

11th
STD

PUBLIC EXAMINATION - MARCH 2024

PART - III

Reg. No.

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TIME ALLOWED : 3.00 Hours]

ECONOMICS (with Answers)

[MAX. MARKS : 90

- Instructions : (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
- (2) Use **Blue** or **Black** ink to write and underline and pencil to draw diagrams.

PART - I

- Note :** (i) Answer **all** the questions. [20 × 1 = 20]
 (ii) Choose the most appropriate answer from the given **four** alternatives and write the option code and the corresponding answer.

- Wages that are paid on the basis of quantum of work done is _____.
 (a) Piece wages (b) Nominal wages (c) Time wages (d) Real wages
- Identify the year of launch of MUDRA Bank :
 (a) 2010 (b) 2000 (c) 2015 (d) 2005
- The Planning Commission has been replaced by the _____ on 1st January 2015.
 (a) Law Commission (b) NITI Aayog
 (c) Human Rights Commission (d) Finance Commission
- "Economics is a study of mankind in the ordinary business of life" - It is the statement of :
 (a) Alfred Marshall (b) Adam Smith
 (c) Samuelson (d) Lionel Robbins
- The functional relationship between "inputs" and "outputs" is called as _____.
 (a) Savings function (b) Consumption function
 (c) Investment function (d) Production function
- Goods and Services tax is _____.
 (a) like value added tax (b) a multi point tax
 (c) a single point tax with no cascading effects (d) having cascading effect
- If total fixed cost (TFC) is 1,000 and total variable cost (TVC) is 200, then find the total cost :
 (a) 500 (b) 800 (c) 20,000 (d) 1,200
- The concept of 'Quasi Rent' is associated with :
 (a) Walker (b) Ricardo (c) Marshall (d) Keynes
- Tenth Five Year Plan period was :
 (a) 2007 - 2012 (b) 1992 - 1997 (c) 1997 - 2002 (d) 2002 - 2007
- In India's total cement production, Tamil Nadu ranks :
 (a) first (b) third (c) second (d) fourth
- Long-run average cost curve is also called as _____ curve.
 (a) production (b) demand (c) sales (d) planning
- $(y - y_1) = m(x - x_1)$ gives the :
 (a) Constant (b) Slope (c) Curve (d) Straight line

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13. Match the following :
- | | |
|-----------------------|------------------|
| (1) Blue Revolution | (i) Oil seeds |
| (2) Yellow Revolution | (ii) Shrimp |
| (3) Grey Revolution | (iii) Fish |
| (4) Pink Revolution | (iv) Fertilizers |
- (a) (1)-(iii), (2)-(i), (3)-(iv), (4)-(ii) (b) (1)-(iii), (2)-(iv), (3)-(i), (4)-(ii)
 (c) (1)-(iv), (2)-(iii), (3)-(ii), (4)-(i) (d) (1)-(ii), (2)-(i), (3)-(iv), (4)-(iii)
14. Who has given scarcity definition of economics?
 (a) Robbins (b) Adam Smith (c) Robertson (d) Marshall
15. In which market form, does absence of competition prevail?
 (a) Duopoly (b) Perfect competition (c) Oligopoly (d) Monopoly
16. The position of Indian Economy among the other strongest economies in the world is :
 (a) Fifth (b) Fourth (c) Tenth (d) Seventh
17. In Monopoly, MR curve lies below _____ curve.
 (a) AR (b) TR (c) AC (d) MC
18. Formula for calculating AP is :
 (a) TP/MP (b) $\Delta TP/N$ (c) TP/N (d) $\Delta TP/\Delta N$
19. Amartya Kumar Sen received the Nobel Prize in Economics in the year :
 (a) 2008 (b) 1998 (c) 2010 (d) 2000
20. When marginal utility reaches zero, the total utility will be :
 (a) Zero (b) Minimum (c) Negative (d) Maximum

PART - II

Note: Answer **any seven** questions. Question No. 30 is **Compulsory**.

7 × 2 = 14

21. Classify the factors of production.
22. What is meant by distribution?
23. Define Gross State Domestic Product (GSDP).
24. State any one feature of Indian Economy.
25. State the reasons for implementing LPG.
26. What is meant by Explicit Cost?
27. What is the difference between HDI and PQLI?
28. Write the classifications of Wants.
29. Define Micro-economics.
30. Classify the market on the basis of Competition

PART - III

Note: Answer **any seven** questions. Question No. 40 is **Compulsory**.

7 × 3 = 21

31. Explain the Long-run cost curves with suitable diagram.
32. Distinguish between Rent and Quasi-rent.
33. Write a short note on Village Sarvodaya.
34. Mention the features of SHG.
35. What are the important features of Utility?

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36. What are the characteristics of Land?
37. What are the properties of Indifference curve?
38. Explain the meaning of Selling Cost with an example.
39. Write a note on mineral resources in Tamil Nadu.
40. What is Bilateral Monopoly?

PART - IV

Note: Answer **all** the questions.

7 × 5 = 35

41. (a) Describe the features of Oligopoly.
(OR)
(b) Discuss the Short-run cost curves with suitable diagram.
42. (a) Explain the objectives of nationalization of Commercial banks.
(OR)
(b) Describe the salient features of EXIM policy (2015 - 2020).
43. (a) Explain various steps of Deductive and Inductive method in Economics.
(OR)
(b) Explain the Law of Variable Proportions with the diagram.
44. (a) What are the methods of measuring Elasticity of Demand?
(OR)
(b) Elucidate the Loanable Funds theory of Interest.
45. (a) Explain the main economic ideas of B.R. Ambedkar.
(OR)
(b) Illustrate the Ricardian Theory of Rent.
46. (a) Analyse the causes for Rural Indebtedness.
(OR)
(b) Explain the various sources of energy in Tamil Nadu.
47. (a) (i) Write any three uses of Mathematical Methods in Economics.
(ii) State any two causes for housing problems in rural areas.
(OR)
(b) Solve the following linear equations by using Cramer's rule.

$$7x_1 - x_2 - x_3 = 0$$

$$10x_1 - 2x_2 + x_3 = 8$$

$$6x_1 + 3x_2 - 2x_3 = 7$$

ANSWER**PART - I**

- | | |
|----------------------------|---|
| 1. (a) Piece wages | 2. (c) 2015 |
| 3. (b) NITI Aayog | 4. (a) Alfred Marshall |
| 5. (d) Production function | 6. (c) a single point tax with no cascading effects |
| 7. (d) 1,200 | 8. (c) Marshall |
| 9. (d) 2002-2007 | 10. (b) third |

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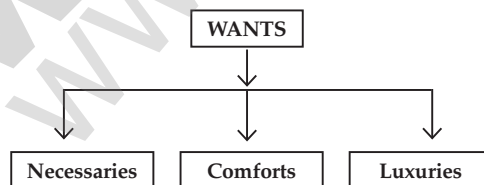
11. (d) planning
 12. (d) Straight line
 13. (a) (1)-(iii), (2)-(i), (3)-(iv), (4)-(ii)
 14. (a) Robbins
 15. (d) Monopoly
 16. (d) Seventh
 17. (a) AR
 18. (c) TP/N
 19. (b) 1998
 20. (d) Maximum

PART - II

21. **Land, Labour** : 'primary factors of production'.
Capital and Organisation : 'secondary factors of production'.
22. (i) Distribution means division of income among the four factors of production.
 (ii) **For Example** : Rent to landlords, wage to labourer, interest to capital and profit to entrepreneurs.
23. The Gross State Domestic Product refers to the total money value of all the goods and services produced annually in the state.
24. **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.
25. (i) **Liberalization** was necessitated because various licensing policies were said to be deterring the growth of the economy.
 (ii) **Privatization** was necessitated because of the belief that the private sector was not given enough opportunities to earn more money.
 (iii) **Globalization** was necessitated because today a developed country can grow without the help of the under developed countries.
26. (i) Payment made to others for the purchase of factors of production is known as Explicit costs.
 (ii) It refers to the actual expenditures of the firm to purchase or hire the inputs the firm needs.
- 27.

Basis	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

28. Goods (or) wants are broadly classified into three categories. They are,

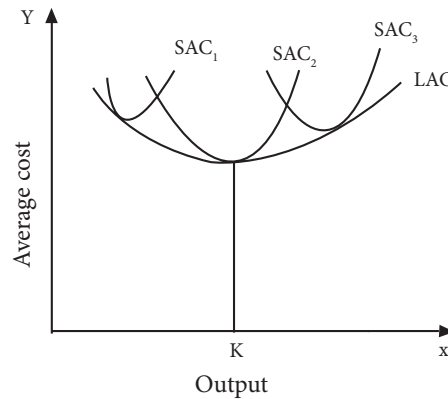


29. (i) Microeconomics is the study of the economic actions of small group of individuals say households, firms, or industries.
 (ii) It studies how business firms operate under different market conditions and how the combined actions of buyers and sellers determine prices.
30. (i) Perfect competition market
 (ii) Imperfect competition market which comprises monopoly market, monopolistic competition market, duopoly market, oligopoly market etc.

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PART - III

31.



- (i) In the long run all factors of production become variable.
- (ii) The existing size of the firm can be increased in the case of long run.
- (iii) There are neither fixed inputs nor fixed costs in the long run.
- (iv) Long run average cost (LAC) is equal to long run total costs divided by the level of output.

(v) $LAC = \frac{LTC}{Q}$

Where, LAC-Long run Average Cost,

LTC - denotes Long run total cost and Q-denotes quantity of output.

- (vi) The LAC curve is called as 'Plant Curve' or 'Boat Shape Curve' or 'Planning Curve' or 'Envelope Curve'.

32.

SI. 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.

33. **Village Sarvodaya :**

- (i) According to Gandhi, "Real India was to be found in villages and not in towns or cities".
- (ii) So he suggested the development of self - sufficient, self - dependent villages.
- (iii) Sarvodaya is a Sanskrit term meaning 'universal uplift' or 'progress of all'.
- (iv) The Sarvodaya Movement has as its target the establishment of a whole network of such self-supporting village communities.
- (v) 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.

34. **Features of SHGs.**

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

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- (ii) Most SHGs are women's groups with membership ranging between 10 and 20.
- (iii) SHGs have well-defined rules and by-laws, hold regular meetings and maintain records and savings and credit discipline.
- (iv) SHGs are self-managed institutions characterized by participatory and collective decision making.

35. Features of Utility:

- (i) Utility is psychological
- (ii) Utility is not equivalent to usefulness
- (iii) Utility is personal and relative.
- (iv) It is the function of the intensity of human want.
- (v) Utility cannot be measured objectively.
- (vi) Utility has no ethical or moral significance.

36. Characteristics of land:

- (i) Land is a primary factor of production.
- (ii) Land is a passive factor of production.
- (iii) Land is the free gift of nature.
- (iv) Land has no cost of production.
- (v) Land is fixed or inelastic in supply.
- (vi) Land is permanent.
- (vii) Land is immovable.

37. Properties of indifference curves:

- (i) Indifference curve must have negative slope.
- (ii) Indifference curves are convex to the origin.
- (iii) Indifference curve cannot intersect
- (iv) Indifference curve do not touch the horizontal or vertical axis.

- 38. (i) From the discussion of 'Product differentiation'. We can infer that the producer under monopolistic competition has no incur expenses to popularise his brand.
- (ii) This expenditure involved in selling the product is called selling cost.
- (iii) According to prof. Chamberlin, selling cost is "the cost incurred in order to alter the position or shape of the demand curve for a product".
- (iv) Most important form of selling cost is advertisement.

Example : In selling costs we include the salaries of sales persons, allowances to retailers to display the products etc. besides the advertisements.

- 39. (i) Tamil Nadu has a few mining projects based on Titanium, Lignite, Magnesite, Graphite, Limestone, Granite and Bauxite.
- (ii) The first one is the Neyveli Lignite Corporation that has led to the development of large industrial complex around Neyveli in Cuddalore district with Thermal power plants, Fertilizer and Carbonisation plants.
- (iii) 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.
- (iv) Molybdenum is found in Karadikuttam in Madurai district.

- 40. Bilateral Monopoly refers to a market situation in which a single producer of a product faces a single buyer of that product.

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PART - IV

41. (a) Oligopoly is a market situation in which there are a few firms selling homogeneous or differentiated products.

Features of Oligopoly :

- (i) **Few large firms :** Very few big firms own the major control of the whole market by producing major portion of the market demand.
- (ii) **Interdependence among firms :** The price and quality decisions of a particular firm are dependent on the price and quality decisions of the rival firms.
- (iii) **Group behaviour :** The firms under oligopoly realise the importance of mutual co-operation.
- (iv) **Advertisement Cost :** The oligopolist could raise sales either by advertising or improving the quality of the product.
- (v) **Nature of product :** Perfect oligopoly means homogeneous products and imperfect oligopoly deals with heterogeneous products.
- (vi) **Price rigidity :** It implies that prices are difficult to be changed. The oligopolistic firms do not change their prices due to the fear of rivals' reaction.

(OR)

(b) **Short run cost curves :**

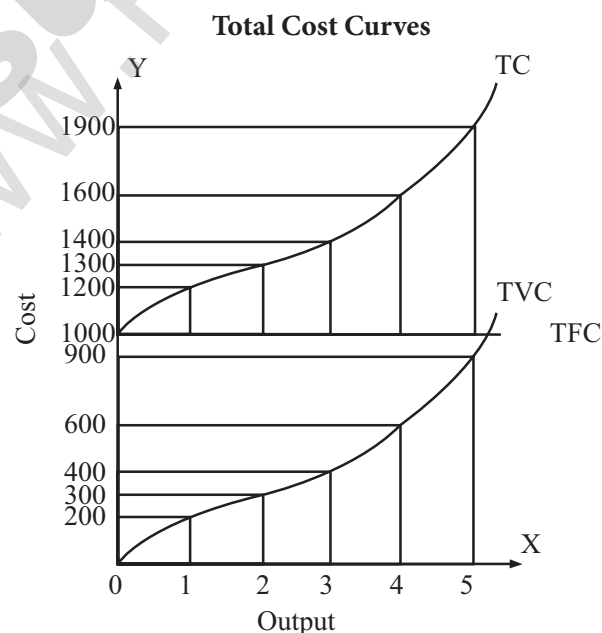
Total fixed cost (TFC) : All payments for the fixed factors of production are known as Total Fixed Cost.

Total variable cost :

- (i) All payments to the variable factors of production are called total variable cost.
- (ii) As output increases TVC also increases.

Total cost curve :

- (i) Total cost means the sum Total of All Payments made in the production.
- (ii) Total cost is the summation of Total Fixed Cost (TFC) and Total Variable Cost (TVC).
- (iii) It is written as $TC = TFC + TVC$



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Average fixed cost :

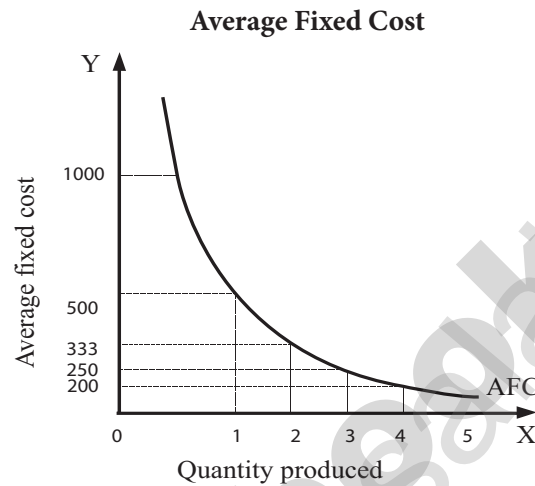
- (i) It refers to the fixed cost per unit of output.
 (ii) It is obtained by dividing the total fixed cost by the quantity of output.

$$AFC = TFC / Q$$

AFC = Average Fixed Cost

TFC = Total Fixed Cost

Q = Output

**Average variable cost : (AVC)**

- (i) It refers to the total variable cost per unit of output.
 (ii) It is obtained by dividing total variable cost (TVC) by the quantity of output (Q)

$$AVC = TVC / Q$$

Average total cost (ATC) or Average cost (AC) :

- (i) It refers to the total cost per unit of output.
 (ii) It can be obtained in two ways.
 (iii) By dividing the firm's total cost (TC) by the quantity of output (Q).

$$ATC = TC / Q$$

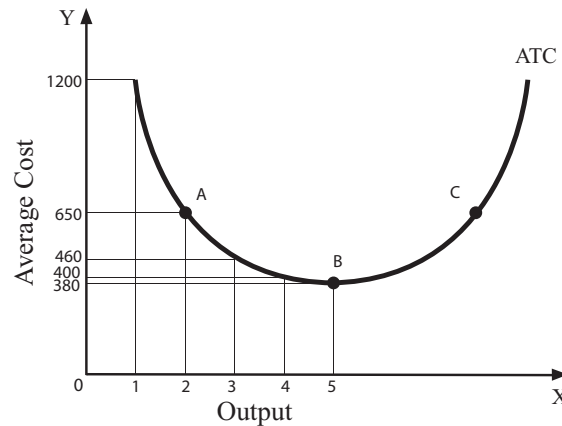
Q in unit	TFC in (₹)	TVC in (₹)	TC in (₹)	ATC TC/Q (in ₹)	AFC in (₹)	AVC in (₹)	ATC (AFC+ AVC) (in ₹)
0	1000	0	1000	1000 / 0 = 0	0	0	0 + 0 = 0
1	1000	200	1200	1200/1=1200	1000	200	1000 + 200 = 1200
2	1000	300	1300	1300 / 2 = 650	500	150	500 + 150 = 650
3	1000	400	1400	1400 / 3 = 466	333	133	333 + 133 = 466
4	1000	600	1600	1600 / 4 = 400	250	150	250 + 150 = 400
5	1000	900	1900	1900 / 5 = 380	200	180	200 + 180 = 380

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Average Cost

**Marginal Cost : (MC)**

- (i) It is the cost of the last single unit produced.
- (ii) The change in total costs resulting from producing one extra unit of output.
- (iii) Marginal cost is 'U' shaped curve.

42. (a) Objectives of nationalization of commercial banks:

- (i) The main objective of nationalisation was to attain social welfare. Sectors such as agriculture, small and village industries were in need of funds for their expansion and further economic development.
- (ii) It helps to curb private monopolies in order to ensure a smooth supply of credit.
- (iii) It is needed to encourage the banking habit among the rural population because 70% of the people lived in rural areas.
- (iv) Nationalization banks were required to reduce the regional imbalances.
- (v) Banks created credit facilities mainly to the agriculture sector and its allied activities after nationalization.
- (vi) Before Independence, the numbers of banks were certainly inadequate.

(OR)

- (b) The new EXIM policy has been formulated focusing on increasing in exports scenario, boosting production and supporting the concepts like Make in India and Digital India.

Salient Features:

- (i) Reduce export obligations by 25% and give boost to domestic manufacturing supporting the "Make in India" concept.
- (ii) 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.
- (iii) Repeated submission of physical copies of documents available on Exporter Importer Profile is not required.
- (iv) Export obligation period for export items related to defence, military store, aerospace and nuclear energy to be 24 months.
- (v) 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 ambitious.

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43. (a) These are two types of method.
(i) Deductive (ii) Inductive

Steps of Deductive Method

- (i) It consists in deriving conclusions from general truths. It takes few general principles and applies them to draw conclusions.
(ii) It is also named as analytical or abstract method.
(iii) The classical and neo-classical school of economist.

Deductive method of economic analysis

Step 1: The analyst must have a clear and precise idea of the problem to be inquired into.

Step 2: The analyst clearly defines the technical terms used in the analysis.

Step 3: Deduce hypothesis from the assumptions taken.

Step 4: Hypotheses should be verified through direct observation of events in the real world and through statistical methods. (eg.) There exists an inverse relationship between price and quantity.

Inductive method of economic analysis

- (i) It involves the process of reasoning from the particular facts to general principle.
(ii) Inductive method, also called empirical method is adopted by the "Historical School of Economists".

Steps of Inductive method

Step 1: Data are collected about a certain economic phenomenon. These are systematically arranged and the general conclusions are drawn from them.

Step 2: By observing the data conclusions are easily drawn.

Step 3: Generalization of the data and then Hypothesis formulation.

Step 4: Verification of the hypothesis (eg.) Engel's law.

(OR)

- (b) **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 products will diminish.

Assumptions:

- (i) Only one factor is variable while others are held constant.
(ii) All units of the variable factor are homogeneous.
(iii) The product is measured in physical units
(iv) No change in the state of technology.
(v) No change in the price.

Stages of Production

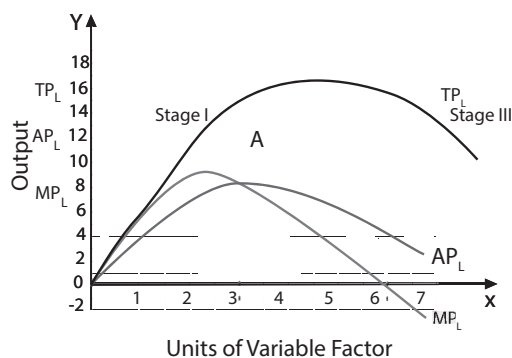
Units of variable factor(L)	Total Product (TP _L)	Marginal Product (MP _L)	Average	Stages
1	2	2	2	I
2	6	4	3	
3	12	6	4	
4	16	4	4	II
5	18	2	3.6	
6	18	0	3	III
7	16	-2	2.28	

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(vi) **Diagram Explanation :** The number of worker is measured on, X-axis, TP_L , AP_L and MP_L are denoted on Y-axis.



Stage - I

- (i) In the first stage MP_L increases up to third labourer and it is higher than the average product.
- (ii) So that total product is increasing at an increasing rate.

Stage - II

- (i) In the second stage, MP_L decreases up to sixth unit of labour where MP_L curve intersects the x-axis.
- (ii) MP_L curve is lower than the AP_L .
- (iii) TP_L increases at a decreasing rate.

Stage - III

- (i) Third stage of production shows that the sixth unit of labour is marked by negative.
- (ii) MP_L and AP_L continues to fall but remains positive.
- (iii) TP_L declines with the employment of more units of variable factor, labour.

44. (a) There are three methods of measuring price elasticity of demand.

(i) **The Percentage Method :-**

$$(1) e_p = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

(2) It is also known as ratio method.

(3) $e_p = \frac{\% \Delta Q}{\% \Delta P}$ where

$\% \Delta Q$ = percentage change in demand ; $\% \Delta P$ = percentage change in price

(ii) **Total Outlay Method :-**

(1) Marshall suggested that the simplest way to decide whether demand is elastic or inelastic is to examine the change in total outlay of the consumer or total revenue of the firm.

(2) Total Revenue = Price \times Quantity

(3) $TR = P \times Q$

Price	Quantity Demanded	Total outlay	Elasticity
150	3	450	} $e > 1$
125	4	500	
100	5	500	} $e = 1$
75	6	450	

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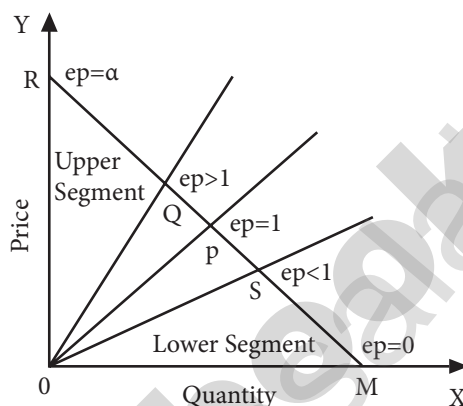
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(iii) Point (or) Geometrical Elasticity :-

- (1) The point elasticity of linear demand curve is shown by the ratio of the segments of the line to the right and left of the particular point.
- (2) The demand curve is a straight line, it is said to be linear.

(3) Point elasticity = $\frac{\text{Lower segment of the demand curve below the given point}}{\text{Upper segment of the demand curve above the given point}}$
--

$$ep = \frac{L}{U} ; L = \text{Lower Segment}; U = \text{Upper Segment}$$



(OR)

(b) Loanable Fund Theory of Interest :

- (i) The Loanable Fund Theory, also known as the 'Neo - Classical Theory'.
- (ii) This theory was developed by Swedish economists like Wicksell, Bertil, Ohlin, Viner, Gunnar Myrdal and others.

Definition : According to this theory, interest is the price paid for use of the loanable funds. The rate of interest is determined by the equilibrium between demand for and supply of loanable funds in the credit market.

Demand for Loanable Funds :

The demand for loanable funds depends upon the following

- (1) Demand for investment (I)
- (2) Demand for consumption (C)
- (3) Demand for Hoarding (H)

Supply of Loanable Funds :

Supply of loanable funds depend upon,

- | | |
|----------------------|------------------------|
| (1) Saving (S) | (2) Bank Credit (BC) |
| (3) Dishoarding (DH) | (4) Disinvestment (DI) |

Supply of loanable funds very directly with the interest rate.

Equilibrium of Classical Theory of Interest :

According to classical theory equilibrium is determined by the intersection of demand and supply of loanable fund.
(S = I)

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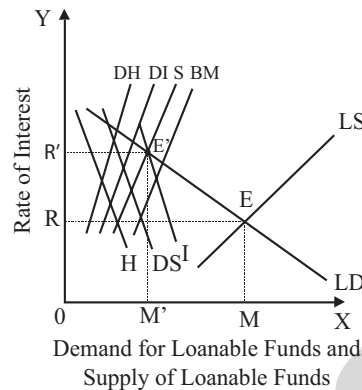
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Supply and Demand for loanable funds :

$$\begin{aligned} \text{Supply of loanable funds} &= \text{Saving} + \text{Bank credit} + \text{Dishoarding} + \text{Disinvestment} \\ &= S + BC + DH + DI \end{aligned}$$

$$\begin{aligned} \text{Demand for loanable funds} &= \text{Investment} + \text{Consumption} + \text{Hoarding.} \\ &= I + C + H \end{aligned}$$

Loanable funds Theory of Interest**Diagram Explanation :**

- (i) X - axis represents demand for and supply of loanable fund Y - axis represents the rate of Interest.
- (ii) The LD and LS curves intersect at point 'E' is called equilibrium point.
- (iii) At this point OR - rate of interest, OM is the amount of loanable funds are determined.

Criticism :

- (i) This theory is "indeterminate" unless the income level is already known.
- (ii) It is very difficult to combine real factors with monetary factors.

45. (a) The main economic ideas of B.R. Ambedkar (1891 - 1956) may be studied under four broad headings . They are.

(A) Financial Economics :

- (i) Much of the work done by B.R. Ambedkar during the period (1913 - 1923) was in the field of finance Economics.
- (ii) He divided the evolution of provisional Finance in to three stages such as
 - (i) Budget by Assignment
 - (ii) Budget by Assigned Revenue
 - (iii) Budget by Shared Revenue

(B) Agricultural Economics :

In 1918, Ambedkar published a paper "Small holdings in India and their Remedies".

(C) Economics of Caste :

- (i) Ambedkar believed that caste was an obstacle to social mobility.
- (ii) The caste system has resulted in the absence of social democracy in India as distinct from political democracy.

(D) Economics of socialism :

- (i) Ambedkar was a socialist. He was a champion of state socialism.
- (ii) He advocated the nationalization of all key industries and suggested state ownership of land and collective farming.

(OR)

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(b) Ricardian Theory of Rent :

The Classical Theory of Rent is called "Ricardian Theory of Rent".

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

Assumption :

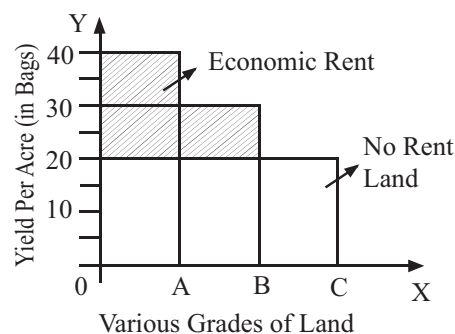
- (i) Land differs in fertility.
- (ii) The law of diminishing returns operates in agriculture.
- (iii) Theory assumes perfect competition.
- (iv) It is based on long period.
- (v) Land is used for cultivation only.
- (vi) Most fertile lands are cultivated first.

Statement of the theory with illustration :

- (i) There are three grades of land namely A, B and C.
- (ii) 'A' being most fertile, 'B' less fertile and 'C' the least fertile land.
- (iii) They will first cultivate all the most fertile land.
- (iv) Given a certain amount of labour and capital 'A' grade land produce 40, B - 30 and C - 20 bags of paddy.
- (v) Suppose another group of people goes and settles down in the same island after some time 'B' grade brought under cultivation.
- (vi) 'A' grade land yield 40 bags of paddy and 'B' grade land yield 30 bags of paddy. The surplus of 10 bags per acre appear on 'A' grade land.
- (vii) This is "Economic Rent"
- (viii) Suppose yet another group of people goes and settles down in the same island after some time 'C' brought under cultivation.
- (ix) 'C' grade land, cost of production is just equal to the price of its production (20- 20)
- (x) Hence 'C' grade land is called "no rent land or marginal land.

Grades of lands and their Productions

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

Ricardian Theory of Rent

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- (xi) 'A' and 'B' grade lands are "intra marginal lands".
- (xii) The economic rent yielded by 'A' and 'B' grade lands.
- (xiii) This grade land is "No rent land".

Criticism :

- (i) The order of cultivation from most fertile to least fertile lands is historically wrong.
- (ii) This theory assumes that rent does not enter into price. But in reality, rent enters into price.

46. (a) **Meaning of Rural Indebtedness:** 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.

(OR)

(b) **Various sources of energy in Tamil Nadu:**

Energy :

- (i) Tamil Nadu tops in power generation among the southern states.
- (ii) The Tamil Nadu Development Agency (TEDA) is a Tamil Nadu Government promoting renewable energy sources and energy conservation activities.
- (iii) The agency has largely been responsible for instigating the tremendous growth of Tamil Nadu in the development of wind power.
- (iv) Muppandal wind farm is a renewable energy source, supplying the villagers with electricity for work.

Nuclear :

The Kalpakkam and the Koodankulam Nuclear power plant are the major nuclear energy plants for the energy grid.

Thermal Power :

- (i) The share of thermal power in total energy sources is very high in Tamil Nadu.
- (ii) It available at Athippattu, Ennore, Mettur, Neyveli and Thoothukudi.

Hydel :

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

Solar and Wind :

- (i) Tamil Nadu tops in solar power generation in India. Southern Tamil Nadu is considered as one of the most suitable regions in the country for developing solar power projects.
- (ii) 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.

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47. (a)

(i) Uses of Mathematical Methods in Economics :

- (i) Mathematical Methods help to present the economic problems in a more precise form.
- (ii) This methods help to explain economic concepts.
- (iii) This methods help to use a large number of variables in economic analysis.
- (iv) To quantify the impact or effect of any economic activity implemented by Government.

(ii) Causes of housing problem in rural areas :

- (i) To getting aggravated due to rapid adaptation of nuclear families.
- (ii) Problems in the provision of proper water supply good sanitation, proper disposal of sewage.

(OR)

(b) The matrix form of the given equation is written as

$$\begin{bmatrix} 7 & -1 & -1 \\ 10 & -2 & +1 \\ 6 & 3 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 0 \\ 8 \\ 7 \end{bmatrix}$$

$$\begin{aligned} \Delta &= \begin{vmatrix} 7 & -1 & -1 \\ 10 & -2 & +1 \\ 6 & 3 & -2 \end{vmatrix} \\ &= 7(4-3) - (-1)(-20-6) + (-1)(30+12) \\ &= 7(1) + 1(-26) - 1(42) \\ &= 7 - 26 - 42 \\ &= 7 - 68 \end{aligned}$$

$$\Delta = -61$$

$$\Delta x_1 = \begin{vmatrix} 0 & -1 & -1 \\ 8 & -2 & +1 \\ 7 & +3 & -2 \end{vmatrix}$$

$$\begin{aligned} &= 0(4-3) - (-1)(-16-7) + (-1)(+24+14) \\ &= 0 + 1(-23) - 1(38) \\ &= 0 - 23 - 38 \end{aligned}$$

$$\Delta x_1 = -61$$

$$\Delta x_2 = \begin{vmatrix} 7 & 0 & -1 \\ 10 & 8 & +1 \\ 6 & 7 & -2 \end{vmatrix}$$

$$\begin{aligned} &= 7(-16-7) - (0)(-20-6) + (-1)(70-48) \\ &= 7(-23) + 0(-26) - 1(22) \\ &= -161 + 0 - 22 \end{aligned}$$

$$\Delta x_2 = -183$$

$$\Delta x_3 = \begin{vmatrix} 7 & -1 & 0 \\ 10 & -2 & 8 \\ 6 & 3 & 7 \end{vmatrix}$$

$$\begin{aligned} &= 7(-14-24) - (-1)(70-48) + 0(30+12) \\ &= 7(-38) + 1(22) + 0(42) = -266 + 22 + 0 \end{aligned}$$

$$\Delta x_3 = -244$$

$$x_1 = \frac{\Delta x_1}{\Delta} = \frac{-61}{-61} = 1$$

$$x_2 = \frac{\Delta x_2}{\Delta} = \frac{-183}{-61} = 3$$

$$x_3 = \frac{\Delta x_3}{\Delta} = \frac{-244}{-61} = 4$$

$$x_1 = 1$$

$$x_2 = 3$$

$$x_3 = 4$$

