"Economics is a strange science. Our subject deals with some of the most important as well as mundane issues that impinge on the human condition"

Velammal Matric. Hr. Sec. School – Surapet

+1 ECONOMICS

Study Material

Name :_____

Class & Section :_____

School :_____

Target Marks :_____

PART B : 2 MARKS QUESTIONS AND ANSWERS

Chapter 1

21. What is meant by Economics?

1. The term or word 'Economics' comes from the Ancient Greek **oikonomikos**
2. Oikos means **"households";** and, nomos means **"management".**
3. Thus, the term **'Economics' means 'management of households**'.

22. Define microeconomics.

1. Micro Economics is the study of the **economic actions of individual units**, say individual **households**, individual **firms** or individual **industries**.
2. Micro economics covers,
   (i) **Value theory** (Product pricing and factor pricing)
   (ii) **Welfare theory** (Theory of Economic Welfare)

23. What are goods?

1. In Economics, the term **'goods' implies the term 'services' also**, unless specified otherwise.
2. Goods (also **called 'products', 'commodities', 'things'** etc),
3. As **material things, goods are tangible**.

24. Distinguish goods from services.

	Goods	Services
1	Tangible	Intangible
2	Have physical dimensions	Heterogeneous
3	Exist independently of their owner	Inseparable from their makers
4	Transferable	Perishable

25. Name any two types of utility.

1. Form Utility, 2. Time Utility, 3. Place Utility,
4. Service Utility, 5. Possession Utility, 6. Knowledge Utility

26. Define positive economics.

1. Positive science **deals with what it is:** → means, it analyses **a problem on the basis of facts** and **examines its causes**.
2. For example, at the time of a price increase, its causes are analysed.

27. Give the meaning of deductive method.

1. It is also named as **analytical or abstract method.**
2. It consists in **deriving conclusions from general truths**; it takes few general principles and applies them to draw conclusions.

Or

1. Deductive method is a process in logic facilitating or arriving at an inference, **moving from general to particular**

Chapter 2

20. Define Utility.

1. In Economics, **utility is the want-satisfying power** of a commodity or a service.
2. It is in the goods and services for an individual consumer at a particular time and at a particular place.
3. Utility is the **capacity of a commodity to satisfy human wants**.

21. Mention the classifications of wants.

1. **Necessaries** : - For example, food, clothing and shelter.
2. **Comforts** : - Example: TV, Fan, Refrigerator and Air conditioner.
3. **Luxuries** : - Example: Jewelry, Diamonds and Cars.

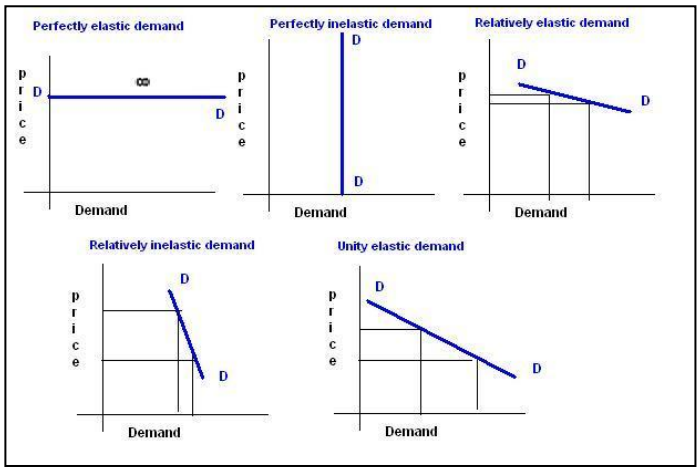
22. Name the basic approaches to consumer behaviour.

Approaches of Consumer Behaviour are two types:		
1. Cardinal Utility	**Basis for Comparison**	**2. Ordinal Utility**
Cardinal utility is the utility wherein the satisfaction derived by the consumers from the consumption of good or service can be expressed numerically.	**Meaning**	Ordinal utility states that the satifaction which a consumer derives from the consumption of good or service cannot be expressed numerical units.
Quantitative	**Approach**	Qualitative
Less	**Realistic**	More
Utils as 1, 2, 3 …. N	**Measurement**	Ranks as ordering 1, 2, 3.. etc.,
Marginal Utility Analysis	**Analysis**	Indifference Curve Analysis
Classical and Neo-classical Economists	**Promoted by**	Modern Economists

23. What are the degrees of price elasticity of Demand?

The degrees of price elasticity of Demand are five as follow,

1. Perfectly Elastic Demand (Ep = ∞)
2. Perfectly Inelastic Demand (Ep =0)
3. Relatively Elastic Demand (Ep>1)
4. Relatively Inelastic Demand (Ep<1)
5. Unitary Elastic Demand (Ep =1)



24. State the meaning of indifference curves.

1. An indifference curve is the **locus of all combinations of commodities** from which the consumer derives the **same level of satisfaction**.

2. It is also called "**Iso- Utility Curve" or" Equal Satisfaction Curve".**

25. Write the formula of consumers surplus.

Consumer's surplus	=	What a person is willing to pay – What he actually pays.
	OR	
Consumer's surplus	=	Potential price– Actual price.

Mathematically,

Consumer's surplus = TU – (P x Q)

TU = Total Utility, P = Price and Q= Quantity of the commodity

26. What are Giffen goods? Why?

1. The Giffen good or **inferior good is an exception to the law of demand.**

2. When the price of an **inferior good falls, the poor will buy less and vice versa.**

Chapter 3

21. Classify the factors of production.

(Land, Labour, Capital and Organisation)

1. **Land represents natural resources** (such as soil, mineral deposits, seas, rivers, natural forests, fisheries etc). **Labour represents human resources**.

2. Together, these two factors are called the ***'primary factors of production'*.**

3. **Saved amount is called as capital**, which serves as investment in the production process. **Organisation or enterprise is a special form of labour**.

4. The third and the fourth factors are called ***'secondary factors of production'*.**

22. Define Labour.

1. Labour refers to any work undertaken for securing an income or reward.

2. According to Marshall, labour represents **services provided by the factor labour**, which helps in **yielding an income** to the owner of the labour-power.

23. State the production function.

According to George J. Stigler, **"Production function is the relationship between inputs of productive services per unit of time and outputs of product per unit of time."**

P r o d u c t i o n function may be expressed as:

Q = f (N, L, K, T)

Where, Q = Quantity of output, N = Land; L = Labour; K = Capital; and T = Technology.

24. Define Marginal Product of a factor.

It is the addition or the increment made to the total product when one more unit of the variable input is employed.

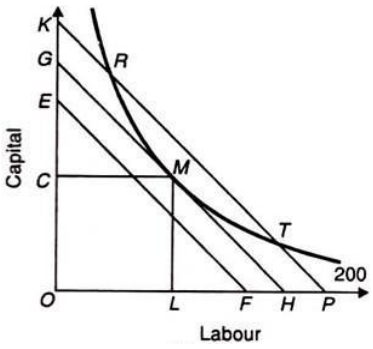
$MP=\Delta TP/\Delta N$	*(or)*	$MP = TP(n) - TP(n-1)$
Where, MP = Marginal Product ΔTP = Change in total product ΔN = Change in units of input		Where, MP = Marginal Product TP(n) = Total product of employing nth unit of a factor TP(n-1) = Total product of employing the previous unit of a factor, that is, (n-1)th unit of a factor.

25. What is Iso-cost line?

1. The iso-cost line illustrates all the **possible combinations of two factors** that can be used at given costs and for a **given producer's budget**.

2. An iso-cost line represents **different combinations of inputs which shows the same amount of cost**.

3. It is otherwise called as **"iso-price line" or "iso-income line" or "iso-expenditure line" or "total outlay curve".**



26. What are conditions for producer's equilibrium?

There is two condition for producer's equilibrium as follow,

1. The iso-cost line must be **tangent** to iso-quant curve.

2. At point of tangency, the **iso-quant curve must be convex to the origin** or $MRTS_{LK}$ must be declining.

27. What are the reasons for upward sloping supply curve?

The following are the reasons for upward sloping of supply curve,

1. **As the price of the commodity increases**, the **quantum supplied of the commodity also increases.**

2. Thus the supply curve has **a positive slope (upward slop)** from left to right.

Chapter 4

21. Define cost.

1. Cost refers to the **total expenses incurred in the production of a commodity.**

2. Cost analysis refers to the study of behaviour of cost in relation to one or more production

22. Define cost function.

The functional **relationship between cost and output** is expressed as 'Cost Function'.

A **Cost Function** may be written as

C = f (Q)

Eg. TC = Q3–18Q2 + 91Q + 12

where, C=Cost and Q=Quantity of output.

Rent of Factory

23. What do you mean by fixed cost?

1. Fixed Cost does **not change with the change in the quantity of output.**
2. In other words, expenses on fixed factors remain unchanged irrespective of the level of output. **For example, rent of the factory**
3. Fixed cost is also called as **'Supplementary Cost' or 'Overhead Cost'.**

24. Define Revenue.

The amount of money that a producer **receives in exchange for the sale of goods** is known as revenue. In short, **revenue means sales revenue.**

$$TR = P \times Q$$

where,

TR denotes Total Revenue,

P denotes Price and

Q denotes Quantity sold.

25. Explicit Cost - Define.

1. It refers to the actual expenditures of the firm to purchase or hire the inputs the firm needs. Examples: i) wages, ii) payment for raw material and etc.,
2. It is also called Accounting Cost or Out of Pocket Cost or Money Cost.

26. Give the definition for 'Real Cost'.

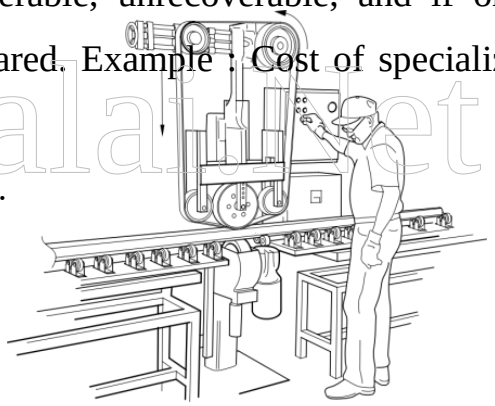
1. Real cost refers to the **payment made to compensate the efforts and sacrifices** of **all factor owners for their services** in production.
2. It includes the **efforts and sacrifices landlords** in the use of land.

27. What is meant by Sunk cost?

1. A cost incurred in the past and cannot be recovered in future is called as Sunk Cost.

2. It is called as sunk because, they are unalterable, unrecoverable, and if once invested it should be treated as drowned or disappeared. Example : Cost of specialized equipments.

3. Sunk cost is also called as 'Retrospective Cost'.



Chapter 5

21. Define Market.

In Economics, the term 'market' refers to a system of exchange between the buyers and the sellers of a commodity, directly or indirectly.

22. Who is price-taker?

1. A **price taker** is a seller who has no control to fix **prices** for a good or service. Example : A Perfection Competition Seller

2. In the competitive market, a **price taker** is a seller who does not affect the **price** of the commodities that he sells.

3. A price taker simply has to accept the market price.

23. Point out the essential features of pure competition. (write any four)

a. Large Number of Buyers and Sellers

b. Homogeneous Product and Uniform Price

c. Free Entry and Exit

d. Absence Of Transport Cost

e. Perfect Mobility of Factors of Production

f. Perfect Knowledge of the Markets

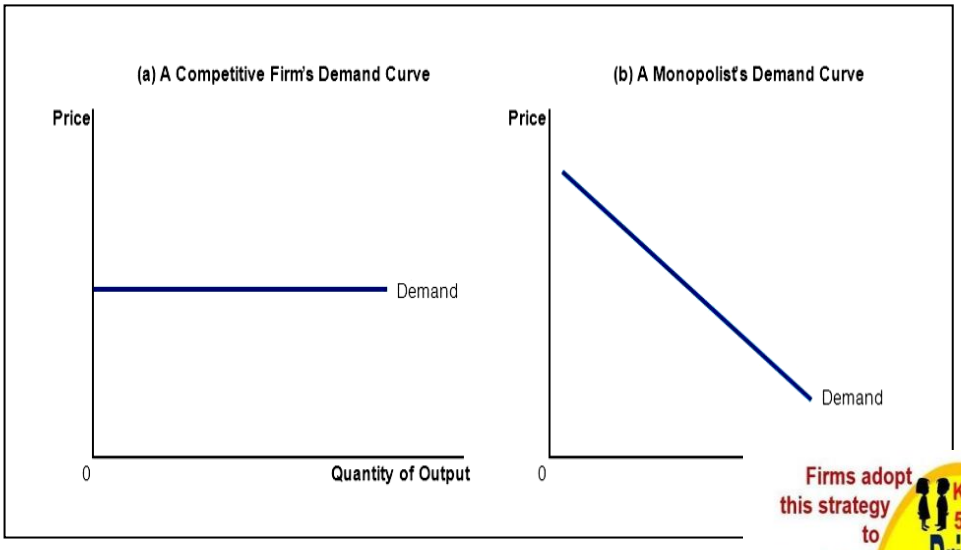
g. No Government Intervention

24. What is selling cost?

1. **Selling costs** refer to those expenses which are incurred for popularizing the differentiated product and increasing the demand for it.
2. **Selling cost** is a special feature of monopolistic competition.
3. Example : Advertisement Cost, Marketing Cost, and etc.,

25. Draw demand curve of a firm for the following:

a) Perfect Competition **b) Monopoly**



26. Mention any two types of price discrimination .

There are three types of price discrimination

(i) Personal – Different prices are charged for different individuals (Ex:Railways Ticket)

(ii) Geographical - Different prices are charged at different places for the same product (Ex: same book sold in different countries at different prices)

(iii) On the basis of Use - Different prices are charged according to the use of a product (Ex : Electricity Prices charged by Tamil Nadu Electricity Board)

27. Define "Excess capacity".

1. A monopolistic firm produces deliberately output which is less than the optimum output that is the output corresponding to the minimum average cost.
2. This is done so mainly to create artificial and raise price.
3. This leads to excess capacity.

Chapter 6

21. What is meant by distribution?

1. Distribution means division of income among the four factors of production.

2. Distribution is given in terms of rent to landlords, wage to labourer, interest to capital and profit to entrepreneurs.

Name	Nature	Reward
Land	Any natural resources	Rent
Labour	Toil and/or skills	Wage
Capital	Man-made resource	Interest
Enterprise	Risk taking and organising	Profit

.22. Mention the types of distribution.

1. **Personal Distribution**

Personal Distribution is the distribution of national income among the individuals.

2. **Functional Distribution**

Functional Distribution means the distribution of income among the four factors of production

23. Define 'Rent'.

According David Ricardo,

"Rent is that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil".

24. Distinguish between real and money wages.

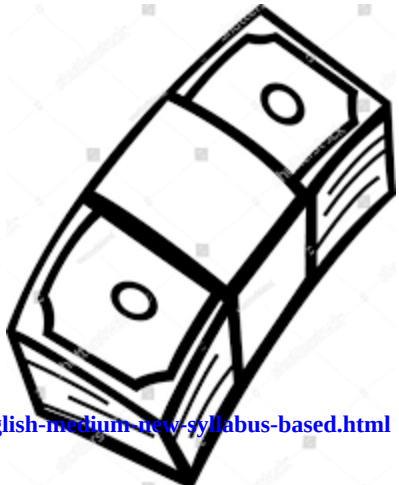
	Money / Nominal Wages	Real Wages
1	Money wages are referred to the wages paid in terms of money.	Real wages are the wages paid in terms of goods and services.
2	**Example:** Money received by a worker per unit of time or quantum of work etc.,	**Example:** Real Wages = Money Wages – Effect of inflation on the purchasing power.

25. What do you mean by interest?

1. **According Alfred Marshall, "**Interest is the price paid for the use of capital in any market"
2. Interest is the reward paid by the borrower to the lender for the use of capital.

26. What is profit?

1. Profit is a return to the entrepreneur for the use of his entrepreneurial ability.
2. It is the net income of the organizer.
3. In other words, profit is the amount left with the entrepreneur after he has payments made for all the other factors



27. State the meaning of liquidity preference.

1. Liquidity preference means the preference of the people to hold wealth in the form of liquid cash other than bonds, securities, gold and etc.,.

2. **According Meyer**, "Liquidity Preference is the preference to have an amount of cash rather than of claims against others".

Chapter 7

21. Write the meaning of Economic Growth

1. A country's economic growth is usually measured by National Income, indicated by **Gross Domestic Product (GDP)**.
2. The GDP is the total monetary **value of the goods and services produced** by that country over a specific period of time, usually one year.

22. State any two features of developed economy

1) High National Income
2) High Per Capita Income
3) High Standard of Living
4) Full Employment of Resources
5) Dominance of Industrial Sector
6) High Level of Technology
7) High Industrialisation
8) High ConsumptionLevel
9) High Level of Urbanisation
10) Smooth Economic Growth
11) Social Equity, Gender Equality and Low Levelsof Poverty
12) Political Stability and Good Governance

23. Write the short note on natural resources

1. Any stock or reserve that can be drawn from nature is a Natural Resource.
2. The major natural resources are -land, forest, water, mineral and energy.
3. Nature has provided with diverse climate, several rivers for irrigation and power generation, rich minerals, rich forest and diverse soil.

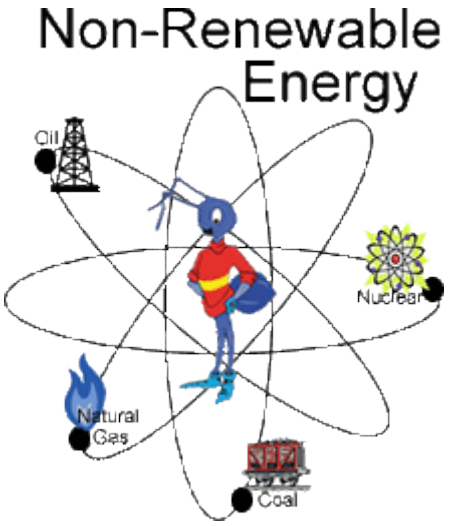
24. Point out any one feature of Indian Economy.

1. **India has a mixed economy :**

Indian economy is a typical example of mixed economy. This means both private and public sectors co-exist and function smoothly. On one side, some of the fundamental

2. **Agriculture plays the key role**

Agriculture being the maximum pursued occupation in India, it plays an important role in its economy as well. Around 60% of the people in India



25. Give the meaning of non-renewable energy

1. As the name suggests, the sources of energy which **cannot be renewed or re-used** are called non-renewable energy sources.
2. Basically these are the energy sources which **will get exhausted** over a period of time.
3. Some of the examples of this kind of resources are **coal, oil, gas** etc.

26. Give a short note on Sen's 'Choice of Technique'.

Sen's 'Choice of Technique ' was **a research work** where he argued that in a labour surplus economy (like India), generation of **employment cannot be increased** at the initial stage by the **adaptation of capital-intensive technique**.

27. List out the reasons for low per capita income as given by V.K.R.V. Rao.

i. Uneconomic holdings with sub-divisions and fragmentation;

ii. Low levels of water availability for crops;

iii. Excess population pressure on agriculture due to the absence of a large industrial sector;

iv. Absence of capital;

v. Absence of autonomy in currency policy, and in general in monetary matters encouraging holding of gold.

Chapter 8

21. What are the Phases of colonial exploitation of India?

1. Period of merchant capital
2. The period of industrial capital and
3. The period of finance capital

22. Name out the different types of land tenure existed in India before Independence.

1. Zamindari system
2. Mahalwari system and
3. Ryotwari system

23. State the features that distinguish a land tenure system from other system.

(a) Who owns the land ;

(b) Who cultivates the land; s

(c) Who is responsible for paying the land revenue to the government.

24. List out the weaknesses on Green Revolution.

(i) Indian Agriculture was still a gamble of the monsoons.

(ii) This strategy needed heavy investment in seeds, fertilizers, pesticides and water.

(iii) The income gap between large,

(iv) Widespread unemployment among agricultural labourers in the rural areas.

(v) Larger chemical use and inorganic materials reduced the soil fertility

25. What are the objectives of Tenth five year plan ?

Main Objectives 10th FYP (2002-2007)

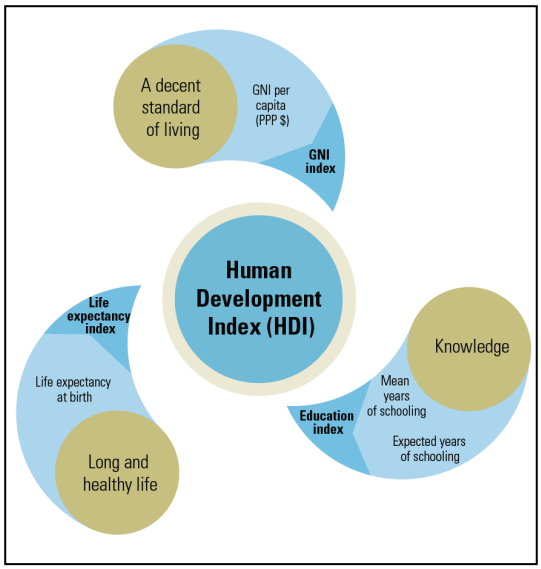
1. This plan aimed to double the per capita income of India in the next 10 years.
2. It aimed to reduce the poverty ratio to 15% by 2012.
3. Its growth target was 8.0% but it achieved only 7.2%.

26. What is the difference between HDI and PQLI ?

Points	PQLI	HDI
Meaning	It refers to overall well being of people	It refers to composite measure of economic & social progress to find out the quality of human life
Made by	Morris D.Morris in 1979	Mahabub – ul – Haq in 1990 for UNDP
Based on	PQLI is based on a) Life expectancy indicator b) Infant mortality indicator c) Basic Literacy indicator	HDI is based on a) Life expectancy indicator b) Educational attainment indicator c) Standard of Living indicator
Construction	PQLI is constructed on a scale of 1 to 100.Where 2 is worst & 100 is best performance	HDI is constructed on a scale of maximum and minimum values of indicator
Formula	$PQLI = \frac{L.E.I+I.M.I+B.L.I}{3}$	$HDI = \frac{L.E.I+E.A.I+S.L.I}{3}$

27. Mention the indicators which are used to calculate HDI.

1. Life expectancy at birth
2. Adult literacy rate
3. Gross Enrollment ratio
4. GDP Percapita (PPP US $)



Chapter 9

21. Why was structural reform implemented in Indian Economy?

1. Indian economy responded to the crisis by introducing a set of policies known as Structural Reforms.
2. These policies were aimed at correcting the weaknesses and rigidities in the various sectors of the economy such as Industry, Trade, Fiscal and Agriculture.

22. State the reasons for implementing LPG.

a. Liberalization was necessitated because various **licensing policies** were said to be deterring the growth of the economy.

b. Privatization was necessitated because of the belief that the private sector was not given enough opportunities to **earn more money**.

c. Globalization was necessitated because today a developed country can grow without the **help of the under developed countries**.

23. State the meaning of Privatization.

1. Privatization means transfer of ownership and management of enterprises from public sector to private sector.
2. Denationalization, disinvestment and opening exclusive public sector enterprises to private sector are the gateways to privatization.

24. Define disinvestment

Disinvestment means selling of government securities of Public Sector Undertakings (PSUs) to other PSUs or private sectors or banks.

25. Write three policy initiative introduced in 1991 – 92 to correct the fiscal imbalance.

1. Reduction in fertilizer subsidy
2. Abolition of subsidy on sugar
3. Disinvestment of a part of the government holdings
4. Expenditures on welfare measures were reduced

26. State the meaning of Special Economic Zones.

1. A **special economic zone** (**SEZ**) is an area in which business and trade laws are different from the rest of the country.
2. SEZs are located within a country's national borders, and their aims include: increased trade, increased investment, job creation and effective administration.

27. State the various components of Central sector schemes under post - harvest measures.

1. Mega Food Parks; Integrated Cold Chain; Value Addition Preservation Infrastructure; Modernization of Slaughter house
2. Scheme for Quality Assurance; Codex Standards; Research and Development and Other promotional activities.

Chapter 10

21. Define Rural Economy.

1. Rural economy refers to villages, and rural community refers to people living in villages.
2. Rural areas have problems like backwardness of agriculture, low income , low employment opportunities, poverty, low infrastructural development, low literacy and etc.,

22. What do you mean by Rural Development?

1. According to the World Bank, 'Rural Development is a strategy designed to improve the economic and social life of a specific group of people - rural poor'.
2. In short, rural development is a process of improving the rural areas, rural people and rural living.

23. Rural Poverty – Define.

1. Rural poverty refers to the existence of poverty in rural areas.
2. Poverty in India has been defined as the situation in which an individual fails to earn sufficient income to buy the basic minimum of subsistence.

24. Define Open Unemployment.

1. In **Open Unemployment**, unemployed **persons** are identified as **they remain without work**.
2. This type of unemployment is found among **agricultural labourers, rural artisans and literate persons**.

25. What is meant by Disguised Unemployment?

1. In Rural areas, many are **employed below their** productive **capacity** and even if they are withdrawn from work the output will not diminish.
2. It is also called Disguised Unemployment or Under employment.
3. This type of unemployment is found among small and marginal farmers, livestock persons and rural artisans.

26. Define Cottage Industry.

Cottage industries are generally associated with agriculture and provide both part-time and full-time jobs in rural areas. Examples: Pottery, Basket Weaving, Coir products and etc.,

27. What do you mean by Micro Finance?

1. Micro finance, also known as micro credit, is a financial service that offers loans, savings and insurance to entrepreneurs and small business owners who do not have access to traditional sources of capital, like banks or investors.
2. The goal of micro financing is to provide individuals with money to invest in themselves or their business.

28. State any two causes of housing problem in rural areas.

1. Rapid adoptation of nuclear families
2. Lack of proper water supply
3. Lack of good sanitation and
4. Lack of proper disposal of sewage

29. Define Rural Electrification.

1. Rural Electrification refers to providing electrical power to rural areas.
2. The main aims of rural electrification are to provide electricity to agricultural operations and to enhance agricultural productivity,

30. State any two factors hindering Rural Electrification in India.

1. Lack of Funds
2. Inter-state Disputes
3. Uneven Terrain
4. High Transmission Loss
5. Power Theft

Chapter 11

21. State any two districts with favorable sex ratio. Indicate the ratios.

S.N	District	Sex Ratio (No. of Females per 1000 Males)
1	The Nilgiris	1041
2	Thanjavur	1031
3	Nagapattinam	1025
4	Tirunelveli	1024
5	Thoothukkudi	1024
Source : Census of India, 2011		

22. Define GSDP.

1. The Gross State Domestic Product refers to the total money value of all the goods and services produced annually in the State.

2. Tamil Nadu is the second largest economy (GSDP) in India

23. Mention any four food crops which are favourable to Tamil Nadu.

1. Rice, 2. Kambu, 3. Corn, 4. Groundnt, 5. Oil Seeds and 6. Sugarcane

24. What are major ports in Tamil Nadu?

Tamil Nadu has three major ports,

- Chennai, Ennore, and Tuticorin

25. What is heritage tourism?

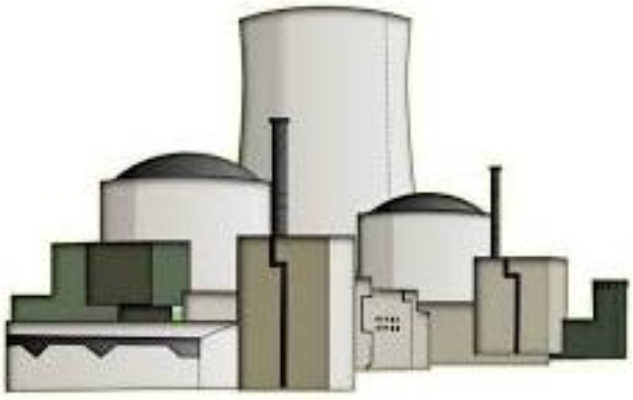
1. "Heritage tourism is traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present. It includes cultural, historic, and natural resources."

2. Example for heritage tourism in Tamil Nadu : Mamallapuram, The Nilgiri Mount Railway, Gangaikonda Cholapuram, Vellore Fort and etc.

26. What are the nuclear power plants in Tamil Nadu?

The Kalpakkam Nuclear Power Plant and the Koodankulam Nuclear Power Plant are the major nuclear energy plants for the energy grid.

Units	Existing Installed capacity (2018)
Kudankulam	1834 MW (2 x 917)
Kalpakkam	470 MW (2 x 235)



27. Define Micro industry

The guidelines with regard to investment in plant and machinery or equipment as defined in the MSMED Act, 2006 are:

Nature of activity of the Enterprise	Investment in plant and machinery excluding land and building for enterprises engaged in manufacturing or production, processing or preservation of goods	Investment in equipment excluding land and building for enterprises engaged in providing or rendering of services (loans up to Rs 1 crore)
Micro	**Not exceeding Rs.25.00 Lakhs**	**Not exceeding Rs.10.00 Lakhs**
Small	More than Rs.25.00 lakhs but does not exceed Rs.500.00 lakhs	More than Rs.10.00 lakhs but does not exceed Rs.200.00 lakhs
Medium	More than Rs.500.00 lakhs but does not exceed Rs.1000.00 lakhs	More than Rs.200.00 lakhs but does not exceed Rs.500.00 lakhs

Chapter 12 (Answers are given at the last of this material)

1. If 62 = 34 + 4*x* what is *x*? (Answer :x is 7)

2. Given the demand function *q* = 150 − 3*p*, derive a function for MR.

3. Find the average cost function where TC = 60 + 10x +15x2

4. The demand function is given by x = 20 - 2p - p2 where p and x are the price and the quantity respectively. Find the elasticity of demand for p = 2.5.

5. Suppose the price p and quantity q of a commodity are related by the equation q = 30 - 4p - p2 find (i) ed at p = 2 (ii) MR

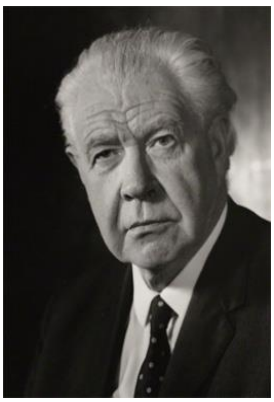
6. What is the formula for elasticity of supply if you know the supply function?

7. What are the Main menus of MS Word?

PART C : 3 MARKS QUESTIONS AND ANSWERS

Chapter 1

28. Explain the scarcity definition of Economics and assess it.



Definition:

"Economics is a science which studies human behaviour as a **relationship between ends and scarce means** which have **alternative uses".**

Major Features.

a. Ends refer to human wants.
b. Resources or means that got to satisfy the unlimited human wants.
c. The scarce means are capable of having alternative uses.

Criticism:

1. Robbins **does not make any distinction between goods conducive to human welfare** and goods that are not.
2. Robbins reduces Economics **merely to theory of resource allocation**.
3. Robbins' definition **does not cover the theory of economic growth and development**.

29. What are the crucial decisions involving 'what is produced?' (any three)

a. Whether to produce more of food, clothing and housing or to have more luxury goods

b. Whether to have more agricultural goods or to have industrial goods and services

c. Whether to use more resources in education and health or to use more resources in military services

d. Whether to have more consumption goods or to have investment goods

e. Whether to spend more on basic education or higher education

30. Explain different types of economic activities.

All human activities related to wealth constitute the subject-matter of Economics. Production, consumption and capital formation are called the basic economic activities of an economy.

1. **Consumption**

   Human wants coming under consumption is the starting point of economic activity.

2. **Production**

   Production is the process of transformation of inputs into output.

3. **Exchange**

   Exchange is concerned with price determination in different market forms.

4. **Distribution**

   Production is the result of the coordination of factors of production.

31. Elucidate different features of services.

1. **Intangible:** Intangible things are not physical objects but exist in connection to other things, for example, brand image, goodwill etc. But today, the intangible things are
2. **Heterogeneous:** Services vary across regions or cultural backgrounds.
3. **Inseparable from their makers:** Services are inextricably connected to their makers.
4. **Perishable:** Services cannot be stored as inventories like assets.

32. What are the important features of utility?

1. Utility is psychological.

2. Utility is not equivalent to usefulness.

3. Utility is not the same as pleasure.

4. Utility is personal and relative.

5. Utility is the function of the intensity of human want. **6.** Utility is a subjective concept

7. Utility cannot be measured

8. Utility has no ethical or moral significance.

33. Distinguish between microeconomics and macroeconomics.

Difference between Micro Economics and Macro Economics

Micro Economics	Macro Economics
1. It is that branch of economics which deals with the economic decision-making of individual economic agents such as the producer, the consumer etc.	1. It is that branch of economics which deals with aggregates and averages of the entire economy. E.g., aggregate output, national income, aggregate savings and investment, etc.
2. It takes into account small components of the whole economy.	2. It takes into consideration the economy of the country as a whole.
3. It deals with the process of price determination in case of individual products and factors of production.	3. It deals with general price-level in any economy.
4. It is known as price theory	4. It is also known as the income theory.
5. It is concerned with the optimization goals of individual consumers and producers	5. It is concerned with the optimization of the growth process of the entire economy.

34. Compare positive economics and normative economics.

Positive and Normative Economics

Positive Economic Theory	Normative Economic Theory
✓is the ***objective*** or scientific attempt to describe and ***explain*** the behavior of the economy and its important variables; ✓reflects ***facts*** and studies ***actual*** economic ***performance***; ✓is an explanation why the economy ***works as it does***; ✓is a ***basis for predicting*** how the economy will respond to changes in circumstances; ✓***free from subjective*** value judgments; ✓represents an approach of a ***scientist***.	✓involves ***subjective*** value judgments about what economy ***must be*** or what measure ***is to be undertaken*** on the base of a particular economic concept or theory; ✓makes prescriptions ***what should be done*** in the economy; ✓offers ***recommendations for changes*** in economic policy to achieve an optimal and desirable state of affairs; ✓ is based on ***personal*** (subjective) ***value judgments***; ✓represents an approach of a ***politician***.

39

Chapter 2

27. Describe the feature of human wants.

a. Wants are unlimited

Human wants are countless in number and various in kinds.

b. Wants become habits

Wants become habits; for example, when a man starts reading news paper in the morning, it becomes a habit.

c. Wants are Satiable

Though we cannot satisfy all our wants, at the same time we can satisfy particular wants at a given time.

d. Wants are Alternative

There are alternative ways to satisfy a particular want

e. Wants are Competitive

All our wants are not equally important.

f. Wants are Complementary

Sometimes, satisfaction of a particular want requires the use of more than one commodity.

g. Wants are Recurring

Some wants occur again and again.

28. Mention the relationship between marginal utility and total utility.

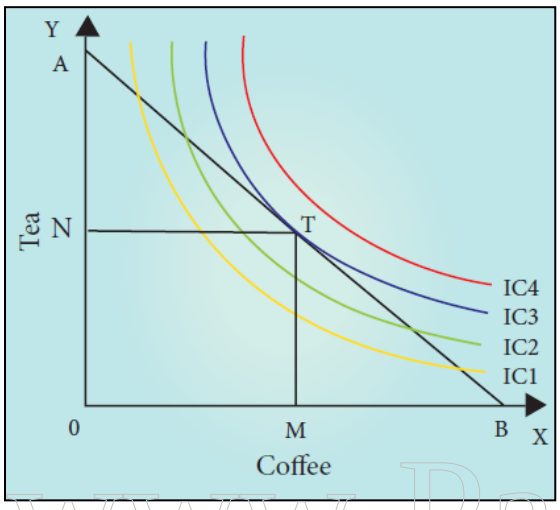
	MARGINAL UTILITY	**TOTAL UTILITY**
1	Marginal utility is the **addition made to the total utility** by consuming one more unit of a commodity (MUn = TUn - TU n-1)	Total utility refer to the sum of utilities of all units of a commodity consumed (TU = $\sum \boldsymbol{MU}$)
2	It declines	It increases
3	It reaches zero	It reaches maximum
4	It becomes negative	It declines

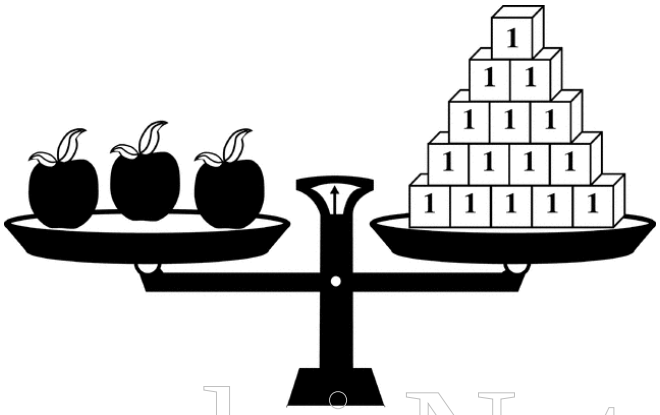
29. Explain the concept of consumer's equilibrium with a diagram.

Meaning ;

Consumer will attain equilibrium when he gets maximum satisfaction from his expenditure on different goods is highest.

Consumer Equilibrium :MRSxy = Px / Py





1. T is the point of equilibrium as budget line AB is tangent on indifference curve IC3 the upper IC which implies maximum possible level of satisfaction.

2. At equilibrium point,

The slope of IC refers to MRSXY and the slope of AB (Budget Line) refers to ratio of price of X to price of Y ie Px/Py . Therefore MRSx,y = Px/Py.

30. & 33. Explain the theory of "consumer's surplus" .

"The excess of price which a person would be willing to pay rather than go without the thing, over that which he actually does pay, is the economic measure of this surplus of satisfaction. It may be called consumer's surplus."

Consumer's surplus = Potential price – Actual price

Consumer's Surplus = TU – (P x Q)

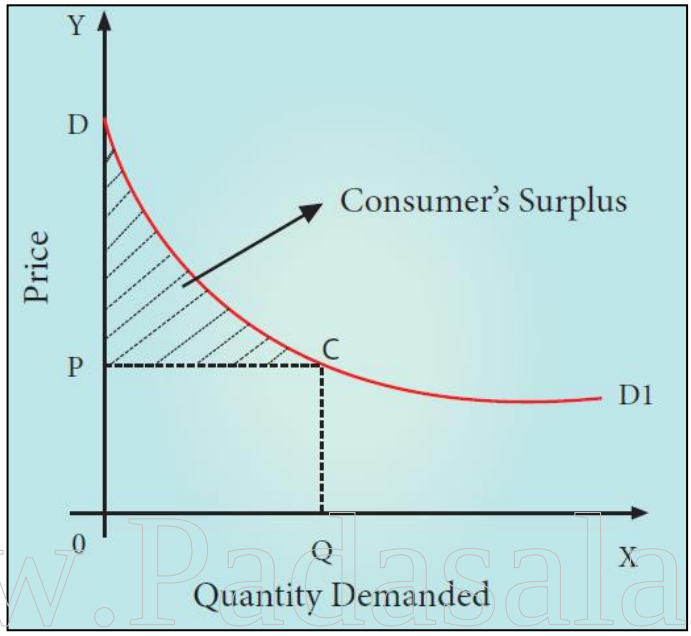
where, TU = Total Utility, P = Price and Q= Quantity of the commodity

Assumptions

1. Marshall assumed that utility can be measured.

2. The marginal utilities of money of the consumer remain constant.

3. There are no substitutes for the commodity in question.

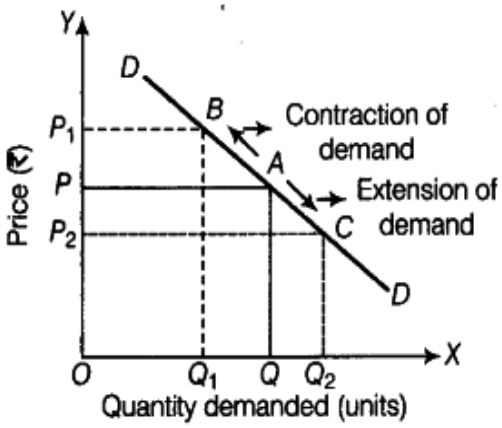


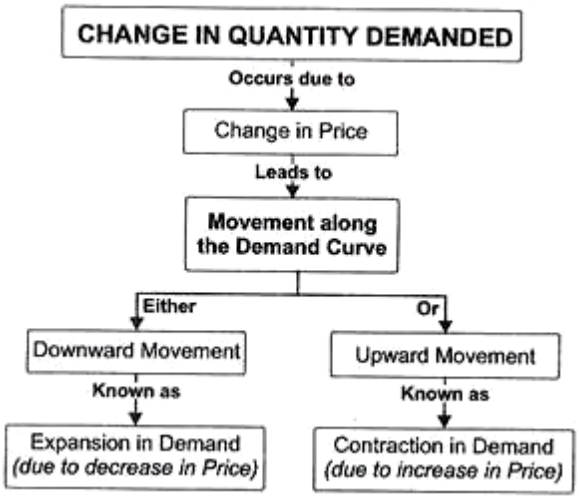
1. X axis shows the amount demanded and Y axis represents the price.
2. DD1 shows the utility which the consumer derives from the purchase of different amounts of commodity.
3. When price is OP, the amount demanded is OQ.
4. Hence, actual price is OPCQ (OP x OQ). Potential Price (Total Utility) is ODCQ.

Therefore,

Consumer' Surplus = ODCQ – OPCQ = PDC (the shaded area)

31. Distinguish between extension and contraction of demand.





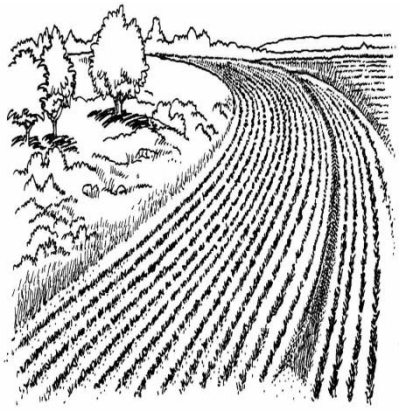
The changes in the quantity demanded for a commodity due to the change in its price alone are called "Extension and Contraction of Demand".

32. What are the properties of indifference curves?

1. Indifference curve must have negative slope
2. Indifference Curves are convex to the origin
3. Indifference curve cannot intersect
4. Indifference curves do not touch the horizontal or vertical axis.

Chapter 3

28. What are the characteristics of land? (any five)



1. Land is a primary factor of production.
2. Land is a *passive* factor of production.
3. Land is the free gift of Nature.
4. Land has no cost of production.
5. Land is fixed in supply. It is inelastic in supply.
6. Land is permanent.
7. Land is immovable.

8. Land is heterogeneous as it differs in fertility.
9. Land has alternative uses.
10. Land is subject to Law of Diminishing Returns.

29. What are the factors governing elasticity of supply? Or

1. Nature of the commodity
2. Cost of production
3. Technical condition
4. Time factor

30. What are the functions of Entrepreneur?

1. **Initiation:** An organizer is the initiator of the business,
2. **Innovation:** A successful entrepreneur is always an innovator.
3. **Coordination:** An organizer applies a particular combination of the factors of production
4. **Control, Direction and Supervision:** An organiser controls so that nothing prevents the organisation from achieving its goal.
5. **Risk-taking and Uncertainty-bearing:**

31. State and explain the elasticity of supply.

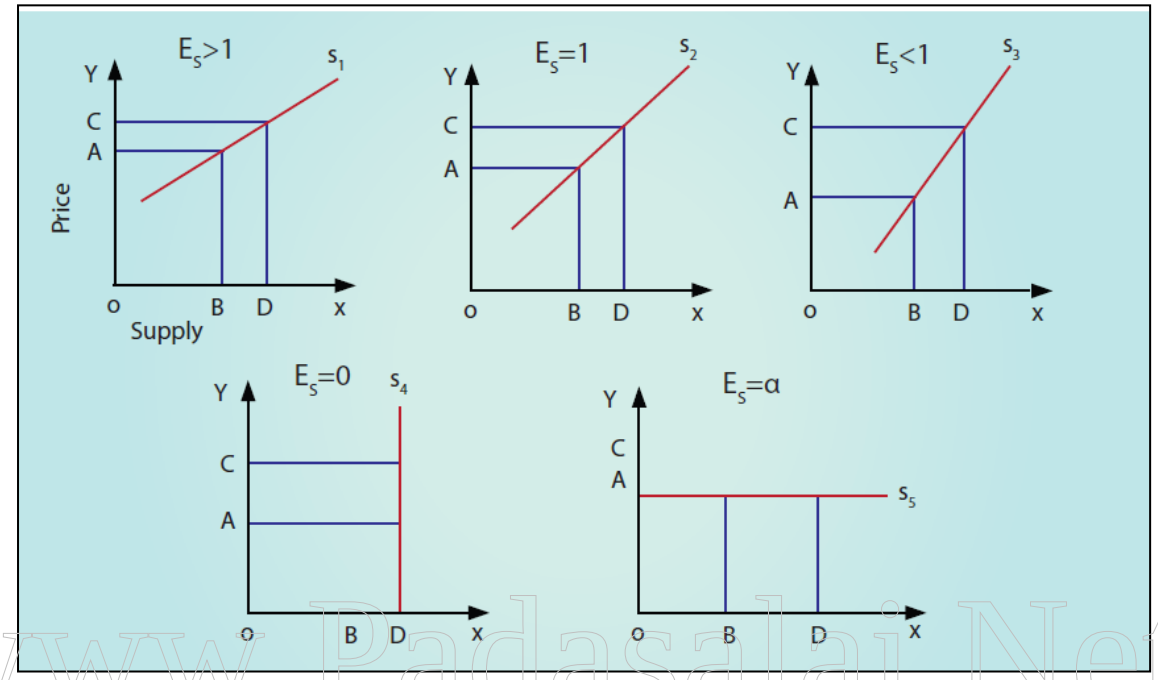
Elasticity of supply may be defined as the degree of responsiveness of change in supply to change in price on the part of sellers.

It is mathematically expressed as:

Elasticity of supply	=	proportionate change in supply / proportionate change in price

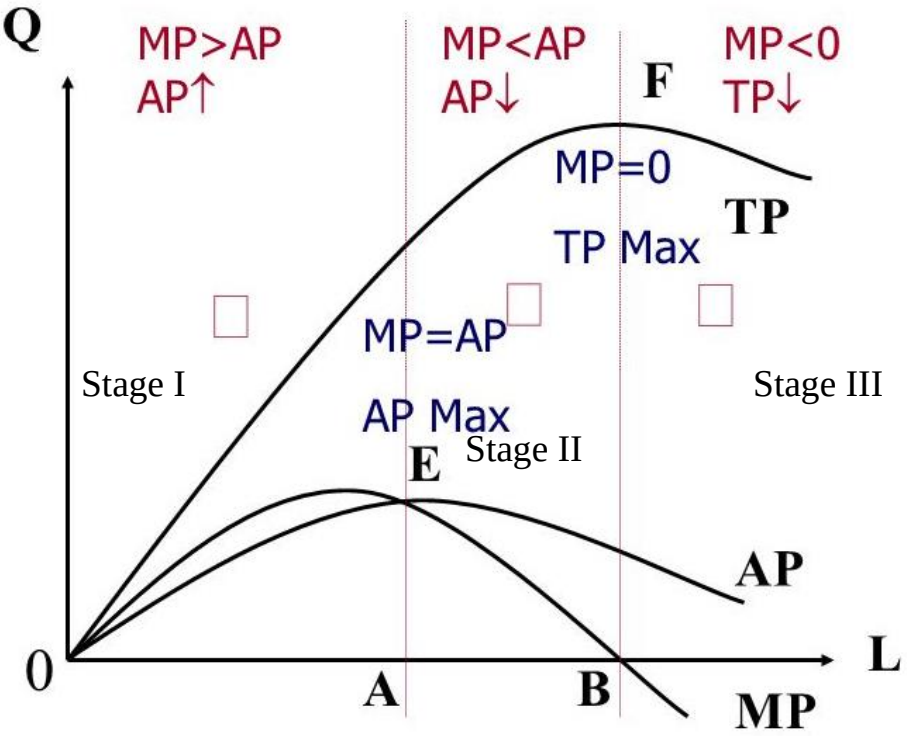
$e_{s=}(\Delta Qs/Qs) / (\Delta P/P)$; $es = \Delta Qs / \Delta P \times P/Qs$

Where Qs represents the supply, P represents price, Δ denotes a change.



32. Bring out the Relationship among Total, Average and Marginal Products.

Stages	TP	MP	AP
Stage I	increases at an increasing rate	beginning it increases, reaches a maximum and starts to decrease	increases, then attains maximum
Stage II	increase at a diminishing rate and reaches maximum	diminish and becomes equal to zero	equal to MP and then begins to diminish
Stage III	Diminishes	becomes negative	continues to diminish but always greater than zero



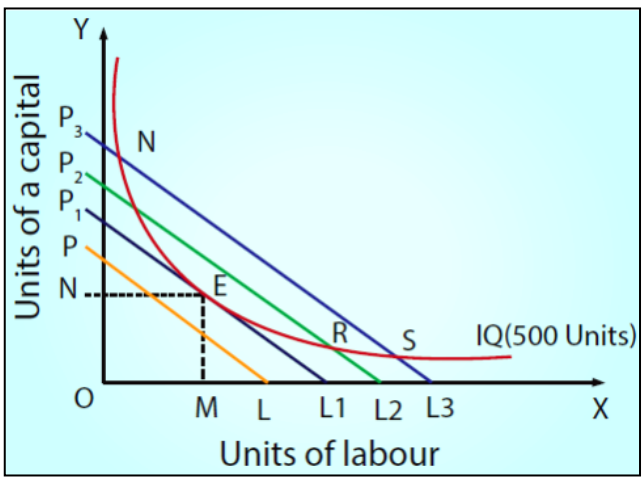
33. Illustrate the concept of Producer's Equilibrium.

Meaning :

The producer manufactures a given amount of output with **'least cost combination of factors'**, with his given budget.

Conditions for Producer Equilibrium

1. The iso-cost line must be **tangent** to iso-quant curve.
2. At point of tangency, the **iso-quant curve must be convex to the origin** or $MRTS_{Lk}$ must be declining.



1. At point E, the firm employs OM units of labour and ON units of capital.
2. The other points such as H, K, R and S lie on higher iso cost lines indicating that a larger outlay is required, which exceeds the financial resources of the firm.

34. State the Cobb-Douglas Production Function.

Meaning

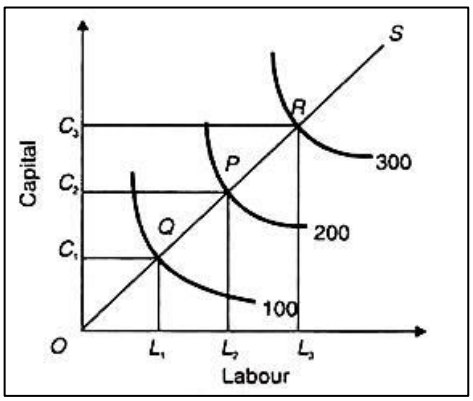
According Cobb-Douglas, " Linear homogeneous production function implies that the factors of production can be substituted for one another up to a certain extent only."

The Cobb-Douglas production function can be expressed as follows.

$$Q = AL\ \alpha\ K\beta$$

Where, Q = output; A = positive constant; K = capital; L = Labor α and β are positive fractions showing, the elasticity coefficients of outputs for the inputs labor and capital, respectively.

- ß = (1- α) since α + ß = 1. denoting constant returns to scale.
- Factor intensity can be measured by the ratio ß / α.



Explanation:

1. The production function explains that with the proportionate increase in the factors, the output also increases in the same proportion.
2. Cobb-Douglas production function implies constant returns to scale.
3. Cobb-Douglas production function considered only two factors like
4. Cobb-Douglas Production Function is a specific standard equation applied to describe how much output can be made with capital and labour inputs.

Chapter 4

28. Distinguish between fixed cost and variable cost.

Fixed Cost	Variable Cost
It refers to the cost incurred on the fixed factors of production	Its refer to the cost incurred on the variable factors of production
This cost remains constant irrespective of the levels of outputs	It varies with levels of outputs
Even if the outputs is nil, fixed cost will be incurred	This cost will increase /decrease with the levels of outputs.
This is also known as supplementary costs or overhead costs	This is also known as prime costs.
Its includes: a) Rent for the building b) Interest paid on capital c) Insurance premium d) Property taxes e) Depreciation and maintenance allowances, etc.	It includes a) Prices of raw materials b) Wages of labours c) Excise duties, sales tax d) Transport expenditure Etc.

29. State the differences between money cost and real cost.

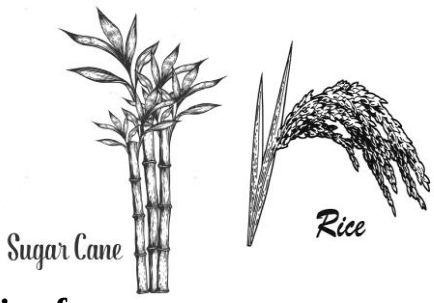
Nominal and Real Cost

- Nominal Cost
  - Nominal cost is the money cost of production
  - It is also called expenses of production
  - It is important from producer's point of view
    - As he has to cover this and earn profit to remain in business
- Real Cost
  - Many economists tried to define real cost
  - Adam Smith regarded
    - pains and sacrifices of labour as real cost
  - Marshall includes under it
    - Real cost of efforts of various qualities
    - Real cost of waiting
  - The Austrian School of economists and their followers gave a new concept of real costs
    - The real cost of production of a given commodity is the next best alternative sacrificed in order to obtain that commodity
    - It is also called opportunity cost or displacement cost

30. Distinguish between explicit cost and implicit cost.

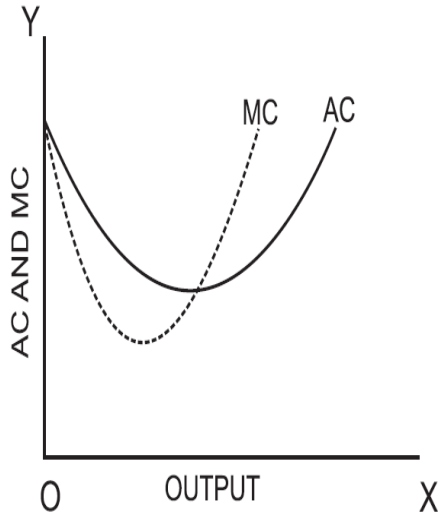
Explicit Cost	Implicit Cost
It includes actual money expenditure incurred by a firm in hiring or buying the factors it needs in the production process	It is not actual money expenditure but is the cost of factors owned by the firm and used by the firm in its production process
It is explicitly shown in the firm's books of accounts and is thus, called accounting costs	It does not enter in the firm's books of accounts
It is a payment concept	It is a receipt concept, i.e., the payments are received by producer for supplied services
Examples: Wages, rent, interest, insurance, etc	Examples: Wages of self labor, rent for self owned premises, etc

31. Define opportunity cost and provide an example.



1. It refers to the **cost of next best alternative use**.
2. In other words, it is the **value of the next best alternative foregone**.
3. For example, **a farmer can cultivate both paddy and sugarcane in a farm land**. If he cultivates paddy, the opportunity cost of paddy output is the amount of sugarcane output given up.
4. Opportunity Cost is also called as **'Alternative Cost' or 'Transfer Cost'.**

32. State the relationship between AC and MC.



- When MC < AC, AC falls
- When MC = AC, AC is constant and at its minimum point
- When MC > AC, AC rises

1. When AC is falling, MC lies below AC.

2. When AC becomes constant, MC also becomes equal to it.

3. When AC starts increasing, MC lies above the AC.

4. MC curve always cuts AC at its minimum point from below.

33. Write a short note on Marginal Revenue.

Marginal cost is the addition made to the total cost by producing one extra unit of output.

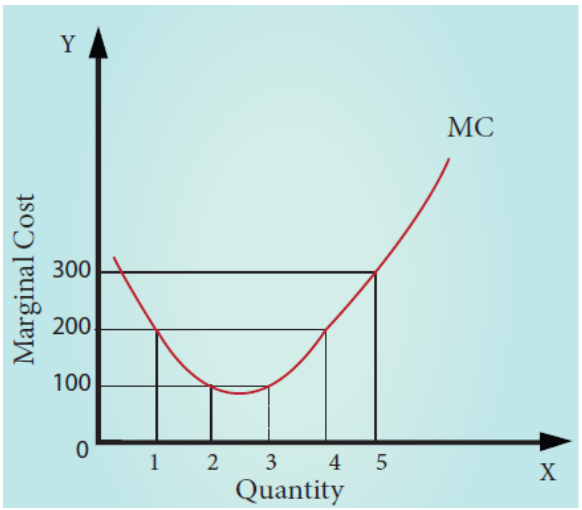
$$MC = \Delta TC / \Delta Q$$

where MC denotes Marginal Cost, ΔTC denotes change in total cost and ΔQ denotes change in total quantity.

The other method of estimating MC is :

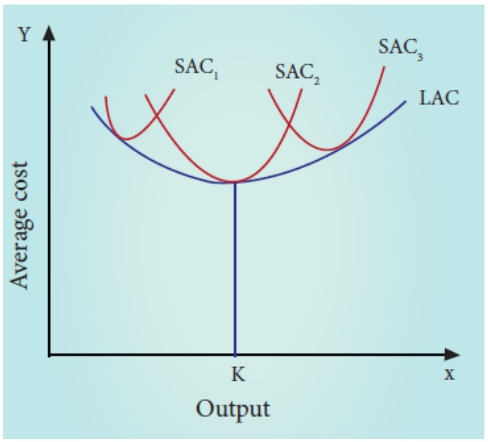
MC=TCn –TCn-1 or***TCn+1 –TCn***

where, 'MC' denotes Marginal Cost, 'TCn' denotes Total cost of 'n'th item, TCn-1 denotes Total Cost of 'n-1' th item, TCn+1 denotes Total Cost of n+1 th item.



34. Discuss the Long run cost curves with suitable diagram.

1. In the long run all factors of production become variable.
2. The existing size of the firm can be increased in the case of long run.
3. There are neither fixed inputs nor fixed costs in the long run.



1. LAC = LTC/Q where, LAC denotes Long-Run Average Cost, LTC denotes Long-run Total Cost and Q denotes the quantity of output.
2. Th e LAC curve is derived from short- run average cost curves.
3. It is the locus of points denoting the least cost curve of producing the corresponding output.

Other names of LAC:

The LAC curve is called as 'Plant Curve' or 'Boat shape Curve' or 'Planning Curve' or 'Envelop Curve'.

Chapter 5

28. What are the features of a market?

1. Buyers and sellers of a commodity or a service

2. A commodity to be bought and sold

3. Price agreeable to buyer and seller

4. Direct or indirect exchange.

29. Specify the nature of entry of competitors in perfect competition and monopoly.

Nature of Entry of competitor	
Perfect Competition	**Monopoly**
It is possible for the very efficient producer, producing the product at a very low cost, to earn super normal profits. Attracted by such a profit, new firms enter into the industry.	There is strict barrier for entry of any new firm; 

30. Describe the degrees of price discrimination.

According to A.C.Pigou, there are three degrees of price discrimination.

(i) First degree price discrimination

A monopolist charges the maximum price that a buyer is willing to pay. Example: Auctions

(ii) Second degree price discrimination

Under this degree, buyers are charged prices in such a way that a part of their consumer's surplus is taken away by the sellers. Example: Cinema theatres .

(iii) Third degree price discrimination

The monopolist splits the entire market into a few sub-market and charges different price in each sub-market. Example : Railways Ticket

31. State the meaning of selling cost with an example.

1. It was Chamberlin who introduced the analysis of selling costs.
2. Selling costs play the key role in monopolistic competition. The firms have to compete to promote their sale by spending on advertisements and publicity.
3. Thus, cost on advertisement publicity and salesmanship ads to the demand of the product.
4. In **selling costs we include** the **salaries of sales persons, allowances to retailers to display the products etc. besides the advertisements. Advertisement expenditure includes costs incurred for advertising in newspapers and magazines, televisions, radio, cinema slides** etc.

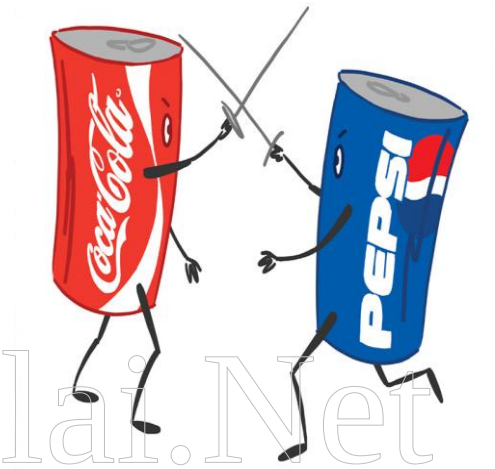
32. Mention the similarities between perfect competition and monopolistic competition.

	Basis of Similarities	Perfect Competition	Monopolistic Competition
1	**Number of Producers/Sellers**	In numerable	Large
2	**Entry / Exit**	Free	Free
3	**Profit**	Abnormal profit in short-run, Normal profit in long-run	Abnormal profit in short-run, Normal profit in long run
4	**Quantity**	Very large	Substantial

33. Differentiate between 'firm' and 'industry'.

	Firm	Industry
Meaning	A firm refers to a single production unit in an industry	An industry refers to a group of firms
Production	Producing a large or a small quantum of a commodity or service	Producing the same product or service in an economy.
Example	A single cement firm	Cement Industry (group of firms producing cement)

34. State the features of duopoly.



1. Each seller is fully aware of his rival's motive and actions.

2. Both sellers may collude (they agree on all matters regarding the sale of the commodity).

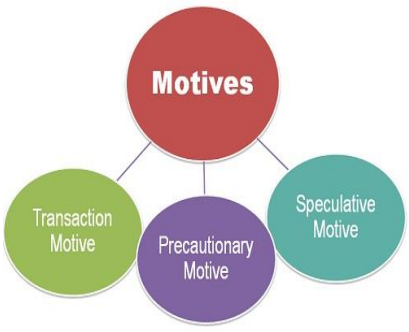
3. They may enter into cut-throat competition.

4. There is no product differentiation.

5. They fix the price for their product with a view to maximising their profit.

Chapter 6

28. What are the motives of demand for money?



1. The Transaction Motive Th e transaction motive relates to the desire of the people to hold cash for the current transactions

Mt = f (y)

2. The Precautionary Motive The precautionary motive relates to the desire of the people to hold cash to meet unexpected or unforeseen expenditures. Mp = f (y)

3. The Speculative Motive The speculative motive relates to the desire of the people to hold cash in order to take advantage of market movements. Ms = f (i).

29. List out the kinds of wages.

1. Nominal Wages or Money Wages.

Nominal wages are referred to the wages paid in terms of money.

2. Real Wages

Real wages are the wages paid in terms of goods and services.

3. Piece Wages

Wages that are paid on the basis of quantum of work done.

4. Time Wages

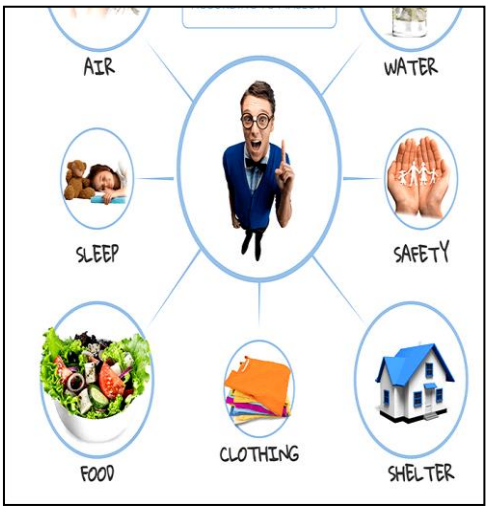
Wages that are paid on the basis of the amount of time.

30. Distinguish between rent and quasi-rent.

Sl. No.	*Rent*	*Quasi-Rent*
1.	Rent accrues to land	Quasi-Rent accrues to manmade appliances.
2.	The supply of land is fixed forever.	The supply of manmade appliances is fixed for a short period only.
3.	It enters into price	It does not enter into price.

31. Briefly explain the Subsistence Theory of Wages.

1. According to this theory, wage must be equal to the subsistence level of the labourer and his family.
2. Subsistence means the minimum amount of food, clothing and shelter which workers and their family require for existence.



3. If workers are paid higher wages than the subsistence level, the workers would be better off and they will have large families.
4. On the other hand, if wages are lower than the subsistence level, there would be a reduction in population

32. State the Dynamic Theory of Profit.

According to J.B Clark profit is the reward for dynamic changes in society. Profit cannot arise in a static (unchanged) society.

The following **five main changes** are taking place in a dynamic society.

1. **Population** is increasing
2. **Volume of Capital** is increasing.
3. **Methods of production** are improving.
4. Forms of **industrial organization** are changing.
5. The wants of **consumer** are multiplying.

33. Describe briefly the Innovation Theory of Profit.

According **Schumpeter profit is the reward for "innovation**". Innovation means **invention put into commercial practice.**

An innovation may consist of the following:

1. Introduction of a **new product**.

2. Introduction of a **new method of production.**

3. Opening up of a **new market.**

4. Discovery of **new raw materials**

5. Reorganization of **an industry / firm.**

34. Write a note on Risk-bearing Theory of Profit.

1. According **to Hawley profit is the reward for "risk taking" in business.** Risk taking is an essential function of the entrepreneur and is the basis of profit.

2. Since the entrepreneur undertakes the risks, he receives profits.

3. If the entrepreneur does not receive the reward, he will not be prepared to undertake the risks. Thus, **higher the risks, the greater are the profit.**

4. It is the profit that induces the entrepreneurs to undertake such risks.

Chapter 7

28. Define Economic Development.

1. The level economic development is indicated not just by GDP, but by an increase in citizens' quality of life or well-being.

2. The quality of life is being assessed by several indices such as Human Development Index (HDI), Physical Quality of Life Index (PQLI) and Gross National Happiness Index (GNHI).

3. On the basis of the level of economic development, nations are classified as developed and developing economies.

29. State Ambedkar's Economic ideas on agricultural economics.

1. In 1918, Ambedkar published a paper "**Small Holding in India and their Remedies".**

2. Citing Adam Smith's 'Wealth of Nations", he made a fine distinction between **"Consolidation of Holdings" and "Enlargement of Holdings".**

3. This paper attempts to **deal with the problem of the size of holding it affects agricultural productivity.**

30. Write on short note on village sarvodhaya.

1. According to Gandhi, "Real India was to be found in villages and not in towns or cities."
2. So he suggested the development of self-sufficient, self-dependent villages.
3. **Sarvodaya** is a Sanskrit term meaning 'universal uplift' or 'progress of all'.
4. The Sarvodaya Movement has as its target the establishment of a whole network of such self-supporting village communities.
5. According to Gandhi, The needs of the village will be determined by the people of the village themselves, through Village Council, representative of the whole village.

31. Write the strategy of Jawaharlal Nehru in India's planning.

1. The Plan was essentially **an integrated approach for development.**

2. The essence **of planning** is to find the best way to utilize all resources of **manpower, of money and so on.**

3. Planning for Nehru was essentially linked up with industrialization
4. Eventual self-reliance for the country's
5. Economic growth on a self- accelerating growth.

32. Write the V.K.R.V.Rao's contribution on multiplier concept.

1. Rao's examination of the **"interrelation between investment, income and multiplier in an under developed economy"** was his major contribution to macroeconomic theory.
2. As a thinker, teacher, economic adviser and direct policy maker, **V.K.R.V. Rao followed the footsteps of his great teacher, John Maynard Keynes.**

3. Dr. Rao argued that whereas **a primary increase in investment would take place**, a subsequent, secondary and tertiary affects through the **expansion of output in the consumption goods sector would not take place**.

5. Consequently, the **multiplier process would not be operation**.

6. Dr. Rao came to the conclusion even that the **money income multiplier would be working but real income multiplier would not be working.**

33. Write a short note on Welfare Economics given by Amartya Sen.

1. Sen's major point has been that the **distribution of income/ consumption among the persons below the poverty line** is to be taken into account.
2. The concept of **capabilities developed by Sen** has been cited as a better index of wellbeing than commodities or utilities.
3. Sen has included the **concept of entitlement items like nutrition, food, medical and health care, employment, security of food supply** in times of famine etc.
4. Sen's 'Choice **of Technique ' was a research work where he argued that in a labour surplus economy,** generation of employment cannot be increased at the initial stage by the adaptation of capital-intensive technique.

34. Explain Social infrastructure.

1. Social infrastructure refers to those structures which are improving the quality of manpower and contribute indirectly towards the growth of an economy.
2. These structures are outside the system of production and distribution.
3. The development of these social structures help in increasing the efficiency and productivity of manpower.
4. For example, schools, colleges, hospitals and other civic amenities.
5. It is a fact that one of the reasons for the low productivity of Indian workers is the lack of development of social infrastructure.

Chapter 8

28. Explain about the Period of Merchant Capital.

1. The period of merchant capital was **from 1757 to 1813.**
2. The only **aim of the East India Company was to earn profit.**
3. **India** had been considered as the best **hunting ground for capital** by EIC
4. The company **administration succeeded in generating huge surpluses** which were repatriated to England.
5. Indian leaders linked this **problem of land revenue with that of the drain**.

29. The Handicrafts declined in India in British Period. Why?

1. Through **discriminatory tariff policy,** the British Government purposefully destroyed the handicrafts.
2. With the **disappearance of nawabs and kings**, there was **no one to protect Indian handicrafts.**
3. Indian **handicraft products could not compete with machine-made products**.
4. The introduction of **railways in India increased the domestic market** for the British goods.

30. Elucidate the different types of land tenure system in colonial India.

1. Zamindari System or the Land lord-Tenant System

Zamindars were declared as the owners of the land and they were responsible to pay the land revenue to the government. The share of the government in total rent collected was fixed at 10/11th, the balance going to the Zamindars as remuneration.

2. Mahalwari System or Communal System of Farming

The ownership of the land was maintained by the collective body usually the villagers which served as a unit of management.

	Permanent Settlement	Ryotwari System	Mahalwari System
Region	Bengal, Bihar Orissa	South India	North West India
Tax Collected by	Zamindars	Company Directly	Village Headman
Land Owner	Zamindars	Farmers	Land Lords
Other Features	✧Tax Burden to Farmers ✧High Tax was Imposed ✧Tax was Increased Frequently		

3. Ryotwari System or the Owner-Cultivator System

Under this system the ownership rights of use and control of land were held by the tiller himself.

31. State the reasons for nationalization of commercial banks.

1. The main objective of nationalization was **to attain social welfare**.

2. Nationalisation of banks helped **to curb private monopolies**

3. Needed **to encourage the banking habit among the rural** population.

4. **To reduce the regional imbalances** where the banking facilities were not available.

5. **Credit facilities mainly to the agriculture sector** and its allied activities

32. Write any three objectives of Industrial Policy 1991.

Industrial Policy upto 1991

The objective of the policy were to :

- Reduce disparities in income and wealth
- Prevent monopolies and concentration of economic power
- Build a large and heavy public sector and manage the same effectively
- Develop heavy and machine making industries
- Accelerate the rate of industrialization and economic growth
- Higher employment generation
- Focus on development of small scale sector
- Optimum utilization of installed capacity
- Rural Industrialization
- Promotion of export oriented units (Industrial Policy

33. Give a note on Twelfth Five Year Plan.

1. Its main theme is “Faster, More Inclusive and Sustainable Growth”.
2. Its growth rate target is 8%.

Major Objectives:

- For growth to be more inclusive we need: Better performance in agriculture
- Faster creation of jobs, especially in manufacturing
- Stronger efforts at health, education and Infrastructure.
- Special plans for disadvantaged/backward regions

34. What is PQLI ?

1. **Morris D Morris** developed the Physical Quality of Life Index (PQLI).
2. The PQLI is a measure to **calculate the quality of life** (well being of a country).
3. For this, he included three indicators such as **life expectancy, infant mortality rate and literacy rate.**
4. A scale of each **indicator ranges from the number 1 to 100.**

Points	PQLI
Meaning	It refers to overall well being of people
Made by	Morris D.Morris in 1979
Based on	PQLI is based on a) Life expectancy indicator b) Infant mortality indicator c) Basic Literacy indicator
Construction	PQLI is constructed on a scale of 1 to 100.Where 2 is worst & 100 is best performance
Formula	$PQLI = \frac{L.E.I+I.M.I+B.L.I}{3}$

Chapter 9

28. How do you justify the merits of Privatisation?

1.Helps in reducing the burden on government.

2.Makes the public sector units competative.

3.Greater automomy for public sector units.

4.Industrial growth.

5. Better service to customers.

29. What are the measures taken towards Globalization?

"Globalization refers to the integration of the domestic (Indian) economy with the rest of the world"

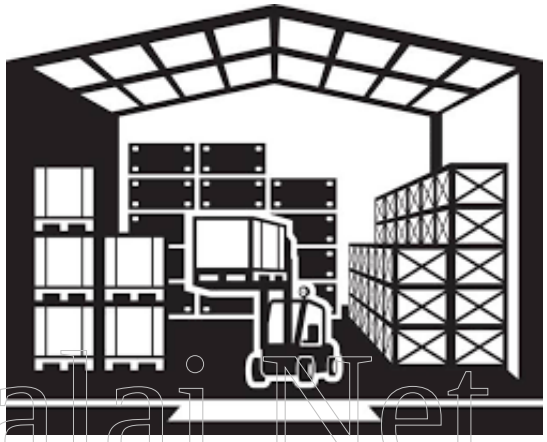
Measures of globalization

1. Import liberalization through reduction of tariff and non-tariff barriers,
2. opening the doors to Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI) are some of the measures towards globalization.
3. The economic activity of multinational firms and the internationalisation of technology.

30. Write a note on Foreign investment policy?

1. Red carpet welcome to foreign investment and foreign technology
2. Enhanced the industrial competition and improved business, including FDI and FPI were allowed
3. Automatic permission was granted for a specified list of high-technology and high-investment priority industries

31. Give short note on Cold storage.



1. India is **the largest producer of fruits and second largest producer of vegetables in the world.**
2. Most of the problems relating to the marketing of **fruits and vegetables can be traced to their perishability.**
3. Perishability is responsible for **high marketing costs, market gluts, price fluctuations** and other similar problems.
4. In order to overcome this constraint, the Government of India and the Ministry of Agriculture promulgated an order known as **"Cold Storage Order, 1964**"

32. Mention the functions of APMC.

1. To promote public private partnership in the ambit of agricultural markets.

2. To provide market led extension services to farmer.

3. To bring transparency in pricing system and transactions taking place in a transparent manner.

4. To ensure payments to farmers for the sale of agricultural produce on same day.

5. To promote agricultural activities.

6. To display data on arrivals and rates of agricultural produce from time to time into the market.

33. List out the features of new trade policy.

1. **Free imports and exports:** Prior to 1991, in India imports were regulated. From 1992, imports were regulated by a limited negative list.
2. **Rationalization of tariff structure and removal of quantitative restrictions**

- Free imports and Exports
- Rationalization of tariff structure/reducing tariffs.
- Liberalization of the exchange rate regime.
- Setting up of trading houses, SEZ's and Export promotion industrial parks.
- Various exemptions under the EXIM policies to boost exports and imports and make the trade policy regime transparent and less cumbersome.

34. What is GST? Write its advantages.

"Goods and Services Tax (GST) is defined as the tax levied when a consumer buys a good or service"

1. It is proposed to be a comprehensive indirect tax levied on manufacture, sale and consumption of goods as well as services.
2. The Act came into effect on 1st July 2017.*The motto is one nation, one market, one tax.*

Advantages

1. Removing cascading tax effect
2. Single point tax
3. Higher threshold for registration
4. Composition scheme for small business
5. Online simpler procedure under GST
6. Defined treatment for e-ecommerce
7. Increased efficiency in logistics
8. Regulating the unorganized sector

Chapter 10

31. State the importance of Rural Development.

1. A major share of population contributions are very much supportive for the **nation building activities.**

2. The rural economy **supports the urban sectors**

3. Improvements in education, health and sanitation in **villages can help avoid many urban problems**

4. **providing gainful employment** in rural areas and improving overall food production.

5. rural-urban **migration can be reduced**

6. To better **utilise the unused and under-utilised resources**

7. To improve the nation's status in the global arena (level).

32. Explain the causes for Rural Backwardness.

1. The distribution of land is **highly skewed in rural areas.**

2. **Non-farm employment opportunities do not match the increasing labour** force.

3. Lack of public sector investment on human resource development.

4. Steady **increase in prices** affects the purchasing power

5. **Low productivity of rural labour**

6. Due to **defective economic structure and policies**, gains of growth are not reaching the poor

7. **The poor are always denied of the benefits**

33. Enumerate the remedial measures to Rural Poverty.

Poverty alleviation schemes and programmes have been implemented as remedial measures to Rural Poverty as follow,

Poverty Eradication Schemes	
Schemes	Year of launch
20 Point Programme	1975
Integrated Rural development Programme(IRDP)	1976
Training Rural Youths for Self-Employment (TRYSEM)	1979
Food for Work Programme (FWP)	1977
National Rural Employment Programme (NREP)	1980
Rural Landless Employment Guarantee Programme(RLEGP)	1983
Jawahar Rozgar Yojana(JRY)	1989
Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	2006

34. What are the remedial measures for Rural Unemployment?

1. To reduce the seasonal unemployment rural people should be **encouraged to adopt subsidiary occupations.**

2. Rural Works Programme such as **construction and maintenance of roads, digging of drains, canals, etc**

3.The **increased cropping intensity creates** additional demand for labour.

4.To provide employment **new industries should be set up in rural areas.**

5. **Employment oriented courses should be introduced** in schools and colleges

35. Write a note on Regional Rural Banks.

1. Regional Rural Banks came into existence in 1975.
2. At present, there are 64 Regional Rural Banks in India.
3. To develop rural economy by providing credit and,
4. Other facilities particularly to the small and marginal farmers, agricultural labourers, artisans and small entrepreneurs

36. Mention the features of SHGs.

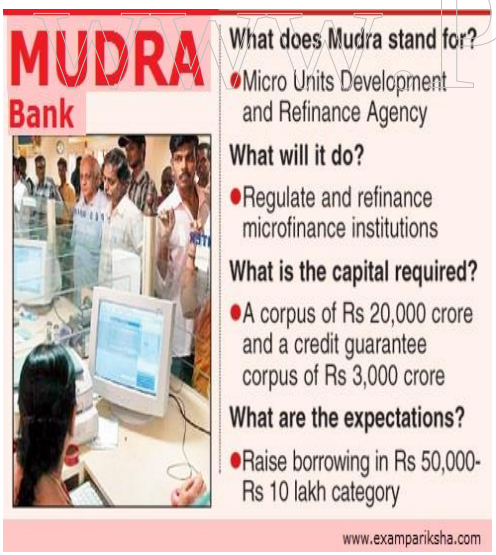
1. SHG is generally an economically homogeneous group formed through a process of self-selection based upon the affinity of its members.

2. Most SHGs are women's groups with membership ranging between 10 and 20.

3. SHGs have well-defined rules and by-laws, hold regular meetings and maintain records and savings and credit discipline.

4. SHGs are self-managed institutions characterized by participatory and collective decision making.

37. List out the objectives of MUDRA Bank.



1. Regulate the lender and the borrower of microfinance

2. bring stability to the microfinance system .

3. lend money to small businesses, retailers, self-help groups and individuals.

4. introduce a system of performance rating and accreditation for the first time.

5. providing guarantees to loans being offered to micro businesses.

6. . Introduce appropriate technologies credit management.

Chapter 11

28. Write a note on mineral resources in Tamil Nadu.

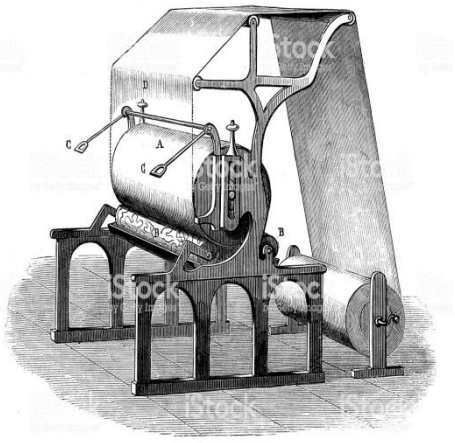
1. Tamil Nadu has a few mining projects based on Titanium, Lignite, Magnesite, Graphite, Limestone, Granite and Bauxite.
2. The first one is the Neyveli Lignite Corporation that has led development of large industrial complex around Neyveli in Cuddalore district with Thermal power plants, Fertilizer and Carbonisation plants.

3. Magnesite mining is at Salem from which mining of Bauxite ores are carried out at Yercaud and this region is also rich in Iron Ore at Kanjamalai.
4. Molybdenum is found in Dharmapuri, and is the only source in the country.

29. Explain GSDP in Tamil Nadu.

1. Tamil Nadu is the second largest economy in India with a GSDP of $ 207.8 billion in 2016-17 according to the Directorate of Economics and Statistics, Tamil Nadu.
2. The GSDP of Tamil Nadu is equal to the GDP of Kuwait on nominalterm and GDP of UAE on PPP terms.
3. The GSDP of Tamil Nadu is far higher compared to many countries as shown below. This is mainly due to population effect.
4. Per capita GSDP would be better for intercountry or interstate comparisons. Tamil Nadu may go below if per capita GSDP is considered for comparison.

30. Describe development of textile industry in Tamil Nadu.



1. Tamil Nadu is the largest textile hub of India.
2. Tamil Nadu is known as the "***Yarn Bowl***" of the country accounting for 41% of India's cotton yarn production.
3. Employment to an estimated 35 million people
4. The textile sector contributes to 14% of the manufacturing sector.
5. About half of India's total spinning mill capacity is in Tamil Nadu.
6. Tirupur known as "**Knitting City**" is the exporter of garments worth USD 3 Billion.
7. Erode is the main cloth market in South India for both retail and wholesale ready-mades.

31. Compare productivity of any two food crops between Tamil Nadu and India.

1. The Government of Tamil Nadu lays emphasis on agricultural production and productivity.
2. As a result, Tamil Nadu tops in productivity, in food crops as well as non-food crops, among the States in India.

Table 11.8 Productivity Position of Tamil Nadu

Crop	Position of Tamil Nadu at National Level
Maize	1
Cumbu	1
Groundnut	1
Total Oilseeds	1
Cotton	1
Coconut	2
Rice	2

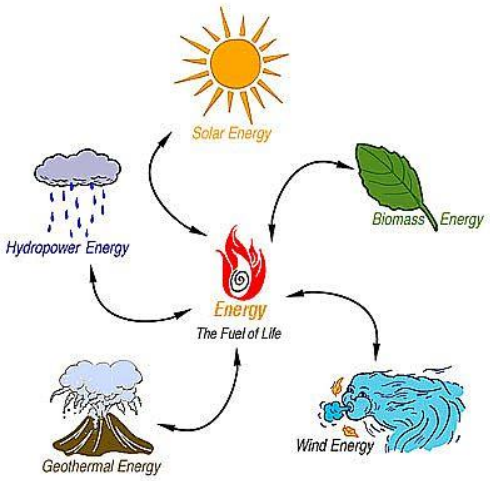
32. Explain the prospect for development of tourism.

1. Tamil Nadu has since ancient past been a hub for tourism. In recent years, the state has emerged as one of the leading tourist destinations for both domestic and foreign tourists.

2. The State currently ranks the highest among Indian States with about 25 crore arrivals

3. Approximately 28 lakh foreign and 11 crore domestic tourists visit the State.

33. What are the renewable sources of power in Tamil Nadu?



1. **Hydel Energy**

   There are about 20 hydro electric units in Tamil Nadu. The prominent units are Hundah, Mettur, Periyar, Maravakandy, Parson Valley etc.

2. **Solar Energy**

   Southern Tamil Nadu is considered as one of the most suitable regions in the country for developing solar power projects.

3. **Wind Energy**

   Tamil Nadu has the highest installed wind energy capacity in India. The State has very high quality of off shore wind energy potential off the Tirunelveli coast and southern Thoothukudi and Rameswaram coast.

34. Describe the performance of Tamil Nadu economy in health.

1. Tamil Nadu has a three – tier health infrastructure comprising hospitals, primary health centres, health units, community health centres and sub-centres.

2. As of March 2015, the State had 34 district hospitals, 229 sub-divisional hospitals, 1,254 primary health centres, 7,555 Sub-centres and 313 community health centres.

Chapter 12 (Answers are given at the last of this material)

1. Illustrate the uses of Mathematical Methodsm in Economics.

2. Solve for x quantity demanded *if* 16*x* − 4 = 68 + 7*x*. (Ans: x is 8)

3. A firm has the revenue function R = 600q - 0.03q2 and the cost function is C = 150q + 60,000, where q is the number of units produced. Find AR, AC, MR and MC. (Answersa:AR = 600 - 0.03q ; MR = 600 - 0.06 q; AC = 150 + (60000/q))

4. Solve the following linear equations by using Cramer's rule.

x1 - x2 + x3 = 2: x1 + x2- x3 = 0 : -x1- x2 - x3 = -6

5. If a firm faces the total cost function TC = 5+ *x*2 where *x* is output, what is TC when *x* is 10?

6. If TC = 2.5*q*3− 13*q*2+ 50*q* + 12 derive the MC function and AC function.

7. What are the steps involved in executing a MS Excel Sheet?

PART D : 5 MARK QUESTIONS AND ANSWERS

Chapter 1

35. Compare and contrast various definitions of Economics.

PART I	Wealth Definition	Welfare Definition
Author	Adam Smith	Alfred Marshal
Year	1776	1890
"Definition"	**"Economics as the science of wealth"**	**"Economics is a study of mankind in the ordinary business of life"**
Key Concepts	1. Individual in the society wants to promote his own gain and in this process 2. Man is guided and led by an "invisible hand". 3. It means that each person works for his own good.	1. Economics studies on one side a study of wealth, on the other, and more important side, a part of the study of man 2. Man promotes primarily welfare and not wealth. 3. Economics contains the concerns of ordinary people.
Criticisms	1. Economics as a 'dismal science', "pig science" etc. 2. As it teaches selfishness which is against ethics.	1. Does not consider immaterial things, 2. Welfare varies from person to person, country to country and one period to another.

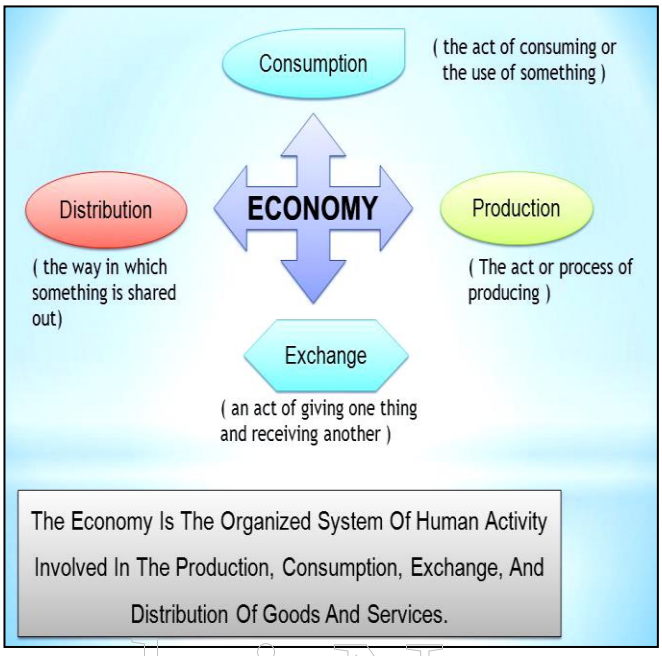
PART II	Scarcity Definition	Growth Definition
Author	Lionel Robbins	Paul Samuelson
Year	1932	1948
"Definition"	**"Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses".**	**"Economics is the study of how men and society choose, with or without the use of money, to produce various commodities over time, and distribute them for consumption, now and in the future"**
Key Concepts	1. Human beings have unlimited wants 2. Resources are limited or scarce. 3. the scarce means are capable of having alternative uses.	1. Samuelson makes his definition dynamic. 2. Covers various aspects like production, distribution and consumption.
Criticisms	1. Does not make any distinction between goods conducive to human welfare and goods that are not	1. Samuelson's definition is applicable also in a barter economy, where money is not used.

36. Explain various divisions of Economics.

Economics has been divided into some branches.

5. **Consumption**

   Human wants coming under consumption is the starting point of economic activity.



6. **Production**

   Production is the process of transformation of inputs into output. the factors of production namely Land, Labour, Capital and Organization.

7. **Exchange**

   Exchange is concerned with price determination in different market forms. This division covers trade and commerce.

8. **Distribution**

   Production is the result of the coordination of factors of production. The reward for factors of production is studied in this division under rent, wages, interest and profit. Distribution studies about the pricing of factors of production.

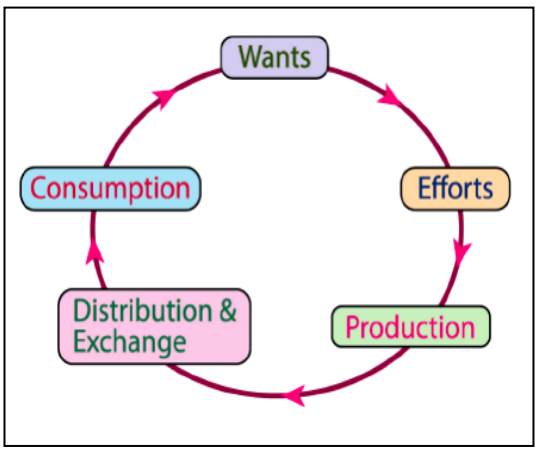
37. Elaborate the nature and scope of Economics.

I. Nature of Economics:

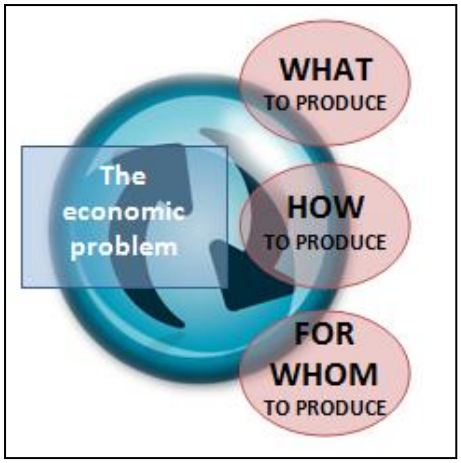
1. A Law **expresses a causal relation between two or more** than two phenomena.
2. Marshall states that the Economic **laws are statement of tendencies** the laws function with cause and effect.
3. Economic **laws are not as precise and certain**
4. Economic **laws are not inviolable**
5. The use of the **assumption 'other things remaining the same'**
6. Economics makes the **Economic laws hypothetical**.
7. Laws in economics are **more exact, precise and accurate** than the other social sciences.
8. Some economic **laws are simply truisms**.

II. The scope of the subject of Economics refers to on the subject-matter of Economics.

1. All human activities related to wealth constitute the subject-matter of Economics.
2. Production, consumption and capital formation are called the basic economic activities of an economy.
3. The flow chart give the scope of economics.
4. Economics focuses on the behaviour and interactions among economic agents, individuals and groups belonging to an economic system.
5. Human activities not related to wealth (non-economic activities) are not treated in Economics. For example, playing cricket for pleasure, mother's child care.



38. Explain basic problems of the economy with the help of production possibility curve.



Production Possibility Curve

Meaning

Production possibility curve shows the menu of choice along which a society can choose to substitute one good for another.

- Choice between relatively scarce commodities due to limited productive resources with the help of **a "Geometric Device" (that is production possibility curve**)

Assumptions

(i) The time period does not change.

(ii) Techniques of production are fixed.

(iii) There is full employment in the economy.

(iv) Only two goods can be produced from the given resources.

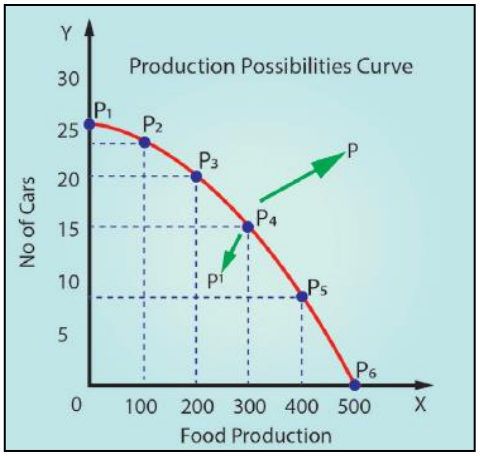
(v) Resources of production are fully mobile.

Production possibilities schedule

Production possibilities	Quantity of food production in tons	No of car production
I	0	25
II	100	23
III	200	20
IV	300	15
V	400	8
VI	500	0

Explanation

1. The quantity of food is shown on x-axis and the number of cars is shown on y-axis
2. The different six production possibilities are being shown as point P1 P2 P3 P4 P5 & P6.
3. A maximum of 500 tons of food can be produced, given the existing technology.
4. If on the other hand, all resources are instead used for producing cars, 25 cars can be produced.
5. In between these two extremes, possibilities exist.
6. If we are willing to give up some food, we can have some cars.



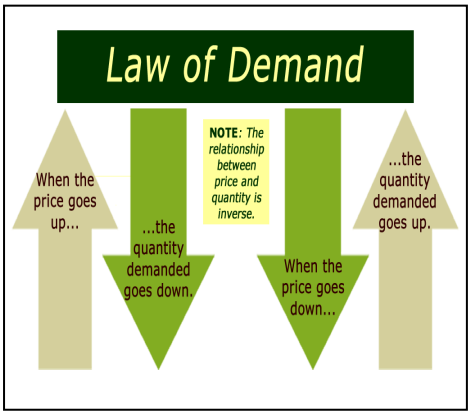
Chapter 2

34. Explain the law of demand and its exceptions.

Definition

According to Alfred Marshall, The Law of Demand said as "the quantity demanded increases with a fall in price and diminishes with a rise in price".

Assumptions of Law of Demand



1. The income of the consumer remains constant.

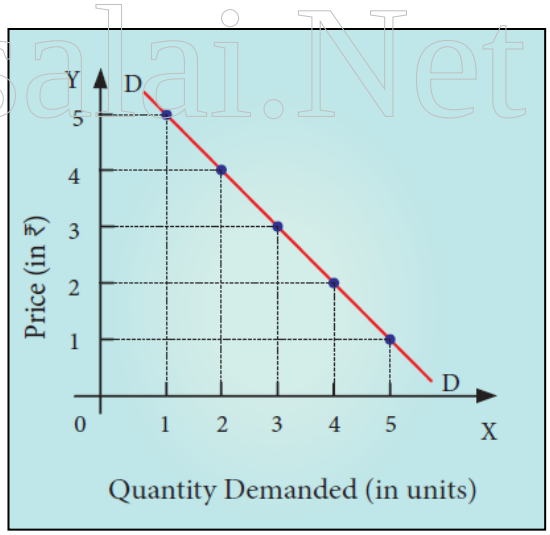
2. The taste, habit and preference of the consumer remain the same.

3. The prices of other related goods should not change.

4. There should be no substitutes for the commodity in study.

Table 2.4 Demand Schedule

Price	Quantity Demanded
5	1
4	2
3	3
2	4
1	5



Explanation

1. Quantity demanded and Y axis represents the price of the commodity.
2. DD is the demand curve, which has a negative slope.
3. Slope downward from left to right which indicates that when price falls, the demand expands and when price rises, the demand contracts.

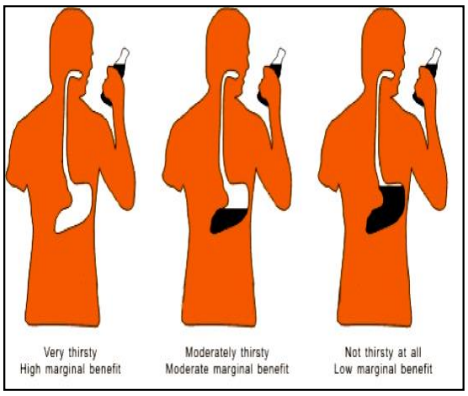
Conclusion

Therefore, the law of demand states that **there is an inverse relationship between the price and the quantity demanded** of a commodity.

35. Elucidate the law of diminishing marginal utility with diagram.

Definition

Marshall states the law as, "the additional benefit which a person derives from a given increase of his stock of a thing, diminishes with every increase in the stock that he already has".



Assumption

1. Utility can be measured by cardinal number (Eg:1,2, 3..)

2. The marginal utility of money remains constant.

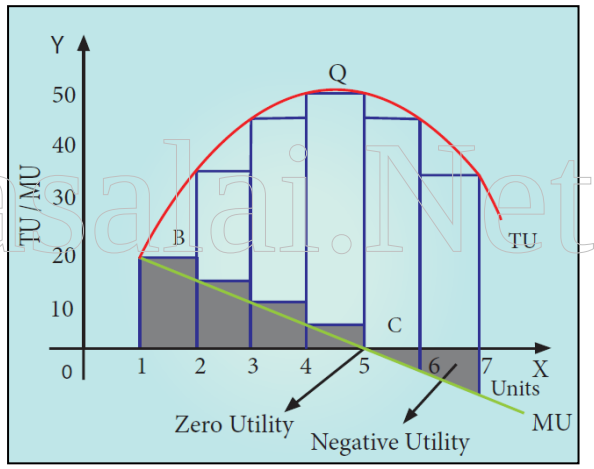
3. The consumer should be a rational consumer

4. The units of the commodity must be reasonable in size.

5. The commodity consumed should be homogeneous

Table 2.1 The Law of Diminishing Marginal Utility

Units of Apple	Total Utility	Marginal Utility
1	20	20
2	35	15 (35-20)
3	45	10 (45-35)
4	50	5 (50-45)
5	50	0 (50-50)
6	45	-5 (45-50)
7	35	-10(35-45)



Explanation

1. Suppose a consumer wants to consume 7 apples one after another.

2. The utility from the first apple is 20. But the utility from the second apple will be less than that of the first (say 15), the third less than that of the second (say 10) and so on.

3. Finally, the utility from the fifth apple becomes zero and the utilities from sixth and seventh apples are negative.

Criticisms

1. Utility cannot be measured numerically.

2. This law is based on the unrealistic assumptions.

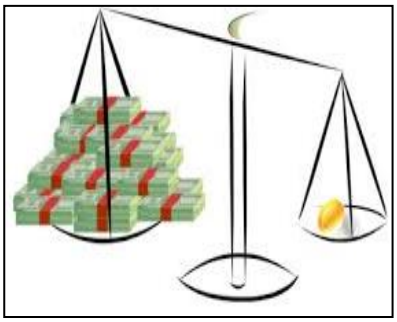
3. This law is not applicable

36. Explain the law of Equi-marginal utility.

Meaning

The law of equi-marginal utility states that the consumer will distribute his money income between the goods in such a way that the utility derived from the last rupee spend on each good is equal.

- In other words, consumer is in equilibrium position when marginal utility of money expenditure on each goods is the same.



$$\text{Equi-marginal} = \frac{MU_A}{P_A} = \frac{MU_O}{P_O} = K$$

Assumption

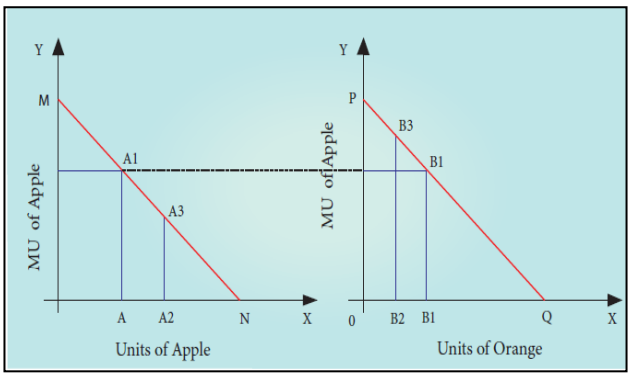
1. The consumer is rational in the sense that he wants to get maximum satisfaction.

2. The utility of each commodity is measurable in cardinal numbers.

3. The marginal utility of money remains constant.

The Law of Equi-Marginal Utility

Units of Commo-dities	Apple		Orange	
	Total Utility	Marginal Utility	Total Utility	Marginal Utility
1.	25	25	30	30
2.	45	20	41	11
3.	63	18	49	8
4.	78	15	54	5
5.	88	10	58	4
6.	92	4	61	3



Explanation

1. X axis represents the amount of money spent and Y axis represents the marginal utilities of Apple and Orange respectively.
2. If the consumer spends ₹6 on Apple and ₹5 on Orange, the marginal utilities of both are equal i.e.,AA**1**=BB**1** (4=4).
3. Hence, he gets maximum utility.

37. What are the methods of measuring Elasticity of demand?

Methods of measuring Elasticity of Demand:

1. The Percentage Method
2. Total Outlay Method
3. Point or Geometrical Elasticity

1. The Percentage Method

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

It is also known as ratio method, when we measure the ratio as:

$$e_p = \frac{\%\Delta Q}{\%\Delta P} \text{ where,}$$

$\%\Delta Q$= percentage change in demand

$\%\Delta P$ = Percentage change in price

2. Total Outlay Method

This examines the change in total outlay of the consumer or total revenue of the firm.

Table 2.6 Total Outlay Method

Price	Quantity Demanded	Total Outlay	Elasticity
150	3	450	e > 1
125	4	500	e = 1
100	5	500	e <1
75	6	450	

Total Revenue = (Price x Quantity Sold)

TR = (P x Q)

3. Point or Geometrical Elasticity

The point elasticity of a linear demand curve is shown by the ratio of the segments of the line to the right and to the left of the particular point.

$$\text{Point Elasticity} = \frac{\text{Lower segment of the demand curve below the given point}}{\text{Upper segment of the demand curve above the given point}}$$

Ep = L / U

Where '**ep**' stands for point elasticity, 'L' stands for the lower segment and 'U' for the upper segment.

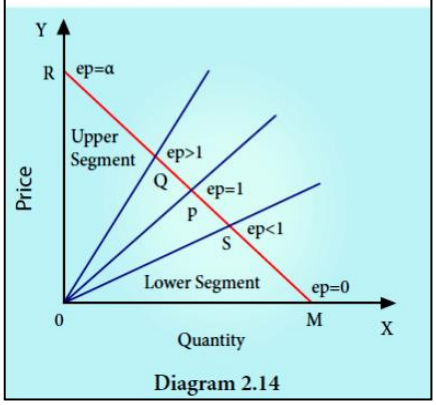


Diagram 2.14

Chapter 3

35. Examine the Law of Variable Proportions with the help of a diagram.

Definition

According to G.Stigler, "As equal increments of one input are added, the inputs of other productive services being held constant, beyond a certain point, the resulting increments of product will decrease, i.e., the marginal product will diminish".

Meaning

The law of variable proportions states that as the quantity of one factor is increased, keeping the other factors fixed, the marginal product of that factor will eventually decline.

Assumptions

1. Only one factor is variable while others are held constant.
2. All units of the variable factor are homogeneous.
3. The product is measured in physical units.

Total Product (TP)

It refers to the total amount of commodity produced by the combination of all inputs

$$TP = \Sigma MP$$

Average Product (AP)

It is the result of the total product divided by the total units of the input employed.

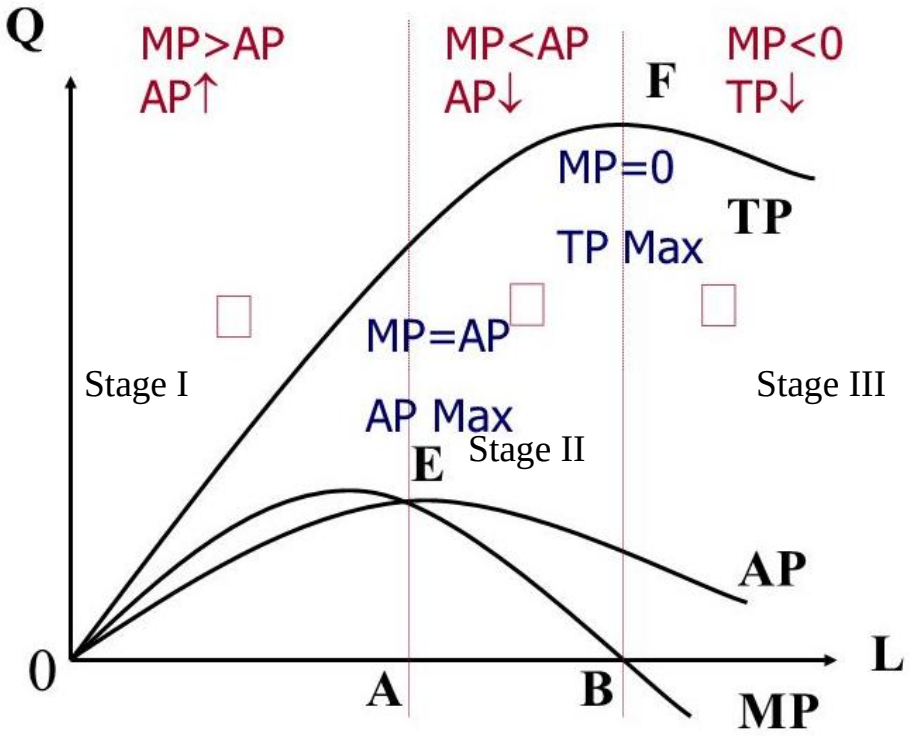
$$AP = TP/N$$

Marginal Product (MP)

It is the addition or the increment made to the total product

$$MP = \Delta TP/\Delta N \quad \text{(or)}$$

$$MP = TP\ (n) - TP\ (n-1)$$



In diagram, the number of workers is measured on X axis while TP, AP and MP are denoted on Y axis. The diagram explains the three stages of production as given in the below table.

Stages	TP	MP	AP
Stage I	increases at an increasing rate	beginning it increases, reaches a maximum and starts to decrease	increases, then attains maximum
Stage II	increase at a diminishing rate and reaches maximum	diminish and becomes equal to zero	equal to MP and then begins to diminish
Stage III	Diminishes	becomes negative	continues to diminish but always greater than zero

36. List out the properties of iso-quants with the help of diagrams.

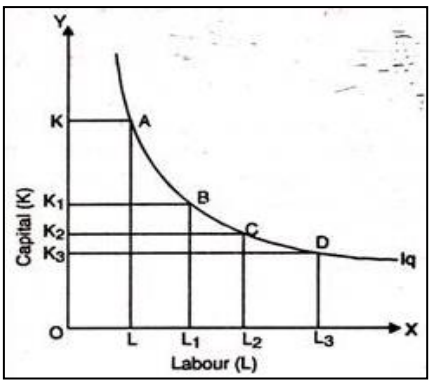
Meaning

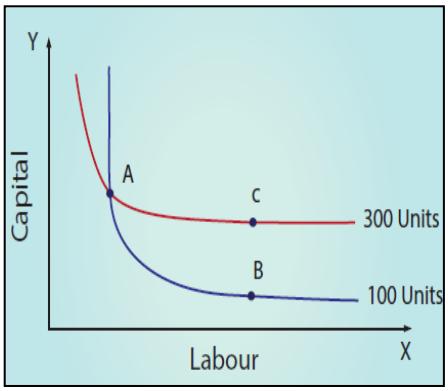
An iso-quant curve can be defined as the **locus of points representing various combinations of two inputs capital and labour yielding the same output.**

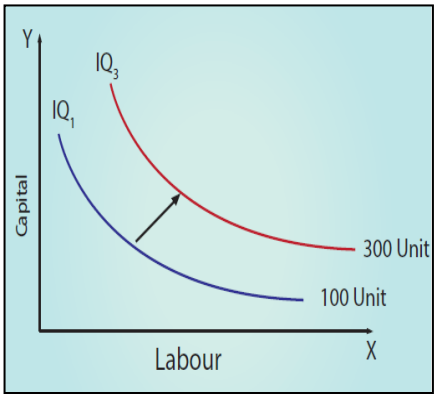
The iso-quant is also called as the **"Equal Product Curve"** or the **"Product Indifference Curve"**

Properties of Iso-quant Curve

1. The iso-quant curve has negative slope.
2. Convex to the origin.
3. Non inter-section of Iso-quant curves.
4. An upper iso-quant curve represents a higher level of output.
5. Iso-quant curve does not touch either X axis or Y axis.







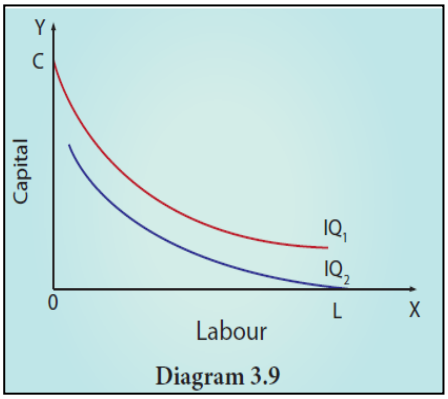


Diagram 3.9

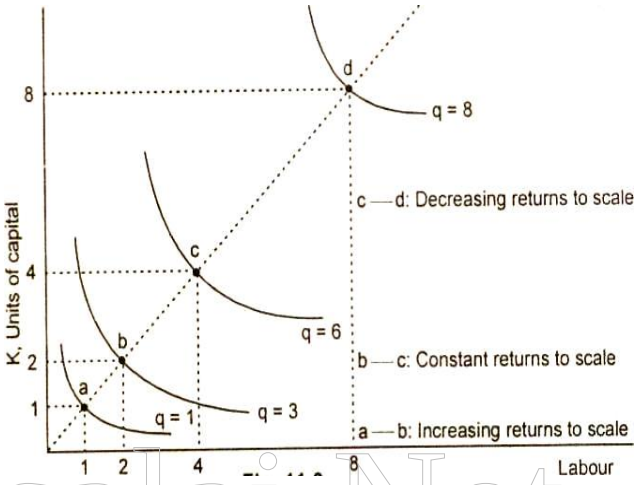
37. Elucidate the Laws of Returns to Scale. Illustrate.

Meaning

The laws of returns to scale explain the relationship between output and the scale of inputs in the long-run when all the inputs are increased in the same proportion.

Assumption

1. All the factors of production are variable but organization is fixed.
2. There is no change in technology.
3. There is perfect competition in the market.
4. Outputs or returns are measured in physical quantities.



Three Phases of Returns to Scale

(1) Increasing Returns to Scale:

(2) Constant Returns to Scale:

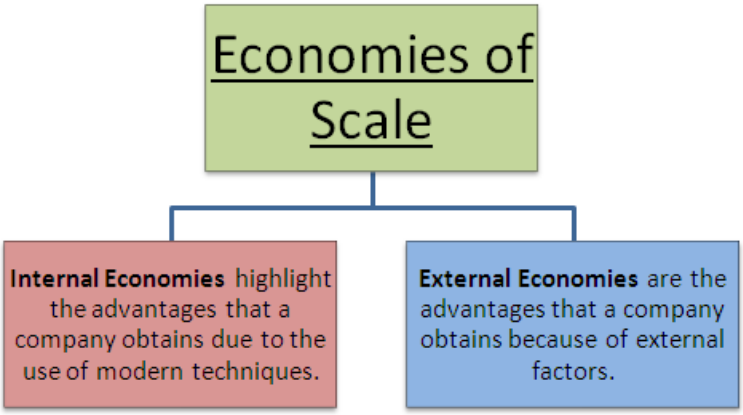
(3) Diminishing Returns to Scale:

Stages	Input	Output	Returns to Scale
a to b	100% ↑	200% ↑	Increasing
b to c	100% ↑	100% ↑	Constant
c to d	100% ↑	33.33% ↑	Decreasing

Explanation

1. In the the movement from point **a to point b** represents increasing returns to scale.
2. The law of constant returns to scale is implied by the movement from the point ***b*** to point ***c***.
3. Decreasing returns to scale are denoted by the movement from the point **c** to point **d.**

38. Explain the internal and external economies of scale.



	Internal Economies	External Economies
1	**Technical Economies:** There is a possibility to introduce up-to-date technologies	**1**. Increased transport facilities
2	**Financial Economies:** Big firms can float shares in the market for capital expansion,	**2.** Banking facilities
3	**Managerial Economies:** Large scale production facilitates specialisation and delegation.	**3.** Development of townships
4	**Labour Economies:** Large scale production implies greater and minute division of labour.	**4.** Development of information and communication
5	**Marketing Economies:** The producers can both buy raw-materials in bulk at cheaper cost and can take the products to distant markets.	5. Expansion of the Plant size

Chapter 4

35. If total cost = 10+Q3, find out AC, AVC, TFC, AFC when Q=5.

35. If total cost = $10 + Q^3$, find out AC, AVC, TFC, AFC when Q = 5.

Ans:

$$TC = TFC + TVC$$

$$AVC = \frac{TVC}{Q}$$

$$AFC = \frac{TFC}{Q}$$

$$AC = \frac{TC}{Q}$$

i) $TC = 10 + Q^3$. Total cost has two components TFC and TVC.

ii) TFC = is the total fixed cost which does not change with the level of output.

iii) It is determined by putting the value of Q.

iv) Given the total cost function

$$TC = 10 + Q^3$$

Q = units of output where Q = 5

Here TFC = 10 (TFC will not change when output changes)

$$TC = 10 + (5)^3$$

$$TC = 10 + 125$$

$$TC = 135$$

$$\therefore 135 = 10 + TVC$$

$$135 - 10 = TVC$$

$$\mathbf{125 = TVC}$$

TVC = 125, TC = 135 $\therefore$ TFC = ?

$$TC = (TFC + TVC)$$

$$135 = x + 125$$

$$135 - 125 = 10$$

$\therefore$ **TFC = 10**

$$AFC = \frac{TFC}{Q} \qquad TFC = 10, Q = 5$$

$$AFC = \frac{10}{5} = 2$$

AFC = 2

$$AVC = \frac{TVC}{Q} \qquad TVC = 125, Q = 5$$

$$AVC = \frac{125}{5} = 5$$

AVC = 25

$$AC = \frac{TC}{Q} \qquad TC = 135, Q = 5$$

$$AC = \frac{135}{5} = 27$$

[or]

$$AC = AFC + AVC$$

$$AC = 2 + 25$$

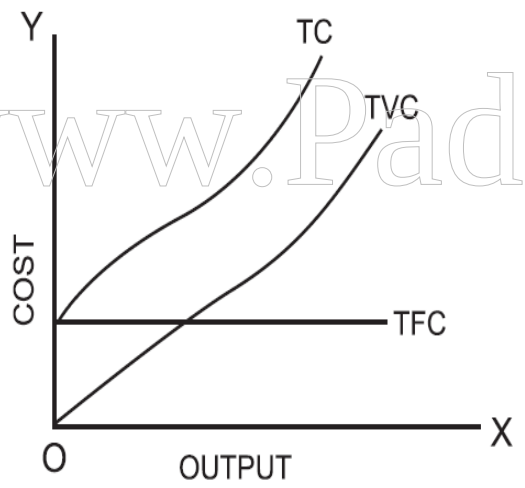
AC = 27.

36. Discuss the short run cost curves with suitable diagram.

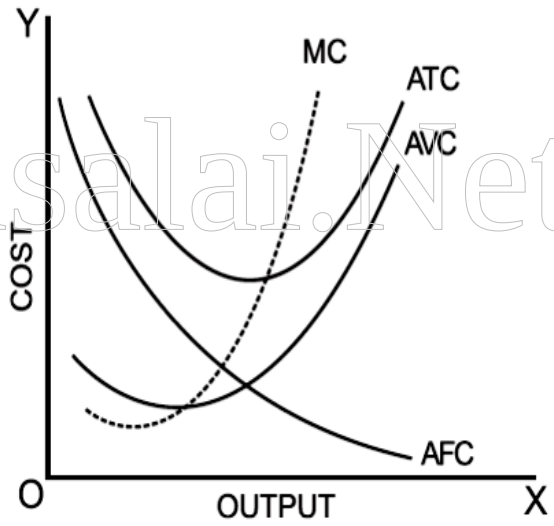
Short run cost curves:

1. **TFC** - Total Fixed Cost Curve
2. **TVC** - Total Variable Cost Curve
3. **TC** - Total Cost Curve
4. **AFC** - Average Fixed Cost Curve
5. **AVC** - Average Variable Cost Curve
6. **AC OR ATC** - Average Cost or Average Total Cost
7. **MC** - Marginal Cost

Total Cost Curves



Short run average cost curves



Total cost

Total cost is the sum of total fixed cost and total variable cost.

$$TC = TFC + TVC,$$ where

TC = Total cost

TFC = Total Fixed cost (cost of fixed factors)

TVC = Total variable cost (Cost of Variable Factors)

Short run average cost curves

Average Fixed Cost (AFC)

The average fixed cost is the fixed cost per unit of output. It is obtained by dividing the total fixed cost by the number of units of the commodity produced.

$$AFC = TFC / Q$$

Average Variable cost (AVC)

Average variable cost is the variable cost per unit of output. It is the total variable cost divided by the number of units of output produced.

$$AVC = TVC / Q$$

Average Total Cost or Average Cost

Average total cost is simply called average cost which is the total cost divided by the number of units of output produced.

$$AC = TC / Q \text{ (or)}$$
$$AC = AFC+AVC$$

Marginal Cost

Marginal cost is defined as the addition made to the total cost by the production of one additional unit of output.

$$MCn = TCn – TCn\text{-}1$$

37. Bring out the relationship between AR and MR curves under various price conditions.

Average Revenue

Average revenue is the revenue per unit of the commodity sold. It is calculated by dividing the total revenue by the number of units sold.

$$AR = TR / Q$$

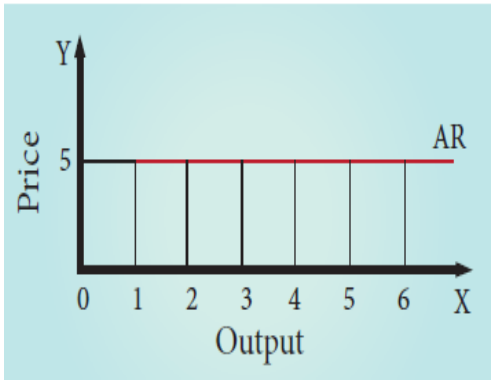
Marginal Revenue

Marginal Revenue is the addition made to the total revenue by selling one more unit of a commodity.

$$MRn = TRn – TRn\text{-}1$$

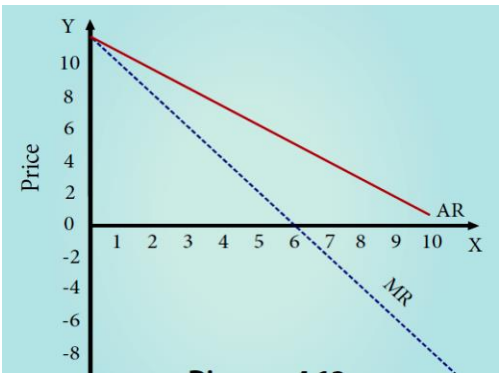
Constant AR and MR (at Fixed Price)

Quantity Sold (Q)	Price (P) ₹	Total Revenue (TR) ₹	Average Revenue (AR) ₹	Marginal Revenue (MR) ₹
1	5	5	5	5
2	5	10	5	5
3	5	15	5	5
4	5	20	5	5
5	5	25	5	5
6	5	30	5	5



Declining AR and MR (at declining Price)

Quantity Sold (Q)	Price (P)/ Average Revenue (AR) ₹	Total Revenue (TR) ₹	Marginal Revenue (MR) ₹
1	10	10	-
2	9	18	8
3	8	24	6
4	7	28	4
5	6	30	2
6	5	30	0
7	4	28	-2
8	3	24	-4
9	2	18	-6
10	1	10	-8



Explanation

1. If a firm is able to sell additional units at the same price then AR and MR will be constant and equal.
2. If the firm is able to sell additional units only by reducing the price, then both AR and MR will fall and be different.

Chapter 5

35. Bring out the features of perfect competition.

Meaning of Perfect Competition

Perfect Competition market is that type of market in which the number of buyers and sellers is very large, all are engaged in buying and selling a homogenous product at uniform price.

Features

1. Large Number of Buyers and Sellers

The term, 'large number of sellers' implies that share of each individual seller is a very, very small quantum of a product.

2. Homogeneous Product and Uniform Price

All the units of the product are identical (ie) of the same size, shape, colour, quality etc. Therefore, a uniform price prevails in the market.

3. Free Entry and Exit

Efficient producer producing the product at a very low cost, to earn super normal profits. Attracted by such a profit, new firms enter into the industry.

4. Absence Of Transport Cost

The prevalence of the uniform price is also due to the absence of the transport cost.

5. **Perfect Mobility of Factors of Production**

As they enjoy perfect freedom to move from one place to another and from one occupation to another, the price gets adjusted.

6. **Perfect Knowledge of the Market**

All buyers and sellers have a thorough knowledge of the quality of the product, prevailing price etc.

7. **No Government Intervention**

There is no government regulation on supply of raw materials, and in the determination of price etc.

36. How price and output are determined under the perfect competition?

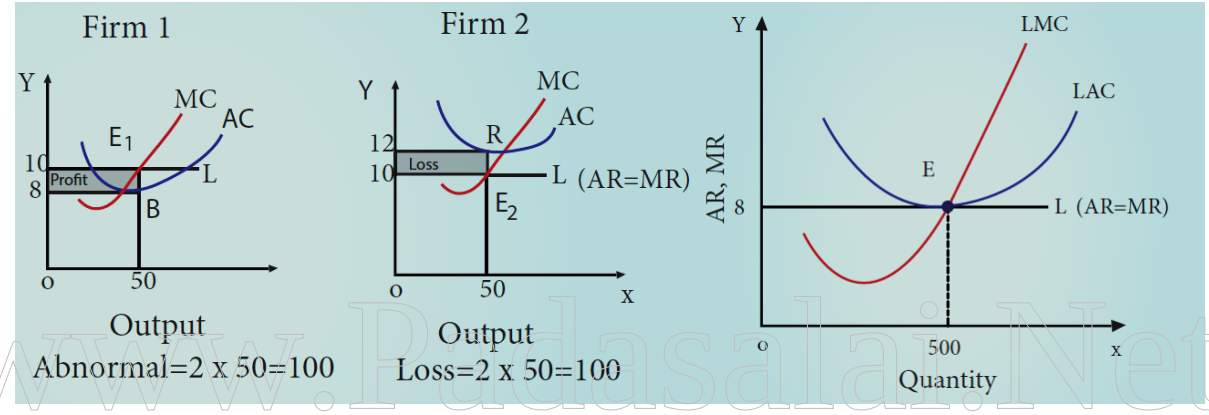
Meaning of Perfect Competition

Perfect Competition market is that type of market in which the number of buyers and sellers is very large, all are engaged in buying and selling a homogenous product at uniform price.

Important Features

1. Large Number of Buyers and Sellers
2. Homogeneous Product and Uniform Price
3. Free Entry and Exit
4. Absence Of Transport Cost

Price & Output Determination-Perfect Competition during Short Run



AR – Average Revenue	AC – Average Cost
MR – Marginal Revenue	MC – Marginal Cost

The firms under Perfect Competition take the price (10) from the industry and start adjusting their quantities produced. **For example Qd= 100 – 5P and Qs=5P. At equilibrium Qd=Qs. Therefore 100-5P=5P.**

100 = 10P; 100/10 = P Qd = demand

P = 10 P = Price

Qd = 100-5(10) Qs = Supply

100-50 = 50

Qs = 5(10)=50

Therefore 50 = 50

Its total revenue is 50X10=500. Its total cost is 50X12=600. Therefore, its total loss is 600-500=100.

Price = AR=MR = Minimum AC

In the long run, all the factors are variable.

1. First, the firms will earn only normal profit.
2. Secondly, all the firms in the market are in equilibrium.
3. **At point E, LMC = MR = AR = LAC.**

37. Describe the features oligopoly.

1. Few large firms

Very few big firms own the major control of the whole market by producing major portion of the market demand.

2. Interdependence among firms

The price and quality decisions of a particular firm are dependent on the price and quality decisions of the rival firms.

3. Group behaviuor

The firms under oligopoly realise the importance of mutual co-operation.

4. Advertisement cost

The oligopolist could raise sales either by advertising or improving the quality of the product.

5. Nature of product

Perfect oligopoly means homogeneous products and imperfect oligopoly deals with heterogeneous products.

6. Price rigidity

The oligopolistic firms do not change their prices due to the fear of rivals' reaction.

38. Illustrate price and output determination under Monopoly.

Meaning

Monopoly is a market structure characterized by a single seller, selling the unique product with the restriction for a new firm to enter the market.

Features of Monopoly

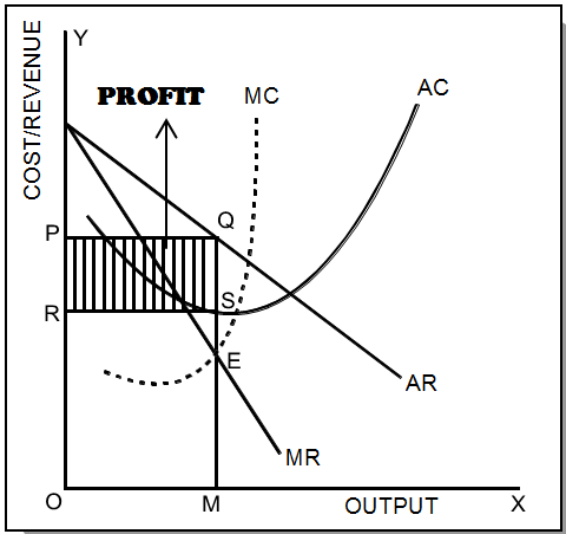
1. There is a single producer / seller of a product;

2. The product of a monopolist is unique and has no close substitute;

3. There is strict barrier for entry of any new firm;

4. The monopolist is a price-maker

Price & Output Determination Under Monopoly



Explanation

1. The Diagram shows that MC cuts MR at E to give equilibrium output as OM.
2. At OM, the price charged is OP (we find this by extending line EM till it touches AR or demand curve).
3. Also at OM,thecostperunitisMS.
4. Therefore,profitperunitisSQortotalprofitisPQRS.

Numerical Explanations

Let us take the following hypothetical example of Total Revenue Function and Total cost function.

TR=100Q-4Q2 and TC=Q3 - 18Q2 + 91Q +12.

Therefore AR= 100 - 4Q; MR=100 - 8Q; AC= Q2- 18Q + 91 + 12/Q;

MC= 3Q2 - 36Q + 91;

When Q=3,

AR= 100 – 4(3) = 88,

AC= 32-18(3) +91+12/3=9-54+91+4=50;

MR=100-8(3) =76;

MC= 3(3)2- 36(3) +91=27-108+91 = 10

Total profit = (Average Revenue – Average Cost) X Total output

39. Explain price and output determined under monopolistic competition with help of diagram.

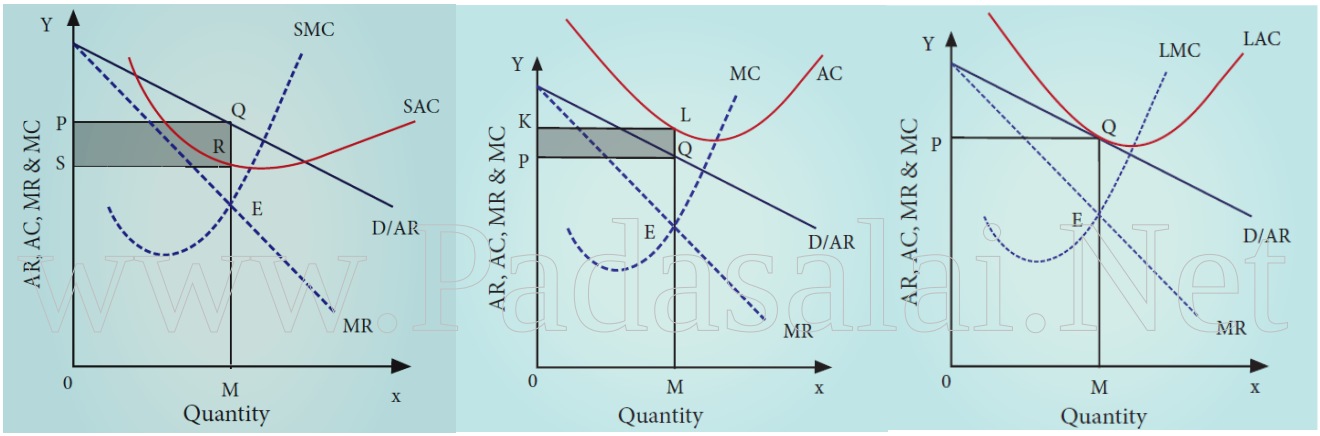
Meaning

Monopolistic competition refers to a market situation where there are many firms selling a differentiated product.

Important Features

1. Large number of buyers and many sellers.
2. Firms produce differentiated products.
3. Firms compete with each other by incurring selling cost
4. Non – price competition

Short run Profit **Short run Loss** **Long run Equilibrium**



Explanation

1. The profit maximisation is achieved when MC=MR.
2. Total profit is 'PQRS'. This is super normal profit under short-run.
3. Total loss is 'PQLK'. This firm incurs loss in the short run.
4. In the long run AR curve is more elastic
5. At E' point = AR=AC and MC=MR. It means that a firm earns normal profit. AR is tangent to the Long Run Average Cost (LAC) curve at point 'Q'.

Short and Long run conditions

Short run	The only one condition for equilibrium in the short run	**MC = MR.**
Long run	The two conditions for equilibrium in the long run	**MC = MR and AC = AR.**

Chapter 6

35. Explain the Marginal Productivity Theory of Distribution.

Meaning

According to the Marginal Productivity Theory of Distribution, the price or the reward for any factor of production is equal to the marginal productivity of that factor. In short, each factor is rewarded according to its marginal productivity.

Assumption

1. All the factors of production are homogenous.

2. Factors of production can be substituted for each other.

3. There is perfect competition both in the factor market and product market.

4. There is perfect mobility of factors of production.

Marginal Product

The Marginal product of a factor of production means the addition made to the total product by employment of an additional unit of that factor. The Marginal Product may be expressed as MPP, VMP and MRP.

Marginal Physical Product (MPP)
Value of Marginal Product = VMP = MPP x Price
Marginal Revenue Product MRP = MPP x MR

MP :Under Perfect Competition

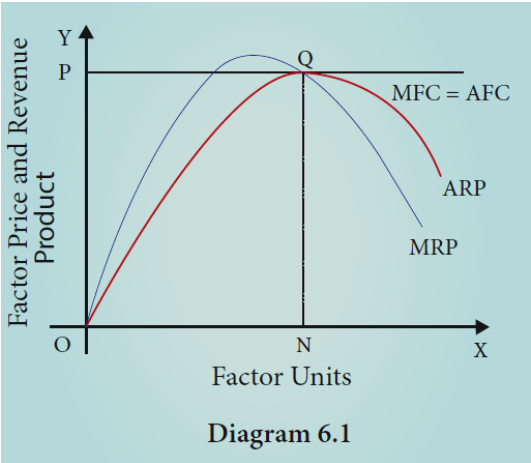
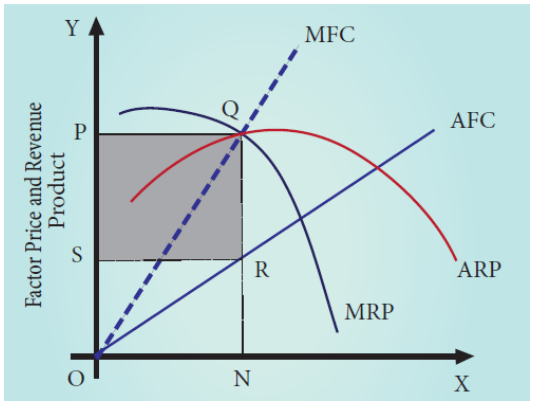


Diagram 6.1

MP : Under Imperfect Competition



Under Perfection Competition

1. When there is perfect competition in the factor market, the firm is in equilibrium (i.e., earning maximum profits) only when MFC = MRP.
2. Hence, in the diagram, the firm reaches equilibrium at point Q by employing ON units of factors and paying OP price (NQ) where MFC = MRP. At the point Q, MRP = ARP.
3. The price paid to the factor (NQ) is also equal to marginal revenue product (NQ) and average revenue product (NQ).

Under Imperfect Competition

1. Under imperfect competition, At the point Q, MFC = MRP, where the employer attains his maximum profit and so he stops employment of the factors at the point.
2. The total exploitation of factor by the employer is RQ X SR = “PQRS” (shaded area).
3. Thus, under imperfect competition, factor is exploited at the equilibrium position.

36. Illustrate the Ricardian Theory of Rent.

Definition

According to Ricardo,"Rent is that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil".

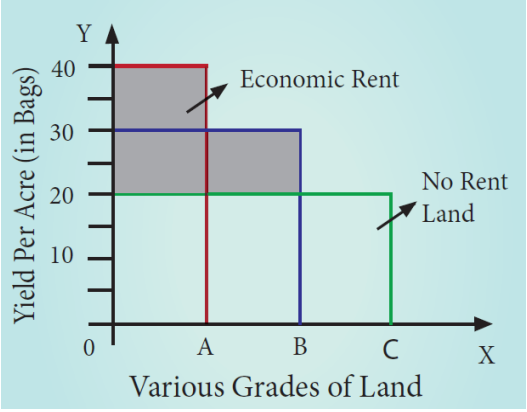
Assumption

1. Land differs in fertility.

2. The law of diminishing returns operates in agriculture.

3. Rent depends upon fertility and location of land.

4. Theory assumes perfect competition.



Schedule of Ricardian Theory of Rent

Grades of Lands	Production (in bags)	Surplus (i.e., Rent in bags)
A	40	40-20=20
B	30	30-20= 10
C	20	20-20= 0

Explanation

1. In diagram, X axis represents various grades of land and Y axis represents yield per acre (in bags).
2. OA, AB and BC are the 'A' grade, 'B' grade and 'C' grade lands respectively.
3. The application of equal amount of labour and capital on each of them gives a yield represented by the rectangles standing just above the respective bases.
4. The 'C' grade land is the "no–rent land" 'A' and 'B' grade lands are "intra – marginal lands".

37. Elucidate the Loanable Funds Theory of Interest.

Definition

According to Loanable Funds theory, The rate of interest is determined by the equilibrium between demand for and supply of loanable funds in the credit market.

- The Loanable Funds Theory, also known as the "Neo–Classical Theory",

Demand for Loanable Funds	Supply of Loanable Funds
1. Demand for Investment (I)	1. Savings (S)
2. Demand for Consumption (C)	2. Bank Credit (BC)
3. Demand for Hoarding (H)	3. Dishoarding (DH)
	4. Disinvestment(DI)

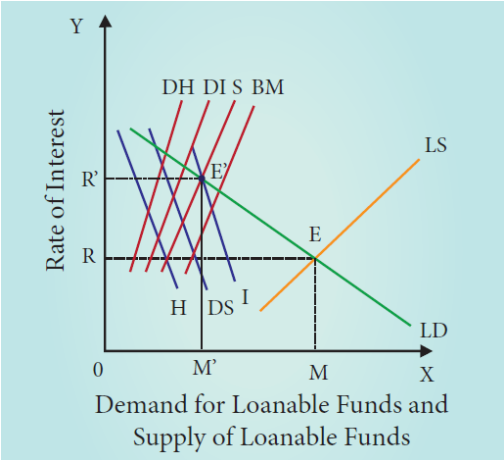
Equilibrium

The rate of interest is determined by the equilibrium between the total demand for and the total supply of loanable funds.

Supply of loanable funds = S + BC + DH + DI

Demand for loanable funds = I + C + H

E = S + BC + DH + DI = I + C + H



1. In Diagram, X axis represents the demand for and supply of loanable funds and Y axis represents the rate of interest.
2. The LD and LS curves, intersect each other at the point "E" the equilibrium point. At this point, OR rate of interest and OM is the amount of loanable funds.

Criticisms

1. The loanable funds theory is "indeterminate"' unless the income level is already known.
2. Difficult to combine real factors like savings and investment with monetary factors like bank credit

38. Explain the Keynesian Theory of Interest.

Meaning

Liquidity preference means the preference of the people to hold wealth in the form of liquid cash rather than in other non- liquid assets like bonds, securities, bills of exchange, land, building, gold etc.

Motives of Demand for Money

1. The Transaction Motive

The desire of the people to hold cash for the current transactions (or day–to- day expenses). $Mt = f(y)$

2. The Precautionary Motive

Desire of the people to hold cash to meet unexpected or unforeseen expenditures such as sickness, accidents). $Mp = f(y)$

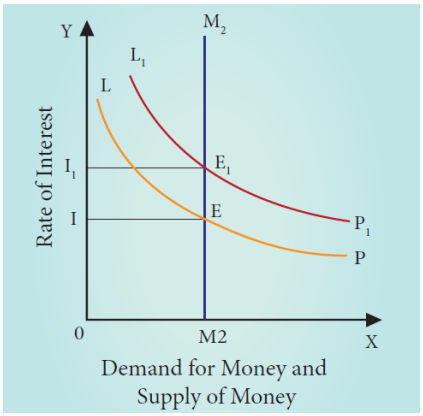
3. The Speculative Motive

The speculative motive relates to the desire of the people to hold cash in order to take advantage of market movements regarding the future.

$Ms = f(i)$

Equilibrium between Demand and Supply of Money

The rate of interest is determined by the demand for money and the supply of money.



1. If liquidity preference increases from LP to L1P1 the supply of money remains constant,
2. The rate of interest would increase from OI to OI1.
3. The supply of money remains constants.
4. Total demand for money=Mt+Mp+Ms

Demand for money=supply of money at equilibrium point ;

Equilibrium Point 1 = E = LP = M2 = I = Rate of Interest ... (1)

Equilibrium Point2 = $E_1 = L_1P_1 = M2 = I_1$ = Rate of Interest ... (2)

Chapter 7

35. Explain strong features Indian economy

Important Strong features of Indian Economy

1. India has a mixed economy

Indian economy is a typical example of mixed economy. This means both private and public sectors co-exist and function smoothly.

2. Agriculture plays the key role

Around 60% of the people in India depend upon agriculture for their livelihood. In fact, about 17% of our GDP today is contributed by the agricultural sector.

3. An emerging market

India has a high potential for prospective growth. This also makes it an emerging market for the world.

4. Fast Growing Economy

India has emerged as the world's fastest growing economy in the year 2016-17 with the growth rate of 7.1% in GDP next to sChina.

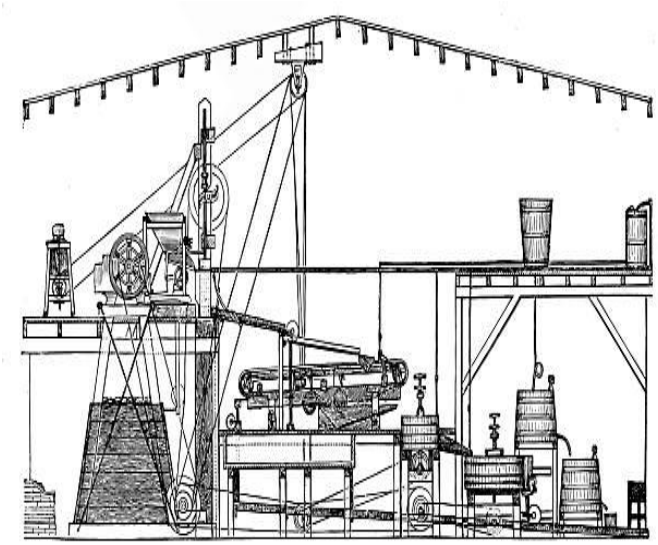
5. Fast growing Service Sector

The service sector, contributes a lion's share of the GDP in India. There has been a high rise growth in the technical sectors like Information Technology, BPO etc.

6. Demographic dividend

The human capital of India is young. This means that India is a pride owner of the maximum percentage of youth.

36. Write the importance of mineral resources in India.



a. Iron-Ore

India possesses high quality iron-ore in abundance. Hematite iron is mainly found in Chattisgarh, Jharkhand, Odisha, Goa and Karnataka.

b. Coal and Lignite

India ranks third in the world after China and USA in coal production. The main centres of coal in India are the West Bengal, Bihar, Madhya Pradesh, Maharashtra,Odisha and Andhra Pradesh.

c. Bauxite

Major reserves are concentrated in the East Coast bauxite deposits of Odisha and Andhra Pradesh.

d. Mica

India stands first in sheet mica production and contributes 60% of mica trade in the world.

e. Crude Oil

Oil is being explored in India at many places of Assam and Gujarat.

f. Gold

India possesses only a limited gold reserve. There are only three main gold mine regions—Kolar Goldfield, Kolar district and Hutti Goldfield in Raichur district (both in Karnataka) and Ramgiri Goldfield in Anantpur district (Andhra Pradesh).

g. Diamond

As per UNECE the total reserves of diamond is estimated at around 4582, thousand carats.

37. Bring out Jawharlal Nehru's contribution to the idea of economic development.

1. Jawaharlal Nehru, one of the chief builders of Modern India,
2. He was a great patriot, thinker and statesman.
3. His views on economics and social problems are found in the innumerable speeches he made and in the books he wrote.
4. Jawaharlal Nehru was a firm believer in democracy.
5. Secularism is another significant contribution of Nehru to India.
6. To Jawaharlal Nehru, the Plan was essentially an integrated approach for development.
7. Jawaharlal Nehru was responsible for the introduction of planning in our country.
8. It was during his period, many IITs and Research Institutions were established.
9. Socialism is another contribution of Nehru to India.
10. Nehru's socialism is democratic socialism.

38. Write a brief note on the Gandhian economic ideas.

Gandhian Thought : Gandhian Economics is based on ethical foundations.

1. Village Republics : To Gandhi, India lives in villages. He was interested in developing the villages as self-sufficient units.

2. On Machinery : Gandhi described machinery as 'Great sin'.

3. Industrialism : Gandhi considered industrialism as a curse on mankind.

4. Decentralization : He advocated a decentralized economy,

5. Village Sarvodaya : He suggested the development of self-sufficient, self-dependent villages.

6. The Doctrine of Trusteeship: Trusteeship provides a means of transforming the present capitalist order of society into an egalitarian one.

7. On Population : Gandhi opposed the method of population control through contraceptives.

8. On Prohibition : Gandhi advocated cent per cent prohibition. He regarded the use of liquor as a disease rather than a vice.

Chapter 8

35. Discuss about the Indian economy during British Period.

On the basis of the form of colonial exploitation, economic historians have divided the British period into three phases: namely,

1. The period of merchant capital
2. The period of industrial capital
3. The period of finance capital

Periods under British Rule	Period	State of Indian Economy
Period of Merchant Capital	**From 1757 To 1813**	1. Aim of the East India Company was to earn profit 2. The best hunting ground for capital 3. The officers of the company were unscrupulous and corrupt.
Period of Industrial Capital	**From 1813 To 1858**	1. India had become a market for British textiles. 2. Indians were exploited 3. India's traditional handicrafts were thrown out of gear.
Period of Finance Capital	**From 1858 To 1947**	1. Finance imperialism began to entrench itself 2. Britain decided to make massive investments in various fields 3. Railway construction policy of the British led to unimaginable as well as uneconomic.

36. Explain the role of SSIs in economic development?

1. Provide Employment

SSIs uselabour intensive techniques. Hence, they provide employment opportunities to a large number of people.

2. Bring Balanced Regional Development

SSIs promote decentralized development of industries as most of the SSIs are set up in backward and rural areas.

3. Help in Mobilization of Local Resources

SSIs help to mobilize and utilize local resources like small savings, entrepreneurial talent etc.,

4. Pave for Optimisation of Capital

SSIs require less capital per unit of output. They provide quick return on investment

5. Promote Exports

SSIs do not require sophisticated machinery. there is a great demand for goods produced by SSIs in international market.

6. Complement Large Scale Industries

SSIs play a complementary role to large scale sector and support the large scale industries.

7. Meet Consumer Demands

SSIs produce wide range of products required by consumers in India.

8. Develop Entrepreneurship

SSIs help to develop a class of entrepreneurs in the society

37. Explain the objectives of nationalization of commercial banks.

1. The main objective of nationalization was **to attain social welfare**.

2. Nationalisation of banks helped to **curb private monopolies** in order to ensure a smooth supply of credit

3. To encourage the **banking habit among the rural population**.

4. To **reduce the regional imbalances** where the banking facilities were not available.

5. After nationalization, **new bank branches were opened in both rural** and urban.

6. **Credit facilities mainly to the agriculture sector** and its allied activities

38. Describe the performance of 12th five year plan in India.

3. Its main theme is "Faster, More Inclusive and Sustainable Growth".

4. Its growth rate target is 8%.

Major Objectives:

- For growth to be more inclusive we need: Better performance in agriculture
- Faster creation of jobs, especially in manufacturing
- Stronger efforts at health, education and Infrastructure.
- Special plans for disadvantaged/backward regions

Major Achievements (Performance of 12th Five Year Plan)

1. Implementation of Pandit Madan **Mohan** Malaviya National Mission on Teachers & Teaching.

2. Uchchatar Aavishkar Abhiyan programme to promote industry-specific need-based research.

3. The National Mission on Education through Information and Communication Technology for making the best use of ICT

4. Rashtriya Uchchatar Shiksha Abhiyan (RUSA) has been approved which aims to achieve equity, access and excellence in higher education.

5. Free and compulsory education to all children in the age group of 6 to 14 years

6. Construction of school toilets under Swachh Vidyalay initiative

7. Implementation of Udaan programme to ensure quality education for girl child

8. Padhe Bharat Badhe Bharat initiative to increase learning outcomes in children.

Chapter 9

35. Discuss the important initiatives taken by the Government of India towards Industrial Policy.

Meaning of Industrial Policy:

Any government action aimed at affecting industry may be considered to be part of industrial policy, which makes it a limitless field.

It usually means government action to influence the ownership and structure of industry and its performance, paying subsidies or providing finance, or of regulation.

Industrial Policy	Important Initiatives
Industrial Policy Resolutions 1948	1. It ushered India as a the system of mixed economy. 2. Industries were classified into four groupssuch as public sector, public–cum –private Sector, controlled private sector, private and co-operative sectors. 3. This policy endeavoured to protect cottage and small scale industries.
Industrial Policy Resolution 1956	1. It assured a fair treatment to the private sector 2. Support and encourage cottage and small scale enterprises 3. Indianisation of foreign concerns
The New Industrial Policy of 1991	1. Industrial licensing will be abolished for all projects except for a short list of industries 2. The policy provides for automatic clearance for import of capital goods

36. Explain the objectives and characteristics of SEZs.

Meaning of Special Economic Zones.

3. A **special economic zone** (**SEZ**) is an area in which business and trade laws are different from the rest of the country.
4. SEZs are located within a country's national borders, and their aims include: increased trade, increased investment, job creation and effective administration.

Major Objectives of SEZs

1. To enhance foreign investment (especially FDI)

2. To increase shares in Global Export

3. To generate additional economic activity.

4. To create employment opportunities.

5. To develop infrastructure facilities.

6. To exchange technology in the global market.

Main Characteristics of SEZ

1. Geographically demarked area with physical security
2. Administrated by single body/ authority
3. Streamlined procedures
4. Having separate custom area
5. Governed by more liberal economic laws.
6. Greater freedom to the firms located in SEZs.

37. Describe the salient features of EXIM policy (2015 – 2020)

1. **Reduce export obligations by 25%** and give boost to domestic manufacturing supporting the **"Make in India" concept.**

2. As a **step to Digital India concept**, online procedure to **upload digitally signed document by CA/CS/Cost Accountant** are developed and further mobile app for filing tax, stamp duty has been developed.

3. **Repeated submission** of physical copies of documents available on **Exporter Importer Profile is not required.**

4. **Export obligation period** for export items related to defence, military store, aerospace and nuclear energy to **be 24 months.**

5. EXIM Policy 2015-2020 is expected **to double the share of India in World Trade from present level of 3% by the year 2020.** This appears to be too ambitions.

Chapter 10

38. 'The features of Rural Economy are peculiar'- Argue.

Meaning

Rural economy refers to villages, and rural community refers to people living in villages.

1. Village is an Institution: The Village is a primary institution and it satisfies almost all the needs of the rural community.

2. Dependence on Agriculture: The rural economy depends much on nature and agricultural activities.

3. Life of Rural People: Lifestyles in villages are very simple. Public services like education, housing, health and sanitation, transport and communication, banking, roads and markets are limited and unavailable.

4. Population Density: Population density, measured by number of persons living per sq. km is very low and houses are scattered in the entire villages.

5. Employment: There exists unemployment, seasonal unemployment and underemployment in rural areas.

6. Poverty: About 22 crores of people in rural areas are poor and live below the poverty line.

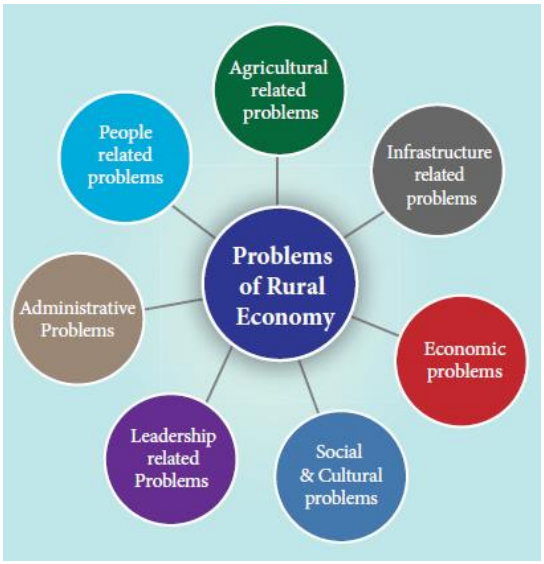
7. Indebtedness: People in rural areas are highly indebted owing to poverty and underemployment, lack of farm and non-farm employment opportunities, low wage employment,

8. Rural Income: The income of the rural people is constrained as the rural economy is not sufficiently vibrant

9. Dependency: Rural households are largely dependent on social grants and remittances from family members working in urban areas and cities.

10. Dualism: Dualism means the co existence of two exteremely different features like developed and underdeveloped, organised and unorganised, traditional and modern.

39. Discuss the problems of Rural Economy.



1. The problems related to **individuals and their standard of living** consist of illiteracy etc.,

2. Agricultural problems as **1.Lack of expected awareness, knowledge, skill and attitude, 2.Unavailability of inputs and so on.**

3. **Poor infrastructure facilities like, water, electricity, transport, educational institutions, communication, health** and etc.,

4. The economic problems related to rural areas are: **inability to adopt high cost technology, high cost of inputs** and so on.

5. Leadership among the hands of **inactive and incompetent people, self-interest of leaders, biased political** will.

6. **Political interference, lack of motivation and interest, low wages in villages, improper utilization of budget**, and absence of monitoring.

40. Analyse the causes for Rural Indebtedness.

Meaning

Rural indebtedness refers to the **situation of the rural people unable to repay the loan** accumulated over a period.

1. Poverty of Farmers:

The vicious circle of poverty forces the farmers to borrow for consumption, cultivation and celebrations. Thus, poverty, debt and high rates of interest hold the farmer in the grip of money lenders.

2. Failure of Monsoon:

Frequent failure of monsoon is a curse to the farmers and they have to suffer due to the failure of nature. Therefore, farmers find it difficult to identify good years to repay their debts.

3. Litigation:

Due to land disputes litigation in the court compels them to borrow heavily. Being uneducated and ignorant they are caught in the litigation process and dry away their savings and resources.

4. Money Lenders and High Rate of Interest:

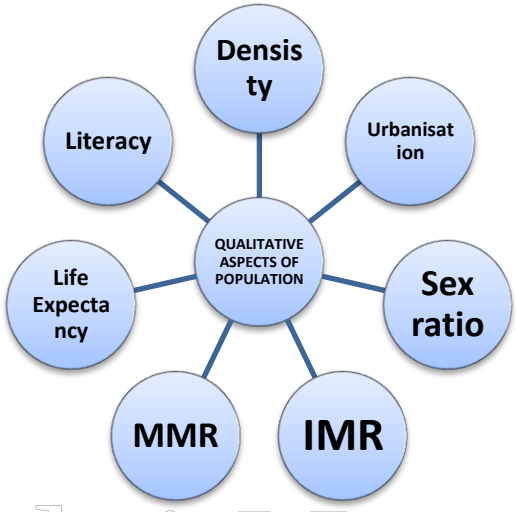
The rate of interest charged by the local money lenders is very high and the compounding of interest leads to perpetuate indebtedness of the farmer.

Chapter 11

35. Describe the qualitative aspects of population.

Meaning

Quantitative aspects include composition, density, distribution, growth, movement, size, and structure of the population. In Tamil Nadu, we measure the following qualitative aspects of population.



1.Density

The density of population which measures population per sq.km is 555 (2011) against 480 (2001).

2.Urbanisation

Tamil Nadu is the most urbanized state with 48.4% of urban population against 31.5% for India as a whole.

3. Sex ratio (Number of female per 1000 males)

Balanced sex ratio implies improvement in quality of life of female population. The sex ratio in Tamil Nadu is nearing balance with 995 which is far better compared to most of the States and all India level.

4. Infant Mortality Rate (mortality before completing 1 year)

5. Maternal Mortality Rate (MMR) (Mother's death at the time of delivery per 1 lakh)

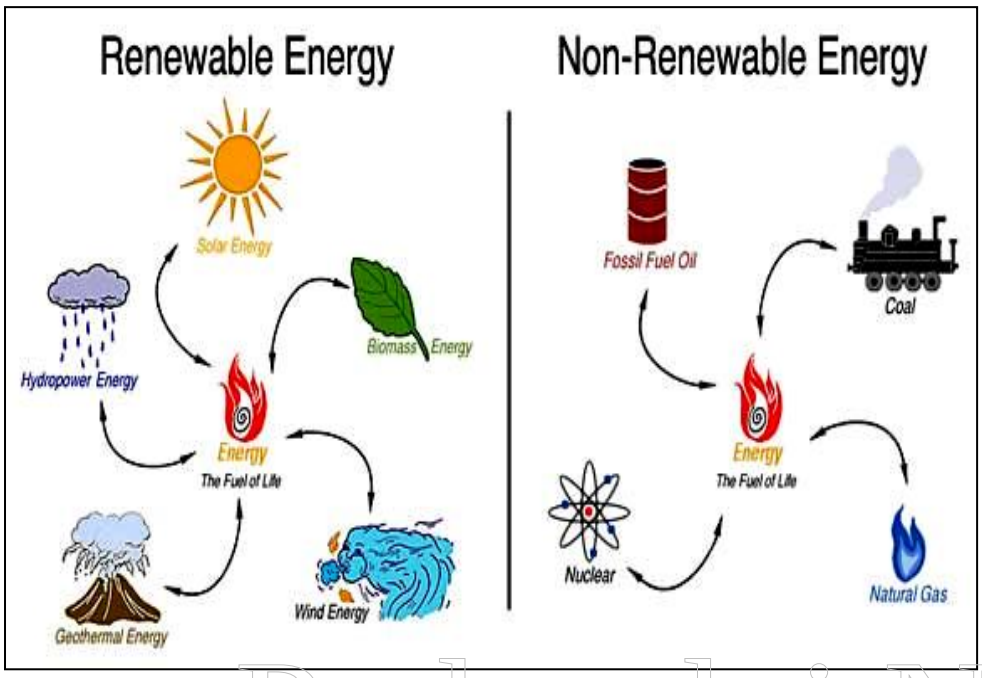
6. Life Expectancy at birth

The average period that a person may expect to live is called life expectancy.

7. Literacy

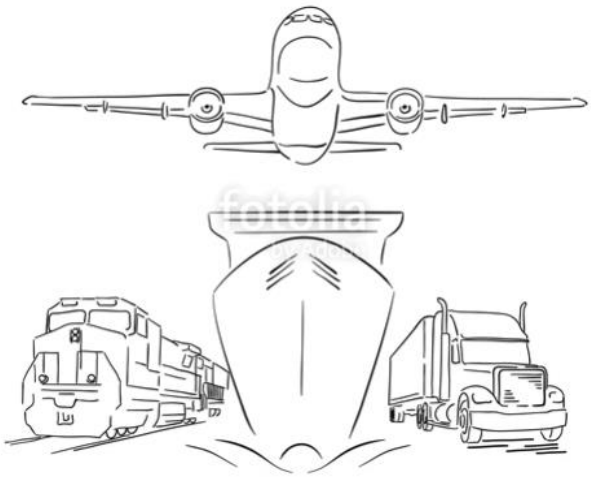
The literacy rate of Tamil Nadu is higher than in many States.

36. Explain the various sources of energy in Tamil Nadu.



1. Tamil Nadu **tops in power generation** among the southern States
2. Tamil Nadu is in the **forefront of all other Indian States in installed capacity.**
3. There are about **20 hydro electric units in Tamil Nadu.**
4. The **Kalpakkam Nuclear Power Plant and the Koodankulam Nuclear Power Plant** are the major nuclear energy plants for the energy grid.
5. The thermal power plants are at **Athippattu (North Chennai) Ennore, Mettur, Neyveli and Thoothukudi.**
6. Southern Tamil Nadu is considered as one of the most suitable regions in the country for **developing solar power projects.**
7. Tamil Nadu has the **highest installed wind energy capacity in India.**

37. Explain the public transport system in Tamvil Nadu.



Tamil Nadu Public Transport System

Tamil Nadu has a well established transportation system that connects all parts of the State.

a. Road

There are 28 national highways in the State, covering a total distance of 5,036 km. It ranks second in India with a share of over 20% in total road projects under operation.

b. Rail

Tamil Nadu has a well-developed rail network as part of Southern Railway, Headquartered at Chennai. Tamil Nadu has a total railway track length of 6,693 km and there are690 railway stations in the State.

d. Ports

Tamil Nadu has three major ports; one each at Chennai, Ennore, and Tuticorin, as well as one intermediate port in Nagapattinam, and 23 minor ports.

Chapter 12 (Answers are given at the last of this material)

1. A Research scholar researching the market for fresh cow milk assumes that *Q*t= f*(P*t, *Y,A,N, Pc)* where *Q*t is the quantity of milk demanded, *P*t is the price of fresh cow milk, *Y* is average household income, *A* is advertising expenditure on processed pocket milk, *N* is population and *P*c isthe price of processed pocket milk .

(a) What does *Q*t= f *(P*t, *Y,A,N, Pc)* mean in words?

(b) Identify the independent variables.

(c) Make up a specific form for this function. (Use your knowledge of Economics to deduce whether the coefficients of the different independent variables should be positive or negative.)

2. Calculate the elasticity of demand for the demand schedule by using differential calculus method $P = 60 - 0.2Q$ where price is (i) zero, (ii) Rs.20, (iii) Rs.40,

3. The demand and supply functions are pd=1600 - x2 and ps = 2x2 + 400 respectively. Find the consumer's surplus and producer's surplus at equilibrium point.

4. What are the ideas of information and communication technology used in economics?

Chapter 12

1. If $62 = 34 + 4x$ what is x? (Answer : x is 7)

Solution :

Given $62 = 34 + 4x$

$62 - 34 = 4x$

$4x = 28$

$$x = \frac{28}{4} \Rightarrow \boxed{x = 7}$$

2. Given the demand function $q = 150 - 3p$, derive a function for MR.

Solution : Given

Demand function

$$q = 150 - 3P$$

Differential with respect to P on both sides

$$\frac{dq}{dP} = 0 - 3 = -3$$

Elasticity of demand

$$nd = \frac{-P}{q}\frac{dq}{dP}$$

$$= \frac{-P}{(150 - 3P)}(-3)$$

$$nd = \frac{3P}{3(50 - P)} = \frac{P}{(50 - P)}$$

$$MR = P\left[1 - \frac{1}{nd}\right] = P\left[1 - \frac{1}{\frac{P}{(50 - P)}}\right]$$

$$= P\left[1 - \frac{(50 - P)}{P}\right]$$

$$= P\left[\frac{P - 50 + P}{P}\right]$$

$$= 2P - 50$$

$$\boxed{MR = 2P - 50}$$

3. Find the average cost function where $TC = 60 + 10x + 15x^2$.

Solution :

Given : $TC = 60 + 10x + 15x^2$

Average cost function $= \frac{TC}{x}$

$$= \frac{60 + 10x + 15x^2}{x}$$

$$= \frac{60}{x} + \frac{10x}{x} + \frac{15x^2}{x}$$

$$\boxed{AC = M\frac{60}{x} + 10 + 15x}$$

4. The demand function is given by $x = 20 - 2p - p^2$ where p and x are the price and the quantity respectively. Find the elasticity of demand for $p = 2.5$.

Solution :

Given : The demand function $x = 20 - 2p - p^2$

Differentiate with respect to p on both sides.

$$\frac{dx}{dp} = 0 - 2 - 2p = -2(1 + p)$$

Elasticity of demand

$$\eta_d = \frac{-p}{x}\frac{dx}{dp}$$

$$= \frac{-p}{(20 - 2p - p^2)} \times -2(1 + p)$$

$$\eta_d = \frac{2p(1 + p)}{(20 - 2p - p^2)}$$

When $p = 2.5$

$$\eta_d = \frac{2(2.5)[1 + 2.5]}{20 - 2(2.5) - (2.5)^2}$$

$$= \frac{5(3.5)}{20 - 5 - 6.25} = \frac{17.5}{8.75}$$

$$\therefore \boxed{\eta_d = 2}$$

5. Suppose the price p and quantity q of a commodity are related by the equation $q = 30 - 4p - p^2$ find (i) e_d at $p = 2$ (ii) MR

Solution :

i) Given $q = 30 - 4p - p^2$

Differentiate with respect to p.

$$\frac{dq}{dp} = 0 - 4 - 2p$$

$$= -2(2 + p)$$

When $p = 2$

$$\frac{dq}{dp} = -2(2 + 2) = -8$$

$$q = 30 - 4(2) - (2)^2 = 18$$

$$e_d = \frac{q}{p}\frac{dp}{dq}$$

$$= \frac{(30 - 4p - p^2)}{p} \times \left[\frac{1}{-2(2 + p)}\right]$$

$= \left(\frac{18}{2}\right)\left(\frac{1}{-8}\right) = \frac{-9}{8}$

ii) $R = pq$

$= p[30 - 4p - p^2]$

$R = 30p - 4p^2 - p^3$

$MR = \frac{dR}{dP}$

$= 30 - 4(2p) - 3p^2$

$\boxed{MR = 30 - 8p - 3p^2}$

When $p = 2$

$MR = 30 - 8(2) - 3(2)^2$

$= 30 - 16 - 12$

$= 30 - 28$

$MR = 2.$

6. **What is the formula for elasticity of supply if you know the supply function?**

Solution :

Let $x = f(p)$ be the supply function, where x is the supply and p is the price. The elasticity of supply is defined as $\eta_s = \frac{p}{x}\frac{dx}{dp}$

7. **What are the Main menus of MS Word?**

Solution :

The main menus of MS word are

i) Home menu
ii) Insert
iii) Page layout
iv) Reference
v) Review
vi) View

Additional Questions :

1. **If $A = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$ then find $|A|$.**

Solution :

Given $A = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$

$|A| = (5)(2) - (4)(3)$

$= 10 - 12$

$\therefore \boxed{|A| = -2}$

2. **If $A = \begin{bmatrix} 2 & 8 & 5 \\ 1 & 1 & 1 \\ 1 & 2 & -1 \end{bmatrix}$ then find $|A|$**

Solution :

$|A| = \begin{vmatrix} 2 & 8 & 5 \\ 1 & 1 & 1 \\ 1 & 2 & -1 \end{vmatrix}$

$= 2[-1-2] - 8[-1-1] + 5[2-1]$

$= 2[-3] - 8[-2] + 5(1)$

$= -6 + 16 + 5$

$\therefore \boxed{|A| = 15}$

3. **A firm produces x tonnes of output a total cost $C(x) = \frac{1}{10}x^3 - 4x^2 + 20x + 5$.**

Find (i) Average cost. (ii) Average variable cost (iii) Average Fixed cost (iv) Marginal cost and (v) Marginal Average cost.

Solution :

Given $C(x) = \frac{1}{10}x^3 - 4x^2 + 20x + 5$

i) Average Cost

$(AC) = \frac{\text{Total cost}}{\text{Output}}$

$= \frac{\frac{1}{10}x^3 - 4x + 20x + 5}{x}$

$= \frac{1}{10}x^2 - 4x + 20 + \frac{5}{x}$

ii) Average Variable cost

$(AVC) = \frac{\text{Variable cost}}{\text{Output}}$

$= \frac{\frac{1}{10}x^3 - 4x^2 + 20x}{x}$

$= \frac{1}{10}x^2 - 4x + 20$

iii) Average Fixed cost

$(AFC) = \frac{\text{Fixed cost}}{\text{Outut}}$

$= \frac{5}{x}$

iv) Marginal cost

$(MC) = \frac{d}{dx}(C(x))$

$$= \frac{d}{dx}\left(\frac{1}{10}x^3 - 4x^2 + 20x + 5\right)$$

$$= \left(\frac{3}{10}x^2 - 8x + 20\right)$$

v) Marginal Average cost

$$(MAC) = \frac{d}{dx}(AC)$$

$$= \frac{d}{dx}\left(\frac{1}{10}x^3 - 4x + 20 + \frac{5}{x}\right)$$

$$= \frac{1}{10}(2x) - 4(1) + 0 + 5\left(\frac{1}{x^2}\right)$$

$$= \frac{1}{5}x - 4 - \frac{5}{x^2}$$

4. For the function $y = 4x - 8$ find the elasticity and also obtain the value when $x = 6$.

Solution :

$$y = 4x - 8$$

$$\frac{dy}{dx} = 4$$

Elasticity $\eta = \frac{x}{y}\frac{dy}{dx}$

$$\eta = \frac{x}{(4x-8)}(4)$$

$$= \frac{4x}{4(x-2)}$$

$$\eta = \frac{x}{x-2}$$

$\therefore$ When $x = 6$, $\eta = \frac{6}{6-2} = \frac{6}{4} = \frac{3}{2}$

PART - C

Book Exercise – Answer the following questions in about a paragraph each :

1. Illustrate the uses of Mathematical Methodsm in Economics.

Solution :

i) Mathematical methods help to present the economic problems in a more precise form.

ii) Mathematical Methods help to explain economic concepts.

iii) Mathematical Methods help to use a large number of variables in economic analyses.

iv) Mathematical Methods help to quantify the impact or effect of any economic activity implemented by Government or anybody.

2. Solve for x quantity demanded if $16x - 4 = 68 + 7x$. (Ans: x is 8)

Solution :

$$16x - 4 = 68 + 7x$$

$$16x - 7x = 68 + 4$$

$$9x = 72$$

$$x = \frac{72}{9}$$

$\therefore$ $\boxed{x = 8}$

3. A firm has the revenue function $R = 600q - 0.03q^2$ and the cost function is $C = 150q + 60{,}000$, where q is the number of units produced. Find AR, AC, MR and MC. (Answers :AR = $600 - 0.03q$; MR = $600 - 0.06\,q$; AC = $150 + (60000/q)$)

Solution :

Given Revenue function

$$R = 600q - 0.03q^2$$

$$AR = \frac{R}{q} = \frac{600q - 0.03q^2}{q} = 600 - 0.03q$$

Marginal Revenue

$$MR = \frac{d}{dq}(R)$$

$$= \frac{d}{dq}(600q - 0.03q^2)$$

$$= 600(1) - 0.03(2q)$$

$\boxed{MR = 600 - 0.06q}$

Cost function

$$C = 150q + 60{,}000$$

$$\text{Average cost AC} = \frac{\text{Total cost}}{q} = \frac{c}{q}$$

$$= \frac{150q + 60{,}000}{q}$$

$$= \frac{150q}{q} + \frac{60{,}000}{q}$$

$$AC = 150 + \frac{60,000}{q}$$

Marginal Cost $MC = \frac{d}{dq}[150q + 60,000]$

$= 150(1) + 0$

$\therefore$ **M.C = 150**

4. Solve the following linear equations by using Cramer's rule.

$x_1 - x_2 + x_3 = 2$:
$x_1 + x_2 - x_3 = 0$:
$-x_1 - x_2 - x_3 = -6$

Solution : Given

$x_1 - x_2 + x_3 = 2$ ..... (1)

$x_1 + x_2 - x_3 = 0$ ..... (2)

$-x_1 - x_2 - x_3 = -6$ ..... (3)

The matrix form of these equations is

$$\begin{bmatrix} 1 & -1 & 1 \\ 1 & 1 & -1 \\ -1 & -1 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 2 \\ 0 \\ -6 \end{bmatrix}$$

$$\Delta = \begin{vmatrix} 1 & -1 & 1 \\ 1 & 1 & -1 \\ -1 & -1 & -1 \end{vmatrix}$$

$= 1(-1-1) - (-1)[-1-1] + (-1+1)$

$= 1(-2) + 1(-2) + 1(0)$

$= -2 - 2$

$\Delta = -4$

$$\Delta x_1 = \begin{vmatrix} 2 & -1 & 1 \\ 0 & 1 & -1 \\ 6 & -1 & -1 \end{vmatrix}$$

$= 2(-1-1) - (-1)[0+6] + 1(0-6)$

$= 2(-2) + 1(6) + 1(-6)$

$= -4 + 6 - 6$

$\Delta x_1 = -4$

$$\Delta x_2 = \begin{vmatrix} 1 & 2 & 1 \\ 1 & 0 & -1 \\ -1 & -6 & -1 \end{vmatrix}$$

$= 1(0-6) - 2(-1-1) + 1(-6-0)$

$= 1(-6) - 2(-2) + 1(-6)$

$= -6 + 4 - 6$

$\Delta x_2 = -8$

$$\Delta x_3 = \begin{vmatrix} 1 & -1 & 2 \\ 1 & 1 & 0 \\ -1 & -1 & -6 \end{vmatrix}$$

$= 1(-6+0) - (-1)[-6+0] + 2[-1+1]$

$= 1(-6) + 1(-6) + 2(0)$

$= -6 - 6$

$\Delta x_3 = -12$

By Cramer's rule

$$x_1 = \frac{\Delta x_1}{\Delta} = \frac{-4}{-4} = 1$$

$$x_2 = \frac{\Delta x_2}{\Delta} = \frac{-8}{-4} = 2$$

$$x_3 = \frac{\Delta x_3}{\Delta} = \frac{-12}{-4} = 3$$

Solution set : $(x_1, x_2, x_3) = \{1, 2, 3\}$

5. If a firm faces the total cost function $TC = 5 + x^2$ where x is output, what is TC when x is 10?

Solution :

Total cost function

$TC = 5 + x^2$

When $x = 10$

$TC = 5 + (10)^2$

$= 5 + 100$

TC = 105

6. If $TC = 2.5q^3 - 13q^2 + 50q + 12$ derive the MC function and AC function.

Solution :

Given $TC = 2.5q^3 - 13q^2 + 50q + 12$

$MC = \frac{d}{dq}(c)$

$= \frac{d}{dq}[2.5q^3 - 13q^2 + 50q + 12]$

$= 2.5(3q^2) - 13(2q) + 50(1) + 0$

$MC = 7.5q^2 - 269 + 50$

$AC = \frac{TC}{q}$

$= \frac{2.5q^3 - 13q^2 + 50q + 12}{q}$

$= \frac{2.5q^3}{q} - \frac{13q^2}{q} + \frac{50q}{q} + \frac{12}{q}$

$AC = 2.5q^2 - 13q + 50 + \frac{12}{q}$

7. What are the steps involved in executing a MS Excel Sheet?

Solution :

The following steps involved in executing a MS Excel sheet :

i) Open MS Excel sheet

ii) Once Excel is opened, any now information and formulae can be entered.

iii) Once complete or while working on spread sheet, you can see your work through the file Tap to the destination of your choice.

Plan the keystrokes needed to complete the tasks; Click Tools ; Assign a Name for the Macro; Click OK; Perform the steps needed to creat your report; Click on the stop button on the macro toolbar to stop recording and save the macro.

Additional Questions :

1. The demand and supply curves are given by $P_d = \frac{16}{x+4}$ and $P_s = \frac{x}{2}$. Find the consumer's surplus and Producer's surplus at the market equilibrium price.

Solution :

For Market equilibrium

Quantity demanded = Quantity supplied

$$\frac{16}{x+4} = \frac{x}{2}$$

$$x(x+4) = 16 \times 2$$

$$x^2 + 4x = 32$$

$$x^2 + 4x - 32 = 0$$

$$(x-4)(x+8) = 0.$$

$x = 4 ; x = -8.$

but $x = -8$ is inadmissible.

$\therefore \boxed{x = 4}$ (i.e.,) $x_0 = 4$

$$P_0x_0 = \left[\frac{16}{4+4}\right] \times 4$$

$$= \frac{16}{8} \times 4$$

$\therefore \boxed{P_0x_0 = 8}$

Consumer's surplus,

$$CS = \int_0^{x_0} f(x)\,dx - P_0x_0$$

$$= \int_0^4 \frac{16}{(x+4)}\,dx - 8$$

$$= 16\left[\log(x+4)\right]_0^4 - 8$$

$$= 16[\log(4+4) - \log(0+4)] - 8$$

$$= 16[\log 8 - \log 4] - 8$$

$$= 16\left[\log\left(\frac{8}{4}\right)\right] - 8$$

$$C_s = 16 \log 2 - 8 \text{ units}$$

Producer's Surplus :

$$P_s = P_0x_0 - \int_0^{x_0} g(x)\,dx$$

$$= 8 - \int_0^4 \frac{x}{2}\,dx$$

$$= 8 - \frac{1}{2}\int_0^4 x\,dx$$

$$= 8 - \frac{1}{2}\left[\frac{x^2}{2}\right]_0^4$$

$$= 8 - \frac{1}{4}[(4)^2 - (0)]$$

$$= 8 - \frac{1}{4}[16]$$

$$= 8 - 4$$

$\therefore \boxed{P_s = 4 \text{ units}}$

2. Integrate : $4x^5 + 6x^3 + \frac{2}{3}x$.

Solution :

$$I = \int\left(4x^5 + 6x^3 + \frac{2}{3}x\right)dx$$

$$= 4\left[\frac{x^6}{6}\right] + 6\left[\frac{x^4}{4}\right] + \frac{2}{3}\left[\frac{x^2}{2}\right] + c$$

$$I = \left(\frac{2x^5}{3} + \frac{3x^4}{2} + \frac{x^2}{3}\right) + c$$

3. Write a short note on MS Excel work sheet.

Solution :

A worksheet is a table like document containing rows and columns with data and formula. There are Four kinds of calculation operators. They are

i) arithmetic
ii) comparison
iii) text concatenation (link together) and
iv) reference

4. Write a short note on Demand Function and Supply Function.

Solution :

Demand Function : $Q_d = f(P_x)$ where "Qd" stands for Quantity demand of a commodity and P_x is the price of that commodity.

Supply Function : $Q_s = f(P_x)$ where "Q_s" stands for Quantity supplied of a commodity and P_x is the price of that commodity.

PART - D

Book Exercise – Answer for each question in about a page :

1. A Research scholar researching the market for fresh cow milk assumes that $Qt = f(Pt, Y, A, N, Pc)$ where Qt is the quantity of milk demanded, Pt is the price of fresh cow milk, Y is average household income, A is advertising expenditure on processed pocket milk, N is population and Pc is the price of processed pocket milk .

a) What does $Qt = f(Pt, Y, A, N, Pc)$ mean in words?

b) Identify the independent variables.

c) Make up a specific form for this function. (Use your knowledge of Economics to deduce whether the coefficients of the different independent variables should be positive or negative.)

Solution :

a) Qt is the functions of Pt, Y, A, N, Pc.

Here

Qt is the quantity of milk demanded.

Pt is the price of fresh cow milk,

Y is average household income,

A is advertising expenditure on processed Pocket milk.

N is population and

Pc is the Price of Processed Pocket Milk.

b) Independent variables are Y and N where y is average household and N is population.

c) When the Price of fresh cow milk (Pt) increases then the quantity of milk demanded (Qt) decreases. When the average household income (Y) increases then quantity of milk demanded (Qt) is also increases. When the advertising expenditure on processed Pocket milk (A) increases, then the quantity of milk demanded (Qt) is also increases.

When the Population (N) increases then the quantity of milk demanded (Qt) is also increases.

When the Price of Processed mil (Pc) increases, then the quantity of milk demanded (Qt) decreases.

Therefore we can frame a linear function as follows

$$Qt = -aPt + bY + cA = dN - ePc$$

where the slope is negative.

2. Calculate the elasticity of demand for the demand schedule by using differential calculus method P = 60 – 0.2Q where price is (i) zero, (ii) Rs.20, (iii) Rs.40,

Solution :

Given $P = 60 - 0.2q$

$$\frac{dp}{dq} = 0 - 0.2$$

$$\boxed{\frac{dp}{dq} = -0.2}$$

Elasticity of demand

$$\eta_d = \frac{-q}{p}\frac{dp}{dq}$$

$$= \frac{-q}{60 - 0.2q} \times (-0.2)$$

$$\therefore \boxed{\eta_d = \frac{0.2q}{60 - 0.2q}}$$

i) When $q = 0$

$$\eta_d = \frac{0.2(0)}{60 - 0.2(0)} = \frac{0}{60} = 0$$

ii) When q = Rs.20

$$\eta_d = \frac{0.2(20)}{60 - 0.2(20)} = \frac{4}{60 - 4}$$

$$= \frac{4}{56}$$

$$= \frac{1}{14}$$

iii) When q = Rs.40

$$\eta_d = \frac{0.2(40}{60 - 0.2(40)}$$

$$= \frac{8}{60 - 8}$$

$$= \frac{8}{52}$$

$$= \frac{2}{13}$$

3. The demand and supply functions are $p_d = 1600 - x^2$ and $p_s = 2x^2 + 400$ respectively. Find the consumer's surplus and producer's surplus at equilibrium point.

Solution :

Demand function

$$p_d = 1600 - x^2$$

Supply function

$$p_s = 2x^2 + 400$$

For market equilibrium

Quantity demanded = Quantity supplied

$$1600 - x^2 = 2x^2 + 400$$

$$1600 - 400 = 2x^2 + x^2$$

$$1200 = 3x^2$$

$$x^2 = \frac{1200}{3}$$

$$= 400$$

$$x = \pm\sqrt{400}$$

$$x = \pm 20$$

But $x = -20$ is ion admissible.

$\therefore \boxed{x = 20}$ (i.e.,) $x_0 = 20$

$$P_0 = 1600 - (20)^2$$

$$= 1600 - 400$$

$$\boxed{P_0 = 1200}$$

$$P_0 x_0 = 1200 \times 20$$

$$\therefore \boxed{P_0 x_0 = 24000}$$

Consumer's Surplus,

$$C_s = \int_0^{x_0} f(x)\,dx - P_0 x_0$$

$$= \int_0^{20} (1600 - x^2)\,dx - 24000$$

$$= \left[1600x - \frac{x^3}{3}\right]_0^{20} - 24000$$

$$= \left\{\left[1600(20) - \frac{(20)^3}{3}\right] - (0)\right\} - 24000$$

$$= 32000 - \frac{8000}{3} - 24000$$

$$= 8000 - \frac{8000}{3} = \frac{24000 - 8000}{3}$$

$$\therefore \boxed{C.S = \frac{16000}{3} \text{ units}}$$

Producer's surplus

$$P_s = P_0 x_0 - \int_0^{x_0} g(x)\,dx$$

$$= 24000 - \int_0^{20} (2x^2 + 400)\,dx$$

$$= 24000 - \left[\frac{2x^3}{3} + 400x\right]_0^{20}$$

$$= 24000 - \left\{\left[\frac{2(20)^3}{3} + 400(20)\right] - (0)\right\}$$

$$= 24000 - \left[\frac{2(8000)}{3} + 8000\right]$$

$$= 24000 - \left[\frac{16000 + 24000}{3}\right]$$

$$= 24000 - \frac{40000}{3}$$

$$= \frac{72000 - 4000}{3}$$

$$\therefore \boxed{P.S = \frac{32000}{3} \text{ units}}$$

4. What are the ideas of information and communication technology used in economics?

Solution :

i) Information and Communication Technology (ICT) is the infrastructure that enables computing faster and accurate.

ii) The following table gives an idea of range of technologies that fall under the category of ICT.

S.No	Information	Technologies
1.	Creation	Personal Computers, Digital Camera, Scanner, Smart Phone
2.	Processing	Calculator, PC, Smart Phone
3.	Storage	CD, DVD, Pen Drive, Microchip, Cloud
4.	Display	PC, TV, Projector, Smart Phone

Additional Questions :

1. Solve by Cramer's rule

$2x_1 + 3x_2 = 7$;

$2x_1 + x_2 = 5$

Solution :

The coefficients and the constant terms are given below for the equations

$$\Delta = \begin{vmatrix} 2 & 3 \\ 2 & 1 \end{vmatrix}$$

$$\Delta = 2 - 6 = -4$$

$$\Delta x_1 = \begin{vmatrix} 7 & 3 \\ 5 & 1 \end{vmatrix}$$

$$= 7 - 15 = -8$$

$$\Delta x_2 = \begin{vmatrix} 2 & 7 \\ 2 & 5 \end{vmatrix}$$

$$= 10 - 14$$

$$= -4$$

By Carmer's rule

$$x_1 = \frac{\Delta x_1}{\Delta}$$

$$= \frac{-8}{-4}$$

$$= 2$$

$$x_2 = \frac{\Delta x_2}{\Delta}$$

$$= \frac{-4}{-4}$$

$$= 1$$

Solutin set

$$(x_1, x_2) = \{2, 1\}$$

2. Solve by Cramer's rule the equations

$2x_1 + 2x_2 - x_3 - 1 = 0$;

$x_1 + x_2 - x_3 = 0$

$3x_1 + 2x_2 - 3x_3 = 1$

Solution :

The matrix form of these equations is

$$\begin{bmatrix} 2 & 2 & -1 \\ 1 & 1 & -1 \\ 3 & 2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$$

$$A \quad X = B$$

$$\Delta = \begin{vmatrix} 2 & 2 & -1 \\ 1 & 1 & -1 \\ 3 & 2 & -3 \end{vmatrix}$$

$$= 2[-3 + 2] - 2[-3 + 3] - 1[2 - 3]$$

$$= 2[-1] - 2[0] - 1[-1]$$

$$= -2 + 1$$

$$\Delta = -1$$

$$\Delta x_1 = \begin{vmatrix} 1 & 2 & -1 \\ 0 & 1 & -1 \\ 1 & 2 & -3 \end{vmatrix}$$

$$= 1(-3 + 2) - 2(0 + 1) - 1(0 - 1)$$

$= 1(-1) - 2(1) - 1(-1)$

$= -1 - 2 + 1$

$\boxed{\Delta x_1 = -2}$

$$\Delta x_2 = \begin{vmatrix} 2 & 1 & -1 \\ 1 & 0 & -1 \\ 3 & 1 & -3 \end{vmatrix}$$

$= 2(0 + 1) - 1(-3 + 3) - 1(1 - 0)$

$= 2(1) - 1(0) - 1(1)$

$= 2 - 1$

$\boxed{\Delta x_2 = 1}$

$$\Delta x_3 = \begin{vmatrix} 2 & 2 & 1 \\ 1 & 1 & 0 \\ 3 & 2 & 1 \end{vmatrix}$$

$= 2(1 - 0) - 2(1 - 0) + 1(2 - 3)$

$= 2(1) - 2(1) + 1(-1)$

$= 2 - 2 - 1$

$\boxed{\Delta x_3 = -1}$

By Cramer's rule

$$x_1 = \frac{\Delta x_1}{\Delta} = \frac{-2}{-1} = 2$$

$$x_2 = \frac{\Delta x_2}{\Delta} = \frac{1}{-1} = -1$$

$$x_3 = \frac{\Delta x_3}{\Delta} = \frac{-1}{-1} = 1$$

Solution Set

$(x_1, x_2, x_3) = (2, -1, 1)$.

"Economics is everywhere,
and understanding economics
can help you make better decisions
and lead a happier life"

-MOHAN R
(Thiruvannamalai)

*** GOOD LUCK ***