Introduction to Economics.
— Sujan Koirala

Economics
- The activities carried out by human activities for their survival is called economics.
Father of economics is Adam Smith.

Development of Economics.
  categorized in 3 phases. They are:-

1. Classical Period (1776 - 1890 AD)
   ↳ Leader Adam Smith : An inqury in to the nature and causes of Wealth of Nation.

2. Neo-classical Period (1890 - 1932 AD)
   ↳ Alfred Marshall : Retining of the theory of classical Period : Material welfare.

3. Modern Period (1932 onwards)
   ↳ Robbins / Lionel Robbins : Scarcity and choice.

Micro-Economics and Macro-Economics.
The Word micro was derived from the Greek word 'Mikros' meaning very small. Microeconomics was coined up by Ragnar Frisch in 1933. Microeconomics is the study of individual economic unit. In other words; it studies the individual units like consumer, price, wages rate, market, etc. Micro economics is also called Price theory.

The Word macro was derived from the Greek word 'Makros' meaning very large. Macroeconomics was

coined up Ragnar Frisch in 1933. Macroeconomics is the study of the economic unit in aggregative form. In other words, it studies the activities of the entire economy. such as national economy, national output, price level, ~~etc.~~ unemployment, etc. Macroeconomics is also called general theory.

Positive and Normative Economics.

↳ Positive economics is a systematized body of knowledge related to 'What it is'. It attempts to establish ~~variables~~ the cause and effects relationship between the economic variables. The results obtained from the experiment are free from personal biasedness. Every issue or fact is taken positively.

Normative economics is a systematized body of knowledge related to 'What ought to be'. The results the obtained from the experiment can be influenced by personal biasedness or value judgement. It aims to findout the solutions to the problems by hook or crook.

• Economic is science because it has cause and effect and art because it teaches us how to earn money for survival.

Business Economics

↳ Business economics refers to the application of economics theories and principals along with the decision of sciences by Managers in order to solve the problems associated with business decision making.

Business Decision Problems.

Application of

Economic Theories	Tools of Decision Science
• Microeconomics	• Mathematics
• Macroeconomics	• Statistics

Business Economics

Optimal solutions to the business Problems.

Nature of Business Economics.

↳ Business Economics is microeconomic in nature or character because it is associated with the decision making process of a single business organization.

- Scope of Business economics
  ↳ Scope of business economics refers to the area that the subject matter of business economics covers. The major subject matters of business economics are as follows:-

- Demand Analysis and Business forecasting
- Production and cost Analysis
- Price Theory.
- Inventory Management
- Capital Management

Demand

\# Desire backed up by :
- Ability to pay
- Willingness to pay

Demand is a desire backed up by willingness to pay and ability to pay.

\# Demand refers to the quantity of a commodity that a customer is willing to purchase at a given price in a particular point of time.

Determinants of demand (Factors)
- Determinants of demand refer to the factors affecting the demand for a particular product. The major factors affecting the demand are as follows:-

- Price of the Commodity
  - Price is the first major factor affecting the demand for the product. There exists an inverse (negative) relationship between the price and the quantity demanded.

- Income of the Consumer
  - The second major determinant of demand is the income of the consumer. There is an positive association between, income of the customer and the quantity demanded.

- Price of the related goods
  - Reta Related goods may be either substitutes or complimentary.

  Incase of substitutes, there is positive relationship between the price of one product and the demand for another product.

  Incase of complimentary, there is inverse relationship between the price of one commodity and the demand for another commodity.

- Taste of the customer consumer.
  - The taste of the consumer positively influences the demand for the product.

- Advertisement
  Advertisement is regarded a an effective marketing strategy, to promote the demand for a particular product.

- Size of the population.
  As the size of the population increases, the demand for basic goods also increases. However the demand for the basic goods decreases along with the decrease in the size of population.

Law of Demand (Imp)
The law of demand was developed by 'Alfred Morshall". It occupies a central position in Micro-economic theories.

According to this law, other thing remaining the same there exists an inverse relationship between the price and the quantity demanded. It means the demand for a commodity increases along with the decrease in price and vice-versa. This law of demand is based on the following Assumpti on

- Income of the consumer is given.
- Price of the related goods are constant.
- There is no change in the taste of the consumer.
- Size of population is fixed.

The law of demand can be explained with the help of following table and figure.

Price of a commodity	Quality demand
1	5
2.	4
3	3
4	2
5.	1

quality of Commodity
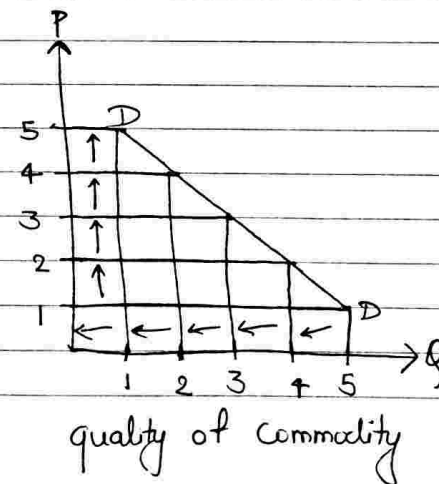
In this figure, DD represents marked demand curve, which is downward sloping due to the inverse relationship between the price and quantity demanded. Initially 5 units (kg) quantity is demanded as Rs. 1 price. As the demanded Rs. 1 price. As the price increases from Rs. 1 → Rs 2 → Rs 3 ..... the demand has decreased from 5kg → 4kg → 3kg ......

Chapter 4   Elasticity of Demand

Elasticity of demand refers to the degree of responsiveness of the quantity demanded to the change in the demand determinant of demand

- Price of the commodity
- Income
- Price of goods

    Looking at these we have:

- Price elasticity of demand
- Income elasticity of demand
- Cross elasticity of demand.

Price elasticity of demand

Price elasticity of demand measures the degree of responsiveness of the quantity demanded to the change in price, while holding the other determinants of demand constant. It can be defined as the ratio of percentage in quality demanded to the percentage change in price

Symbolically,

$$e_P = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

$$= \frac{\Delta Q/Q \times 100\%}{\Delta P/P \times 100\%}$$

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

Types of price elasticity of demand
1. Perfectly elastic demand ($e_P = \infty$)
2. Perfectly inelastic demand ($e_P = 0$)
3. Relatively elastic demand ($e_P > 1$)
4. Relatively inelastic demand ($e_P < 1$)
5. Unitary elastic demand ($e_P = 1$)

Measurement of price elasticity of demand
1. Point Method.
If there is small change in the price and quantity then point method is used to calculate the price elasticity.

$$e_P = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P}$$

2. Arc Method.
If there is significant change in the price, quantity then arc method is used to calculate the price elasticity.

$$e_P = \frac{P_2 + P_1}{Q_2 + Q_1} \cdot \frac{\Delta Q}{\Delta P}$$

Income Elasticity of Demand

→ Income elasticity of demand measures the degree of responsiveness of quantity demanded to the change in income, which holding other determinant of demand constant. It can be defined as the ratio of percentage change in quantity demanded to the percentage change in income.

Symbolically;

$$e_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in Income.}}$$

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

$$= \frac{\Delta Q/Q}{\Delta Y/Y}$$

$$\therefore e_y = \frac{Y}{Q} \cdot \frac{\Delta Q}{\Delta Y}$$

Types of Income elasticity of demand

1. Negative income elasticity $(e_y < 0)$
   Income ↑ demand ↓
2. Zero income elasticity $(e_y = 0)$
   Income (change) demand (doesn't change)
3. Income Elasticity greater than one $(e_y > 1)$
   Income ↑ demand increase more than income.
4. Income elasticity less than One $(e_y < 1)$
   Income ↑ demand (doesn't increase according to income).

Measurement of Income elasticity of Demand.

1. Point Method
If there is small change between Income and demand then point Method is used to calculate the income elasticity.

$$e_y = \frac{Y}{Q} \cdot \frac{\Delta Q}{\Delta Y}$$

2. Arc Method.
If there is significant change in the income and demand then arc method is used to calculate the income elasticity.

$$e_y = \frac{Y_2 + Y_1}{Q_2 + Q_1} \cdot \frac{\Delta Q}{\Delta Y}$$

Cross Elasticity of Demand

→ The demand for one product is affected by the price of another product. Such effect is measured by Cross Elasticity of Demand. It can be defined as the ratio of percentage change in quantity demanded for X (say) to the percentage change in price of y (say).

Symbolically;

$$e_c = \frac{\text{Percentage change in quantity demanded for x.}}{\text{Percentage change in price of y.}}$$

$$= \frac{\frac{\Delta Q_x}{Q_x} \times 100\%}{\frac{\Delta P_y}{P_y} \times 100\%}$$

$$\therefore e_c = \frac{P_y}{Q_x} \cdot \frac{\Delta Q_x}{\Delta P_y}$$

Types of Cross elasticity of demand

1. Positive Cross Elasticity ($e_c > 0$)

$P_y \uparrow\downarrow \qquad Q_x \uparrow\downarrow$

X and y are substitutes

2. Negative Cross elasticity ($e_c < 0$)

$P_y \uparrow\downarrow \qquad Q_x \downarrow\uparrow$

X and y are complements.

3. Zero Cross Elasticity ($e_c = 0$)

price (changes)   Demand (remain same)

X and Y are unrelated goods.

Measurement of cross elasticity of demand

1. Point Method

- If there is small change in the price and ~~income~~ demand then, point method is used to calculate the cross elasticity of demand.

elasticity high → Price and income ma demand ↑ change.
low elastic → P. and I ↑ ma demand ↓ change.
ma testo asheir huna.

$$e_c = \frac{P_y}{Q_x} \cdot \frac{\Delta Q_x}{\Delta P_y}$$

2. Arc Method

If there is significant change in price and demand then arc method is used to calculate the cross elasticity of demand.

$$e_c = \frac{P_{y_2} + P_{y_1}}{Q_{x_2} + Q_{x_1}} \cdot \frac{\Delta Q_x}{\Delta P_y}$$

Factors Affecting the Elasticity of Demand

The major factor affecting the elasticity of demand are breifly explained as follows:-

1. Nature of the product
- The nature of the good may be either basic goods or luxurious goods. In case of basic goods, the demand becomes less elastic while luxurious goods have high elasticity.

2. Availability of substitutes.
- Due to the availability of substitutes, consumers ~~toto~~ will have many alternatives. In such situation, demand for the product become higly elastic.

3. Time period
   — In short run, the demand for the products become less elastic to due to lack of alternatives. But in the long run, people Consumers will have enough time to think about alternatives. Consequently, the demand for same product become highly elastic.

4. Habitual Goods.
   → In case of habitual goods, the demand becomes less elastic as people are compelled to purchase the products whatever be the income or price.

5. Multiple Uses.
   — In case of the goods and services with multiple uses, The demand is highly elastic. for instance, electricity has multiple uses suchas heating, cooking, charging, etc.

Supply

Supply:
— Supply refers to the quantity of the commodity that the producer or saler is willing to offer at a specified price in a particular point of time.

→ To be Supply, there should be two components things. ie price and time.

Law of supply
· Another important facet (side) of market mechanism is what market supply. Therefore, Law of supply occupies important role in the market equilibrium. Other things remaining the same, the law of supply states that there is a positive relationship between price and quantity supplied.
It means, the supply of commodity increases along with the increase of the in price, while supply decreases along with decrease in Price of the commodity. The law of supply is based on the following assumptions.

→ There is no state change in the state of technology.
→ No change in the prices of the factors of production.
→ No change of in the price of substitutes.
→ No change in the government policies.
→ No change in the climatic condition.

The law of supply can be explained on the basis of following table and figures.

| Price (Rs.)	Quantity (Kg)
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Table
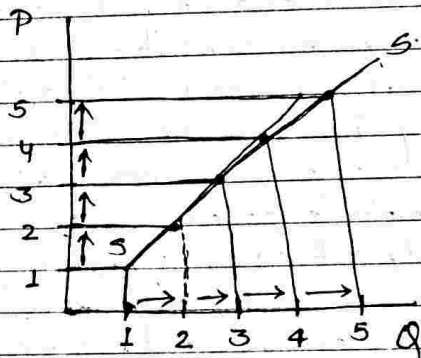
Figure

In the fig; SS is the supply curve which is positively rela sloped due to this positive relationship between price and quantity supplied. At Price Re 1, 1 kg output is supplied. As the price increases from Re 1 to Rs 2 to Re 3, the quantity supplied also has increased from 1 kg to 2 kg to 2kg ......

Market Equilibrium.

— Equilibrium refers to the balance between two opposite forces. However, market equilibrium is defined at the point where market demand curve and market supply curve intersect each other. At equilibrium point, equilibrium price and output are determined. Market equilibrium is based described with the help of following table and figure.

Price (Rs.)	Quantity Demanded (kg)	Quantity (supply) (kg)	Balance.
1.	5	1	D > S
2.	4	2	D > S
3.	3	3	D = S
4.	2	4	S > D
5	1	5	S > D
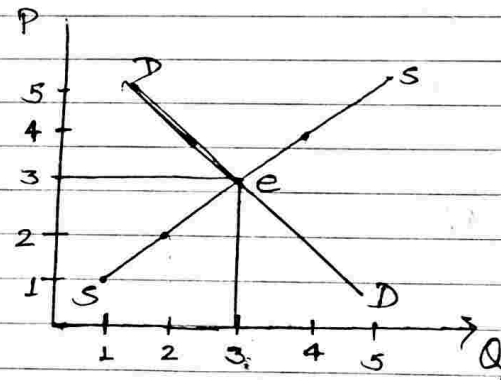
In the fig; the market is in equilibrium at point e, defined by the interaction between market demand (DD) and market supply curve (ss). At point e, equilibrium price and quanity are Re. 3 and 3 kg respectively. As price increases to Re. 4, then supply ex-ceeds the demand leading to decrease in price until e is reached.

Elasticity of Supply:
- Elasticity of supply refers to the degree of responsiveness of quantity supplied to the change in price, holding other determinants of supply constant. It can be defined as the ratio of percentage change in quantity supplied to the percentage change in price.
Symbolically,

$$e_p = \frac{\text{Percentage change in quantity Supplied}}{\text{Percentage change in Price}}$$

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

$$\therefore e_p = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P}$$

Types of elasticity of supply.
1. Perfectly elastic supply ($e_p = \infty$) (change in price)
2. Perfectly inelastic supply ($e_p = 0$) (change in supply)
3. Relatively elastic supply ($e_p > 1$)
4. Relatively inelastic supply ($e_p > 1$)
5. Unitary elastic supply ($e_p = 1$)

Measurement of elasticity of supply.

1. Point Method
In case of small change in supply and Price, then Point method is used.

$$e_p = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P}$$

2. Arc Method
In case of Arc Method is used & in order to capture the significant change in supply and Price.

$$e_p = \frac{P_2 + P_1}{Q_2 + Q_1} \cdot \frac{\Delta Q}{\Delta P}$$

Importance of elasticity
Elasticity of demand is useful in business deci-sion making. Therefore, the importance of elasticity can be outleted as outline as follows:-

• Price Determination.
- Price elasticity is useful in determining the price of the product. If the demand for the

product is relatively elastic, low price is set. If the demand for the product is relatively inelastic, then high price is set. In both the situation, total revenue is maximized.

- Joint Product Pricing.
  In case of joint products, high price is set for the product with inelastic demand and low price is set for the product which has elastic demand.

- To classify the nature of the commodities
  Income elasticity of demand is useful inorder to classify the nature of commodities. In case of negative income elasticity goods become inferior. Goods are very very necessary if income elasticity is equal to zero. In case of positive income elasticity. The goods become either luxurious or basic.

- To formulate the marketing strategy.
  -If the income elasticity high in the society, people become luxurious. In this situation, advertisement can be effective marketing strategy. to promote the sale of luxurious goods.

- To determine the interdependence between the commodities
  Cross elasticity provides an important guideline to determine the demand inter-dependence between the commodities. If

cross elasticity is positive, then commodities are substitutes. If cross elasticity is negative, then the commodities are complementary.

Utility

Utility refers to the one satisfying power of goods and services. Since, utility is physco psydological phenomena know the consumer knows it by means of introspection.

Concept of Utility

Cardinal Utility
— According to this approach, the utility derived from the consumption of various units of a commodity can be measured in terms of numbers like 10, 20, 30 ..... so on. The unit of measurement is util.

Ordinal Utility.
— According to this approach, the utility derived from the consumption of various units of a commodity cannot be measured in terms of numbers rather can be ranked on the basis of consumers preference such as 1st, 2nd, 3rd and so on.
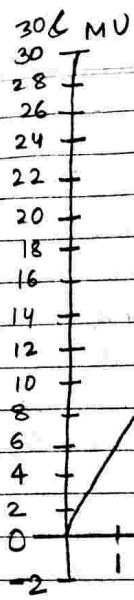
TMImp. Law of Diminishing Marginal Utility
This law was propounded by H.H Gosson. Therefore, it is also called Gosson's 1st law. Later, this law was modified by Alfred Marshal. According to this law, As the consumer consumes various units of a commodity continuously the additional utility derived from the consumption of successive unit does on diminishing. This law is based on on the following assumption.

→ Consumer must be rational.
→ Commodity must be normal.
→ There is no time Gap.
→ Marginal utility of money income is constant.
→ Commodities must be in similar units.
→ There is no change in the taste.

Law of diminishing Marginal utility can be explained with the tables and figure, which is drawn below:—

Quantity of Commodities	Total Utility (TU)	Marginal Utility (MU)
0	0	0
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0
7	28	−2

In the fig, marginal utility curve MU is downward sloping because as the consumer consumes 1,2,3,4...... commodity, marginal uti utility (MU) has decreased from 10 to 8 to 6......... This downward sloping MU curve justified the law of diminishing ut marginal utility. When total utility increases at decreasing rate, MU is decreasing but remains positive. As TU becomes maximum, MU is equal to zero (MU=0). When total utility starts decreasing, MU becomes negative.

Imp

Law of substitution. / Law of equimarginal utility / satisfaction.
   - This law was propounded by H.H. Gossen. Therefore, This law is also called Gossen's 2nd law. However, it is popularized by Alfred Marshell. According to this law, a rational consumer allocates his/her budget among the commodities in such a way that the marginal utility derived from last Re. spent on the commodities must be same. This is also called as equimarginal utility.
                  This law is based on following assumptions.
→ the consumer is rational.
→ Commodities must be normal.
→ Utility is measurable / cardinal.
→ Price of commodities are given.
→ The budget of the consumer is fixed.
→ Marginal utility of money income is constant.

This law can be explained with the help of following table and figure.

Units of commodities	TU_x	MU_x	TU_y	MU_y
0	0	0	0	0
1	10	10	12	12
2	18	8	22	10
3	24	6	30	8
4	28	4	36	6
5	30	2	40	4
6	30	0	40	0
7	28	-2	38	-2

Table of law of substitution.

suppose the consumer has Rs 7 to spend on X and Y. The per unit price of X and y is Re 1.

→ $7x + 0 \cdot Y = 28$
→ $6x + 1y = 30 + 12 = 42$
→ $5x + 2y = 30 + 22 = 52$
→ $4x + 3y = 28 + 30 = 58$
→ $3x + 4y = 24 + 36 = 60$
→ ~~2y~~ $- 2x + 5y = 18 + 40 = 58$
→ $1 \cdot x + 6y = 10 + 40 = 50$
→ $0 \cdot x + 7 \cdot y = 0 + 38 = 38$

$$\boxed{\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_M}$$ → Marginal utilities of money income
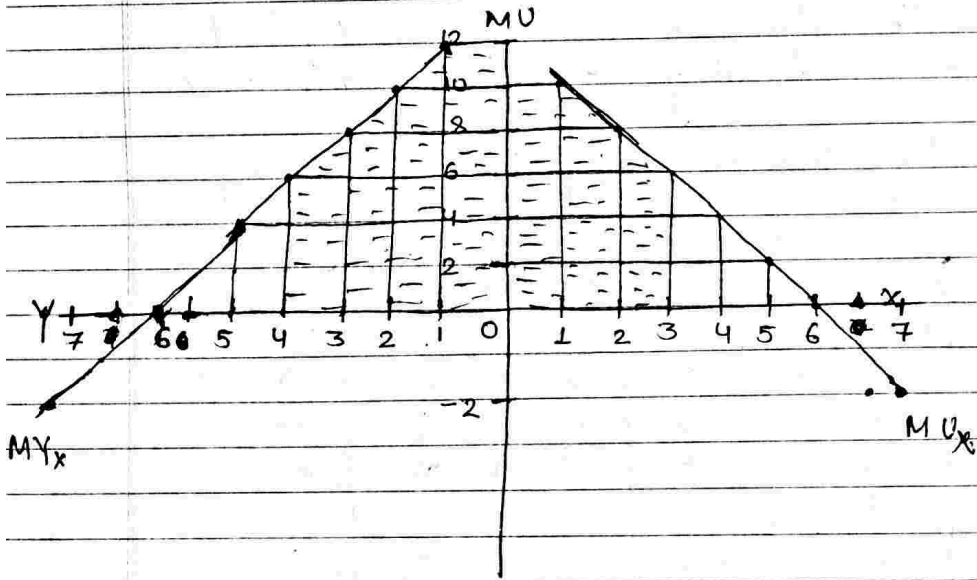
In fig; the shaded area under marginal utility curves gives maximum utility derived by the consumer by consuming 3 units of X and 4 units of Y. ($MU_x = 8$ $MU_y = 6$).

Indifference Curve.

Indifference Curve is the locus of various combinations of two commodities such that each combination would give same level of satisfaction.

Properties of Indifference Curve

1. Indifference curve slopes downward

In order to maintain the same level of satisfaction, the quantity of one commodity should be decreased for the increase in the consumption of another commodity. This is possible when IC slopped downward.

2. Higher indifference curve gives higher level of satisfaction.

Higher indifference curve gives higher level of satisfaction in the sense that the quantity of one commodity has increased without diminishing the quantity of another commodity. Conversly, Lower indifference curve gives lower level of satisfaction.
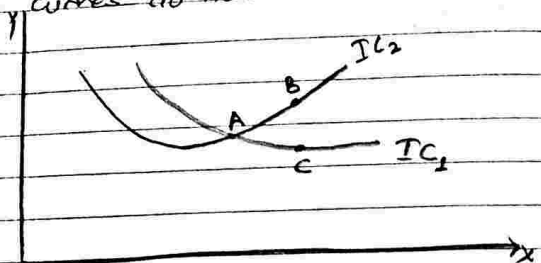
3. Indifference curve does not touch either axis.

X and Y inperfect substitute.
If IC touches X-axis then, y=0
If IC touches Y-axis then, x=0.

4. Indifference curves do not intersect each other.

If indifference curves intersect each other. The combinations A and B give same level of satisfaction because both the combination lie on IC_2. Similarly, combination of A and C also give same level of satisfaction as both combinations lie on IC_1. It means combinations B and C would also give same level of satisfaction but it is not possible because both the combinations lie on different indifference curves.

$$A = B - IC_2$$
$$A = C - IC_1$$
$$B \neq C$$

Marginal Rate of Substitution (MRS$_{xy}$)

MRS$_{xy}$ refers to the quantity of y commodity that has to be sacrificed for an additional unit of x commodity so as to maintain the same level of satisfaction. Indifference curve is based on the assumption of diminishing of marginal rate of substitution.

| Combinations	X-commodity	Y-commodity	MRSxy
A	1	15	—
B	2	11	4:1
C	3	8	3:1
D	4	6	2:1
E	5	5	1:1

5. Indifference Curve is convex to the origin
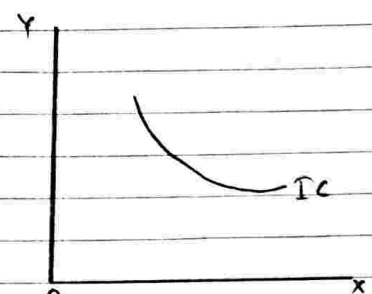
IC is convex to the origin due to the assumption of diminishing marginal rate of substitution.

Budget Line / Price Line

Budget line / Price line refers to the combinations of two goods that can be purchased by spending entire amount of money income that the consumer has.
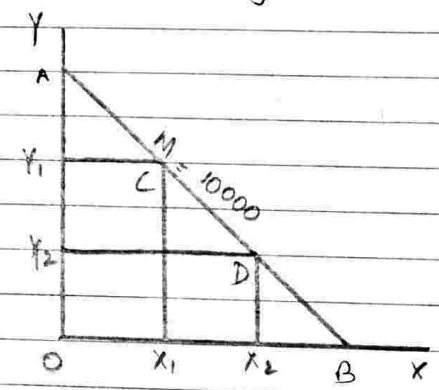
AB is a budget / Price line.

→ If the consumer spends entire Rs 10,000 on the purchase of X = OB.

→ If the consumer spends entire Rs 10,000 on the purchase of Y = OA

$$P_x \cdot X + P_y \cdot Y = M$$
$$P_y \cdot Y = -P_x X + M$$
$$Y = -\left(\frac{P_x}{P_y}\right) X + \frac{M}{P_y}$$

~~to~~ On comparing with $y = mx + c$ where,

$$m - slope = -\frac{P_x}{P_y}$$

Consumer's Equilibrium:

A rational consumer maximizes the utility based on the following assumptions:-

- Consumer must be rational
- Prices of X and Y are also given.
- Budget is fixed.
- No change in taste and proference
- Commodities are inperfect substitutes.
- Consumer is consistent in his/her choices.
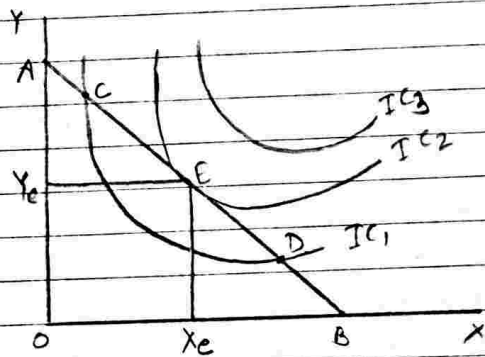
IC₃ is desireable but not possible due to budget constraint. Similarly, the consumer does not prefer combinations C and D because both the combinations lie on lower indifference curve IC₁.

Hence, the maximum utility the consumer derives ~~at~~ out of given budget is IC_2. Hence, Point 'e' is the consumers equilibrium point detined by the tangency between AB budget line and IC_2. At point e, following two conditions required for equilibrium have been fulfilled.

→ slope of Indifference Curve = slope of budget line

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

→ Indiblerence curve is convex.

Chapter 8

Laws of Production

Production function —
- It refers to the technological or engineering relationship between output and the factors of production (inputs) Symbolically,

$$Q = \text{function} (\quad k, L, N, 0) \ldots \ldots \textcircled{1}$$

where,

- Q = output
- k = capital
- L = labor
- N = Land
- 0 = Organization

For simplicity, production function is expressed in terms of two inputs : Labor and capital. Hence, the production function is rewritten as.

$$Q = f(k, L) \ldots \ldots \textcircled{2}$$

On the basis of time period Production function is classified into two categories:-

ⓐ short run production function

ⓑ Long run production function

- ## Short run production function
  - In short run, an entrepreneur doesnot have enough time to change the quantity of both inputs at a time. It means one inputs remains fixed, while the other input becomes variable. In order to increase the production in short run, the quantity of variable input should be increased.

Concepts of total product, Average product and Marginal product (TP, AP, MP)

① Total Product (TP)
- It refers to the total quantity of the product by employing certain number of labor.

② Average Point (AP)
- It can be obtained by dividing the total product by the units of labor employed.

$$\therefore AP = \frac{TP}{L} \qquad \qquad \therefore Labor (L)$$

③ Marginal Product (MP)
- It refers to the net addition to the total product resulting from the employment of an extra unit of level.

$$MP_n = TP_n - TP_n - 1$$

Table.

Unit of labor (L)	TP	AP	MP
0	0	0	0
1	10	10	10
2	22	11	12
3	36	12	14
4	48	12	12
5	56	11.2	8
6	60	10	4
7	60	8.6	0
8	56	7	-4

In the fig, initially the total product increases of an increasing rate upto 3 units labor. At 3 units, marginal product becomes maximum. The total product increases at a decreasing rate upto 7 units of labor. As a results, both AP and MP are falling. At 4 units of labor, both AP and MP are equal. At 7 units of labor total product become maximum. Consequently, MP is equal to zero. As the number of labor increases

to 8 units, total product has decreased. As a result, MP becomes negative.

Long run Product function
In long run, an entrepreneur has ample time to change the quantity of inputs. It means there is no existence of fixed inputs in the long run, all the inputs become variable. In long run, quantity of inputs can be changed either in same proportion or in different proportion.

\# Laws of returns to scale is associated with former case. It captures the scale effect on output if the quantity of inputs are charged in the same proportion. On the basis of scale effect on output, law of returns to scale can be classified into following: Three categories:-
→ Increasing returns to scale
→ Decreasing returns to scale
→ Constant returns to scale.

\# Increasing returns to scale
-If output changes more proportionately than the proportionate change in the quantity of inputs, then it is the case of increasing returns to scale. It means doubling the quantity of inputs would lead to increase the output by more than double.
for example: If labor and capital are increased by 10% and output increased by 15%, it is said to be increasing returns to scale.

Decreasing returns to scale
- If output changes less proportionately than the proportionate change in the quantity of inputs, then it is called decreasing returns to scale. It means doubling the quantity of inputs would lead to increase the output by less than double. For example, if labor and capital are increased by 15% and output increases by 10%, then, it is the case of decreasing returns to scale.

Constant returns to scale
- If output and the quantity of inputs change in the same proportion, then it is said to be constant returns to scale. It means doubling the quantity of inputs would lead to increase the output exactly by double. For example, if labor and capital are increased by 10% and output also increases by 10%, then, it is the case of constant returns of to scale.

Cost
- Cost refers to the expenses made on the factors of production (inputs). The traditional economic theory splits the concept of cost on the following two categories:-
→ short run cost
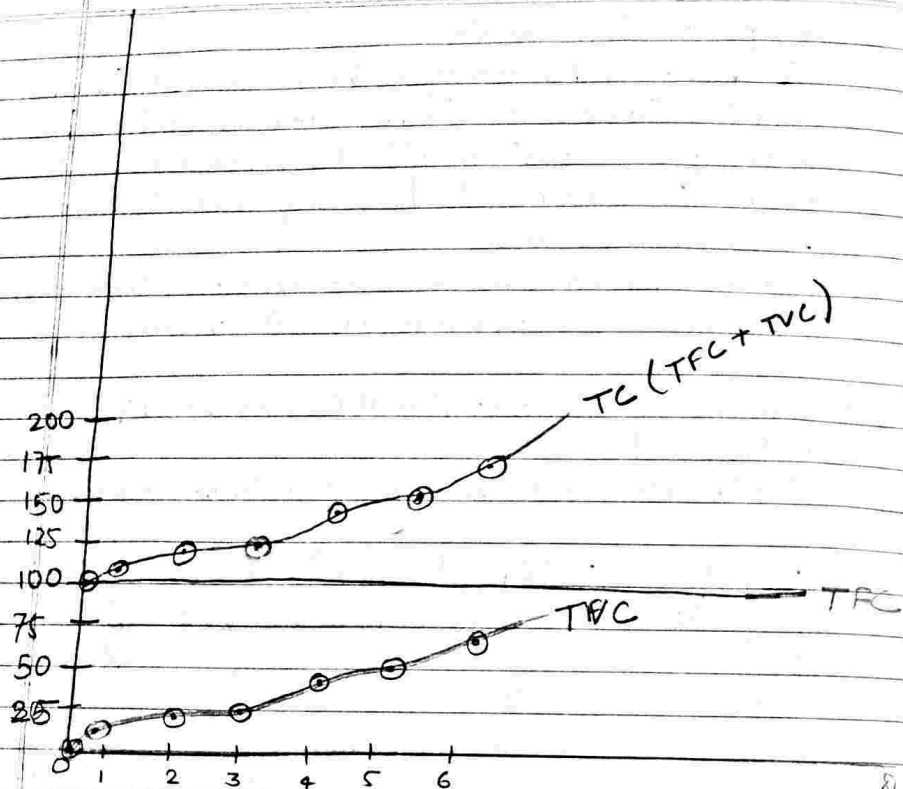→ Long run cost

Concept of short run Cost:
In short run, the quantity of inputs can not be changed at a time. Therefore, some inputs remain fixed while some inputs become variable. The expenditure made on the fixed inputs (land, buildings, machine, etc) is called fixed cost.
On the other hand, the expenditure made on variable inputs (labor, raw materials, fuel, etc) is called variable cost.

Concept of Total cost, Total fixed cost and Total variable cost:
Total cost = Total fixed cost + Total variable cost.

Units of Output(Q)	Total Fixed cost (TFC)	Total Variable cost (TVC)	Total cost
0	100	0	100
1	100	10	110
2	100	18	118
3	100	24	124
4	100	36	136
5	100	50	150
6	100	65	165

In the fig, TFC curve is of horizontal straight line because it remains fixed whatever be the level of output. Even if production is zero, fixed cost is incurred. TVC curve is inverse 's' shape. If production is zero, TVC is also equal to zero. As the output increases, TVC also increase. TC curve has been derived through this summation of TFC and TVC. TC curve is also the inverse 's' shape.

Concept of Long run.

- Concept of Average cost, Average fixed cost, Average Variable cost and Marginal cost.

Average cost = Average fixed cost + Average Variable

Average cost = $\dfrac{TC}{Q}$

Average fixed cost (AFC) = $\dfrac{TFC}{Q}$

Average variable cost (AVC) = $\dfrac{TVC}{Q}$

Marginal cost (MC) = $TC_n - TC_n - 1$

Unit of output	Total fixed cost	Total variable cost	Total cost	AFC	AVC	AC
0	100	0	100	–	0	0
1	100	10	110	100	10	110
2	100	18	118	50	9	59
3	100	24	124	33.33	8	41.3
4	100	36	136	25	9	34
5	100	50	150	20	10	30
6	100	65	165	16.67	10.13	27.0
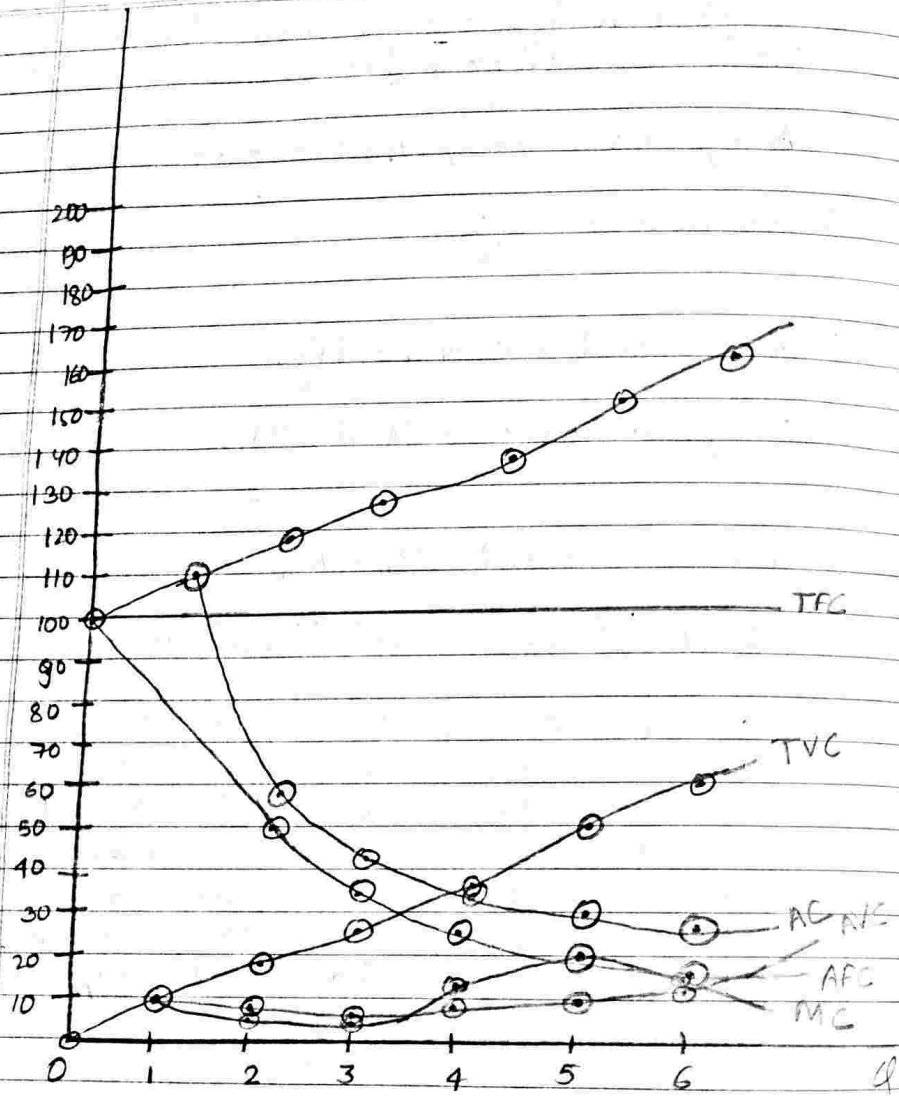
In the fig, AFC curve is of rectangular hyperbola shape. AVC, AC and MC are U shaped due to application of law of variable proportion.

Long Run cost Curves

Long run refers to the extension of the short run. In long run on entrepreneur has enough time to change the quantity of inputs. Therefore, there is no existence of fixed factors in the long run. In long run the shapes of AC and MC are U shaped due to the application of law of return to scale.

Relationship between AC and MC

Initially as AC decreases along with the increase in output, MC also falls. At minimum point of AC, AC = MC. As AC increases after minimum point, MC also rises along with the increase in output. When AC falls, MC lies below. When AC starts increasing MC lies above AC.

Market structure.

Perfect Competition Market

- Perfect Competition is a market structure characterized by large numbers of buyers and sellers producing the homogeneous product and there is free entry and exit.

Characteristics:

① Large no. of buyers and sellers
- In perfect competition Market, there is large no. of buyers and sellers. Therefore, the decision taken by a single seller or buyers becomes insignificant in totality.

② Homogeneous Products:
- All the firms in perfect competition market sell homogeneous or identical products in terms of size, quality, quantity packaging, etc. So, that consumers cannot more proper distinction between the products.

③ free entry and exit
- There is no restriction imposed on the entry and exit of the firms in perfect competition market. If the existing firms are earning maximum profit, new firms will be attracted. As a result entry of new firms will take place in the market. If the existing firms are bearing loss in the long run, then they leave the industry.

④ Complete information
- In perfect competition market, both buyers and sellers are assumed to have perfect knowledge about the market information is obtained without paying any cost.

⑤ No government intervention
- There is no government intervention in the market in terms of tax and subsidy.

⑥ Profit maximization.
- Each firms under perfect competition market is guided by the single goal ie. the maximization of profit.

⑦ Free mobility of factors of production.
- Under perfect competition market there is free mobility of factors of production from the firm to another firm.

Imp

 # Price and Output Determination under perfect Competition.

- **Short run Equilibrium**
   In short run, following three cases may arises.
- Excess profit (AR > AC)
- Loss   (AR < AC)
- Normal profit (AR = AC)

The firm under perfect competition is said to be in equilibrium. When it fulfills the following 2 conditions required for equilibrium.

- SMC = MR (Necessary condition)
- SMC must run MR from below (sufficient condition)

$\therefore$ SMC = Short run - Marginal cost

MR = Marginal revenue.
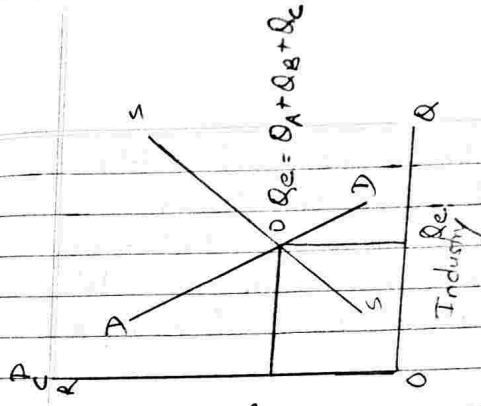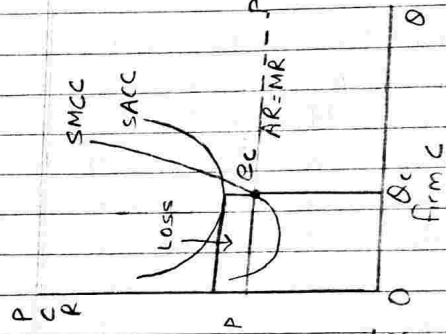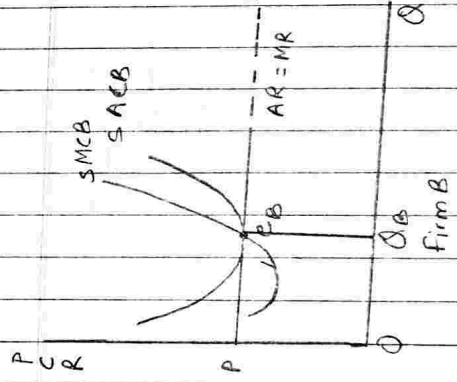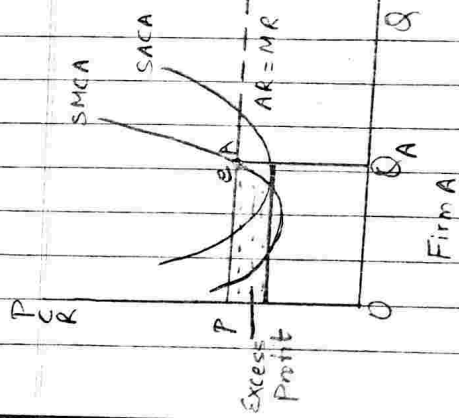
The firm A, B and C are in equilibrium at point e_A, e_B and e_C respectively where the two conditions required for equilibrium have been fulfilled.

At equilibrium point, OP price is set. A earns excess profit At this price, Firm A earns excess profit represented by shaded region. Firm B earns only normal price profit, while firm C bears the loss.

The industry is in equilibrium at point e defined by the interaction between market demand curve (DD) and market supply curve (ss). Industrie's equilibrium has been derived through horizontal ~~supp~~ summation of three firms of equilibrium.

Long-Run Equilibrium

In long run, all the ~~firms~~ under perfect competition on only normal profit. The excess profit on the short run would attract the entry of new firms in the market. As a result, the supply of output increases, leading ~~the pri~~ to decrease in the price. With the large no. of firms in the market, resources become ~~shortage~~ scarce (shortage). Consequently, the ~~resources~~ cost of production increases. Hence, excess profit is pulled Out. It means, firms under perfect competition on only normal profit in long run.

Firm A

Industry
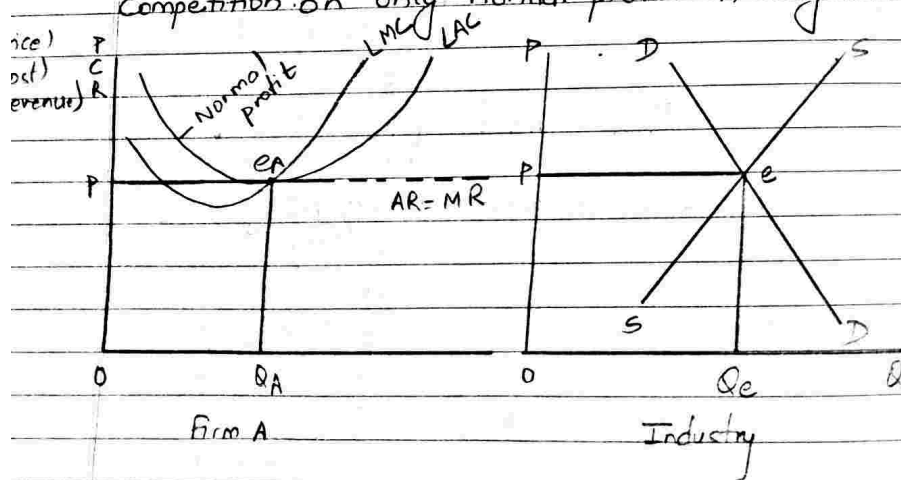
'Mono' → Greek - Single
'poly' → Seller
Nepal oil co-operation(eg).

Monopoly

Monopoly is a market structure characterized by a single seller, it sells the product which has no close substitutes and restriction are imposed on the entry of new firms.
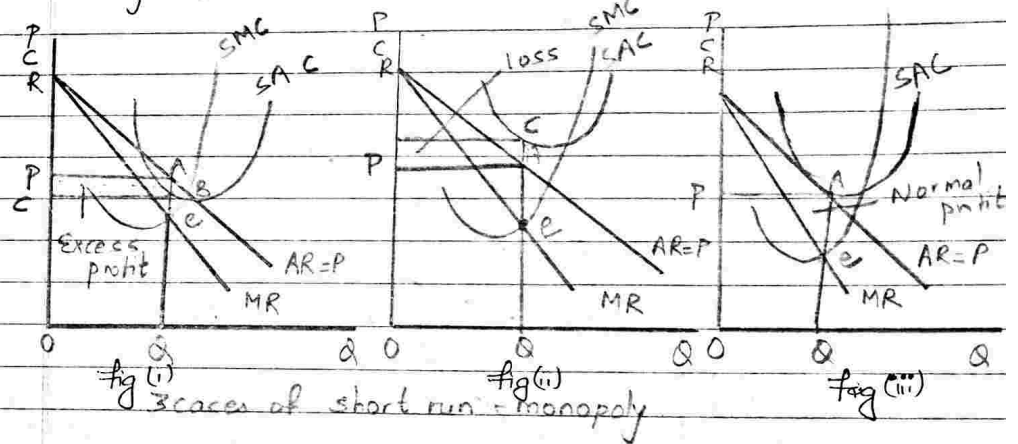
✓ IMP
Price and output determination under monopoly:

IMP
Short-run Equilibrium:

In short run, three cases may arise:
1. Average Revenue (AR) > Actual cost [Excess Profit]
2. Average Revenue (AR) < Actual cost (AC) [Loss]
3. Average Revenue (AR) = Actual cost (AC) [Normal Profit]

3 cases of short run - monopoly

The firm is in equilibrium where the following two conditions required for equilibrium have been fulfilled.
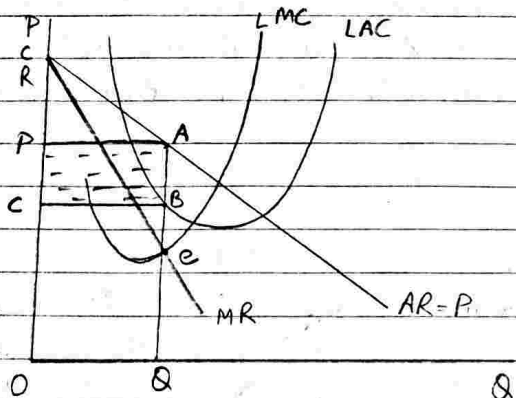→ SMC (short run) = MR
→ SMC has cut MR from below.

At equilibrium, OP price is set ~~so~~ to sell OQ output. In fig A(i), firm earns excess profit represented by the shaded area PABC. In fig (ii), firm ~~earns~~

bears loss indicated by blank Area PABC. In fig(iii) the firm earns normal profit.

Long run Equilibrium.
— Being a single seller, monopolist earns excess profit in the long run. It is in the sense that, monopolist has complete control over the supply of the output. As a result, monopolist is the price maker. Therefore, the monopolist becomes able to earn, excess profit in the long run.

fig(i) Long run Equilibrium.

The firm is in equilibrium where the following two conditions required for equilibrium have been fulfilled.
→ LMC = MR
→ LMC has cut MR from below.

At equilibrium, OP price is set to sell OQ output. In fig(i); firm earn ~~earn~~ excess profit represented by the shaded region PABC.

Monopolistic Competition.
— Monopolistic Competition is a mixture of perfect competition and monopoly market. It is a market structure characterized by large number of sellers producing ~~diff.~~ the differentiated products with close substitutes and there is free exit and entry and exit.

Price and Output Determination under Monopolistic Competition

Short run Equilibrium
In short run, following three cases may arise:-
• AR > AC [Excess profit]
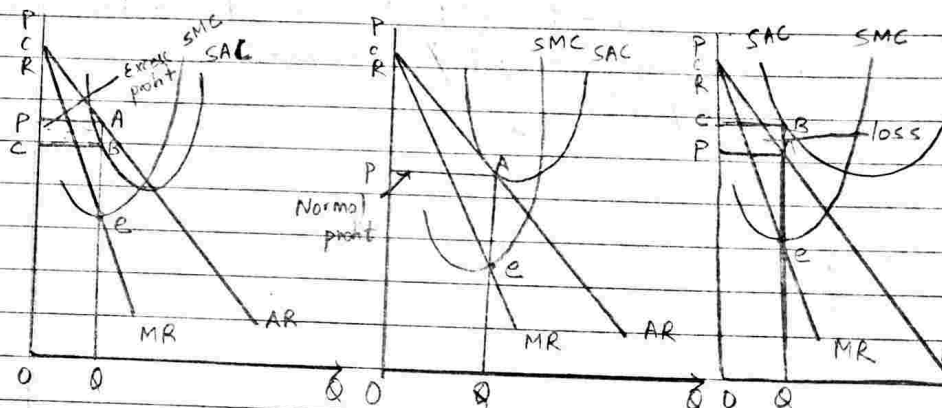• AR = AC [Normal Profit]
• AR < AC [Loss]

Fig. A   fig B   fig C

The firm is in equilibrium at point 'e' where following two conditions required for equilibrium have been fulfilled.
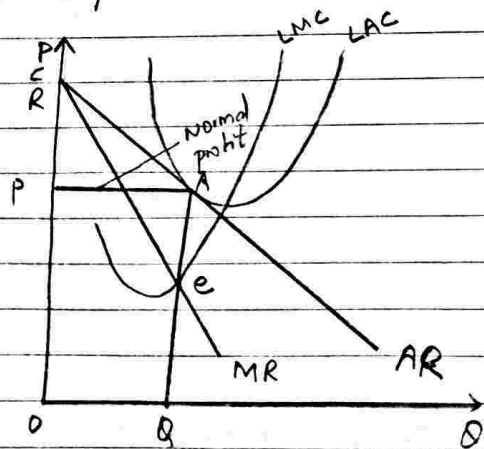• MC = MR
• MC has cut MR from below.

The firm sells OQ quantity of OP price.

In fig A, firms earns excess profit equal to the shaded area PABC. In fig B, the firm earns only normal profit. In fig C, the firm is in loss equal to the black area PABC.

Long run Equilibrium:
- The firms under monopolistic competition earn only normal profit in the long run. In long run, the entry of the new firms take place due to the excess profit in the short run. As a result, supply of output increases leading to fall in the price. Due to the large number of seller in the market, there is shortage of resources. Hence, the cost of production increases. Therefore, excess profit in long run is ruled out. Hence, the firms under monopolistic competition earns only normal profit.

In the figure; the firm is in equilibrium at point e. The firm sells OQ output at OP price and earns only normal profit.

Example: Ncell, churot, NTC, etc.
eg of oligopoly.

Imp
Oligopoly

- Oligopoly is a market structure characteristized by few sellers having large market share. Duopoly is a market limiting case of oligopoly where only two firms participate in market.

Features of oligopoly

1. Few sellers (having large market share)
2. Mutual interdependence (competition between two firms which hampers the demand or price by the decision of another firms).
   - In oligopoly market, firms are said to be mutually interdependent in the sense that the decision regarding the price taken by one firm significantly affects the demand condition of another firm.

3. Uncertainty
   - In oligopoly market, uncertainty arises due to mutual interdependence.

4. Importance of advertisement or selling cost
   - In oligopoly market, there is significant role of advertisement and sells promotional activities because each firm attempts to make its product unique in the minds of the consumer.

Imp
Price Discrimination

- Price discrimination refers to the different prices charged for the same product at different sub markets. Price discrimination is usually practised by monopolist. There are following conditions for price discrimination.

- Monopoly
- Legal sanction
- Ignorance of the consumer
- Laziness of the consumer
- Market sealing

Types of Price discrimination

→ First -Degree Price Discrimination
  - In first degree price discrimination, seperate price is charged for each single product.

→ Second -Degree Price Discrimination
  - In this price discrimination, prod the number of product is divided into different group and different prices are charged for the different groups.

→ Third degree Price Discrimination (monopoly)
  - In this degree of price discrimination, two different prices are charged for the same product.

IMP/ Peak Load Pricing

- Peak load pricing is one of the forms ft. a price discrimination where different prices are charged for the same product or service at different time periods. During peak hours, period, the demand for the product is high. Therefore, high price is charged. During off peak period, the demand for the product is low. As a result, low price is charged for the same product. Following three conditions need to be met for the application of peak load pricing.

- Same facility must be used to provide service at different time periods.
- Product or service must not be storable.
- There must be variations in demand characteristics.

Transfer Pricing

- Transfer pricing becomes possible when the production operates at more than one stage of.

  Transfer pricing refers to the price charged by the production division for a intermediate product while transfering it to the next stage of production.

Price skimming

  It is the practise of setting high price for the product of in the market. It is practised to create the image of the product in the market and to compensel for compensate for the huge amount of money incurred in developing the product.

Penetration Price

- This pricing test tecnique involves setting the low price in competitive market. It is usually practised with the intension of driving the competitors out of the market.

Cost - Plus Pricing (Mark - Up pricing)

- This pricing tecnique is widely practised in real world. This approach basically involves setting the price that covers cost of producing or accu acquiring the product, plus target rate of return from investment.

There are too steps involved in cost - puls pricing:-

1. first, the cost of production is estimated. Costs are calculated on an average basis.

$$A_c = AF_c + AV_c$$

The second step involves, the estimated target rate of return. It that return, requires 'X' profit, then per unit profit will be $\dfrac{X}{Q}$. Hence, price is set as follows:-

$$P = AF_c + AV_c + \dfrac{X}{Q}$$

Consider the following cost schedule

$$TC = TVC + TFC \qquad AVC = \frac{TVC}{Q}$$
$$AFC = \frac{TFC}{Q} \qquad AV = AFC + AVC$$

Output (Q)	Total variable cost	TFC	TC	AFC	AVC	AC	MC
0	0	200	200	—	0	0	0
1	28	300	228	200	28	228	28
2	52	200	252	100	26	126	24
3	70	200	270	66.67	23.33	90	18
4	93	200	293	50	23.25	73.25	23
5	148	200	348	40	29.6	69.6	55
6	238	200	438	33.33	39.67	73	90
7	370	200	570	28.57	52.85	81.42	132
8	338	200	738	25	67.25	92.25	168

a. at TFC = Rs 300, compute TC, AFC, AC and MC
b. Graph TFC, TVC and TC and explain their behaviour.
c. Graph AC and MC and explain their behaviour.
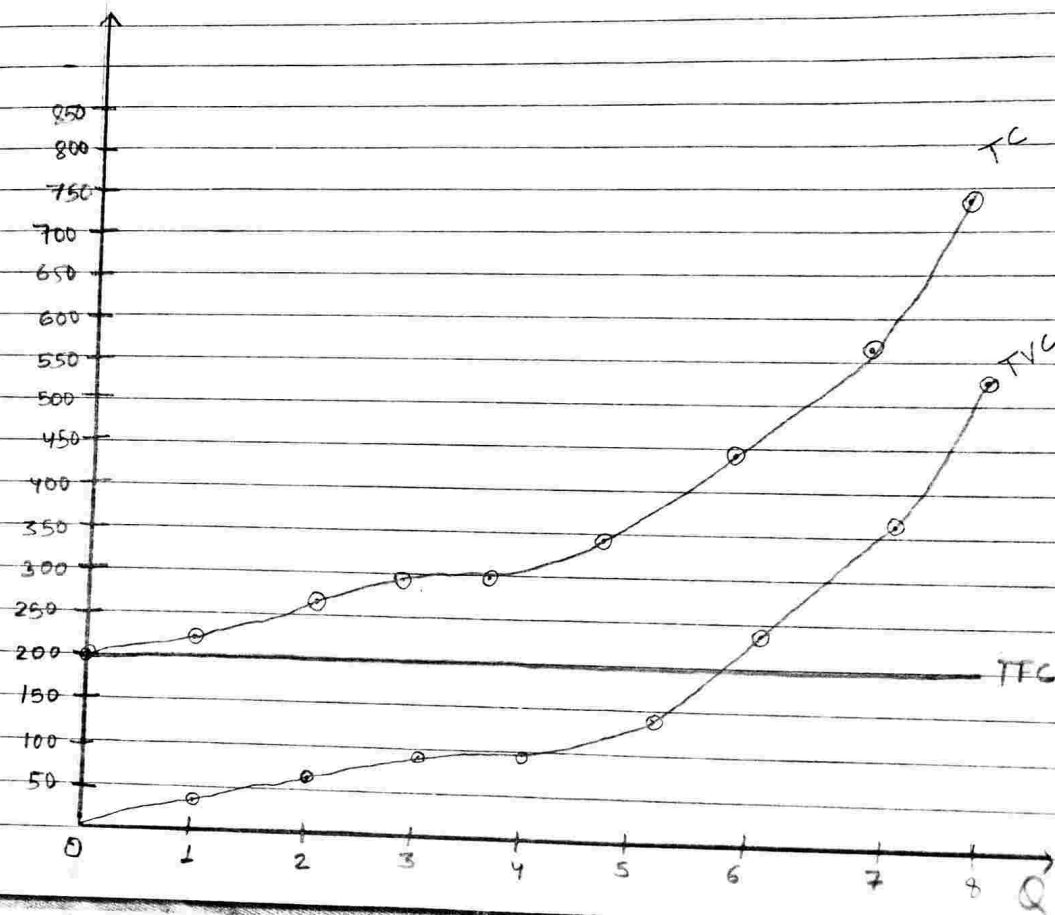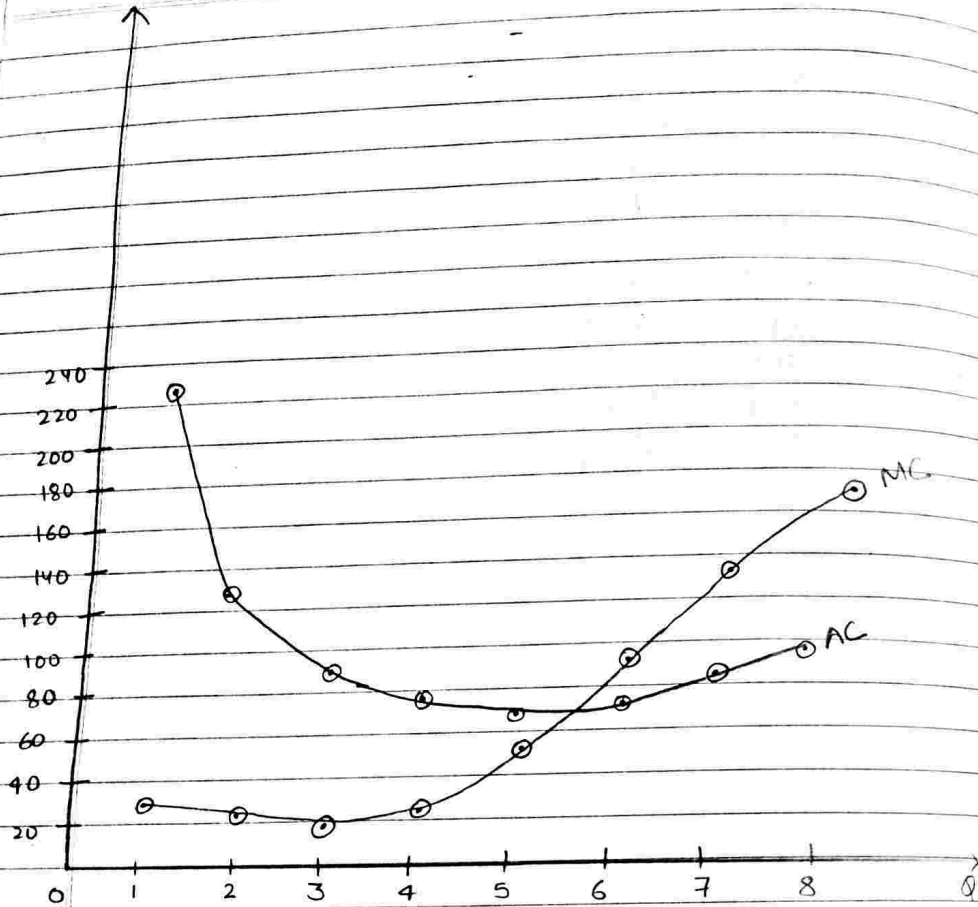
Chapter - 9 (Imp)
Law of demand and supply
Consumer equilibrium
 Law of diminshing utility.
Consumer indifference curve.
to