textsuperscript{m} of the monopoly firm will be at point E where aggregate CMR is equal to MC & the MC is cuts CMR from below. Here, eq\textsuperscript{m} output is OQ. The monopolist will so distribute his total output OQ in two markets the MR of each market is the same. If his MR is less in one market & more in the other, then it will be profitable for him to transfer comm. from less-MR market to more-MR market.

In order to get the same marginal revenue, the monopolist will sell OQA amt. of output in market 'A' & OQB amt. of output in market 'B'. He will sell more in market 'A' at OPA price & less in market 'B' at OPB price. Total amt. of output in 2 market i.e. OQA + OQB will be equal to the total output OQ produced by the monopolist.
Dumping

Dumping is a special case of price discrimination in which a monopolist charges a higher price in the domestic market and a lower price in the foreign market. In this case, a monopolist has to face two types of markets: a domestic market where he has monopoly control, and a foreign market where he has to compete with other sellers. So, he can charge a higher price in the domestic market but a lower price in the foreign market. The demand curve (AR) in foreign markets is perfectly elastic or horizontal. Homemarket is monopolistic. Demand (AR) is downward sloping or less elastic.

![Graph showing marginal cost (MC) and marginal revenue (MR) curves]

As shown in the fig., the firm faces perfect competition in the foreign market & hence ARF and MRF both are the same and parallel to x-axis. Similarly, as monopoly prevails in the domestic market, ARH and MRH both slope downward. MC curve refers to marginal cost curve of the total output.

For eqn., the dumping monopolist must produce an output that equalizes his MC to his combined marginal revenue (ZMR). E is the eqn. point where ZMR = MC & MC cuts ZMR from below. Eqn. output is OQ. The monopolist's total profits are represented by the area AFEG. These profits are at a maximum & are contributed by both markets.
of output

OE q.e.t. is sold in home market at price QA & QE. 2. QE q.e.t. of output
is sold in foreign market at price QE.

Oligopoly

Oligopoly is the firm of market org, in which there are few
seller of a product. If the product is homogenous there is a pure/
standardized Oligopoly. If the product is differentiated there is
differentiated oligopoly. Since there are only a few large seller of a
product the action of each seller effect the others that means the
firms are mutually interdependent. As a result oligopolist usually
engage in non-price rather than price competition coz of mutual
interdependence. If one firm reduces the price of its product, it
could take most of the sells away from the other firms. Other
firms are threat likely to retaliate & possibly start price war. As
a result, oligopolist is characterized by price rigidity. It is
difficult to determine the demand curve.

The oligopoly firms try to compete with the rivals on the
basis of quality, product design, gift voucher, customer service &
advertising.

Pure oligopoly is found in the production of cement,
steel & many other industrial product which are standardized.
Eg. of differentiated oligopoly are auto mobile, cigarettes, electrical
appliances, noodles where a few large firm dominated the market
characteristics

1) A few sellers: Each oligopoly firm sells a large part of total
output & can influence price.

2) Interdependence: Price & output decision of firms are interdepen-
dence. One firms price decision is reacted by another firms.
3) Indeterminate price: Reaction to the price change by a firm is difficult to guess in respect to price of the product cooperate or fight to date.

4) Price rigidity & non-price war: Once a price comes to prevail, it continues for years as such inspite of changes in cost & demand while maintaining cost constant, firms attain to improve through various types of non-price competition such as various types of concession to the consumer, free free delivery, repair facilities, gift coupon.

5) Importance of advertisement & selling cost/expenses.

Under oligopoly advertisement & selling cost can become a life & death matter, which fail to keep up a advance version of its competitors. Many find its customers shifting off to rival products advertising & selling cost include all expenses incurred to obtained addition demand for the product.

6) Collusion: Business syndicates/cartel/trust may be formed by the oligopolistic firms to eliminate price cut competition & for sharing the market of the product to maximize industry or total profit.

7) Entry of the firm into the industry. Entry of the firm is not formally barred but it is difficult to get the entry of new firms into oligopoly market coz the existing firms may come to an agreement for blocking the entry of new firm into industry.

Concepts used in Oligopoly

1. Price leadership: long standard, reputation
2. Price war
3. Collusion
4. Secret Price concession -> Cheating
5. Non Price Competition
Collusion—Collusion means a formal or informal agreement among oligopolist firms on what prices to charge & how to divide market of product to maximize industry or total profit. Collusion arises due to the mutual interdependence among oligopoly firms. It sells turn from price war & leads to an increase in total profit.

**Difficulties or Obstacles**

a. The greatest obstacle to it is anti-trust laws.

b. The greater the no. of firms & the extent of the product differentiation, the more difficult collusion becomes.

c. Creating by the member firms are other obstacles to effective collusion.

1. **Jact or Covert Collusion**

   It is an informal agreement such as price leadership & is not illegal. It is often practiced in oligopolist market when increase in cost condition make a price change necessary. The most efficient firm in the industry usually starts price increase on the Jact understanding. The other firm in the industry will follow the price increase within a few days. This defies the danger of price war & will not be against anti-trust laws.

2. **Open or overt Collusion**

   It refers to the formal agreement such as a cartel. It is illegal in most of the countries. In US, anti-trust laws consider it as illegal.

**Cartel:** It is an org. of producers for the purpose of setting price & dividing the market so as to maximize total profit & block entry of new firms into the industry. The most extent firm is a centralized cartel which behaves as a monopolist. Cartels are illegal in US. All firms producing the product come together to form a monopoly.
Central agency estimates demand & cost curves to determine qty & price for the market as also for constituent firms. Having access to cost of individual firms, the central agency determines MC of the industry through horizontal summation of MC of the constituent firms. In the fig. the profit maximizing monopoly output is determined at the point E where MC cuts MR from below. The output is OA & Corresponding price, OP. To allocate it among constituent firms, a horizontal line through E is drawn to cut MC1 at E1 & MC2 at E2. The points E1 & E2 determine quantities Q1 & Q2 that the two firms should produce & sell so that Q=Q1+Q2. The constituent firms sell their allocation at monopoly price P. The firm with lower cost gets a higher % market share (Q1) & earns a higher profit than the other firm with higher costs (Q2).