

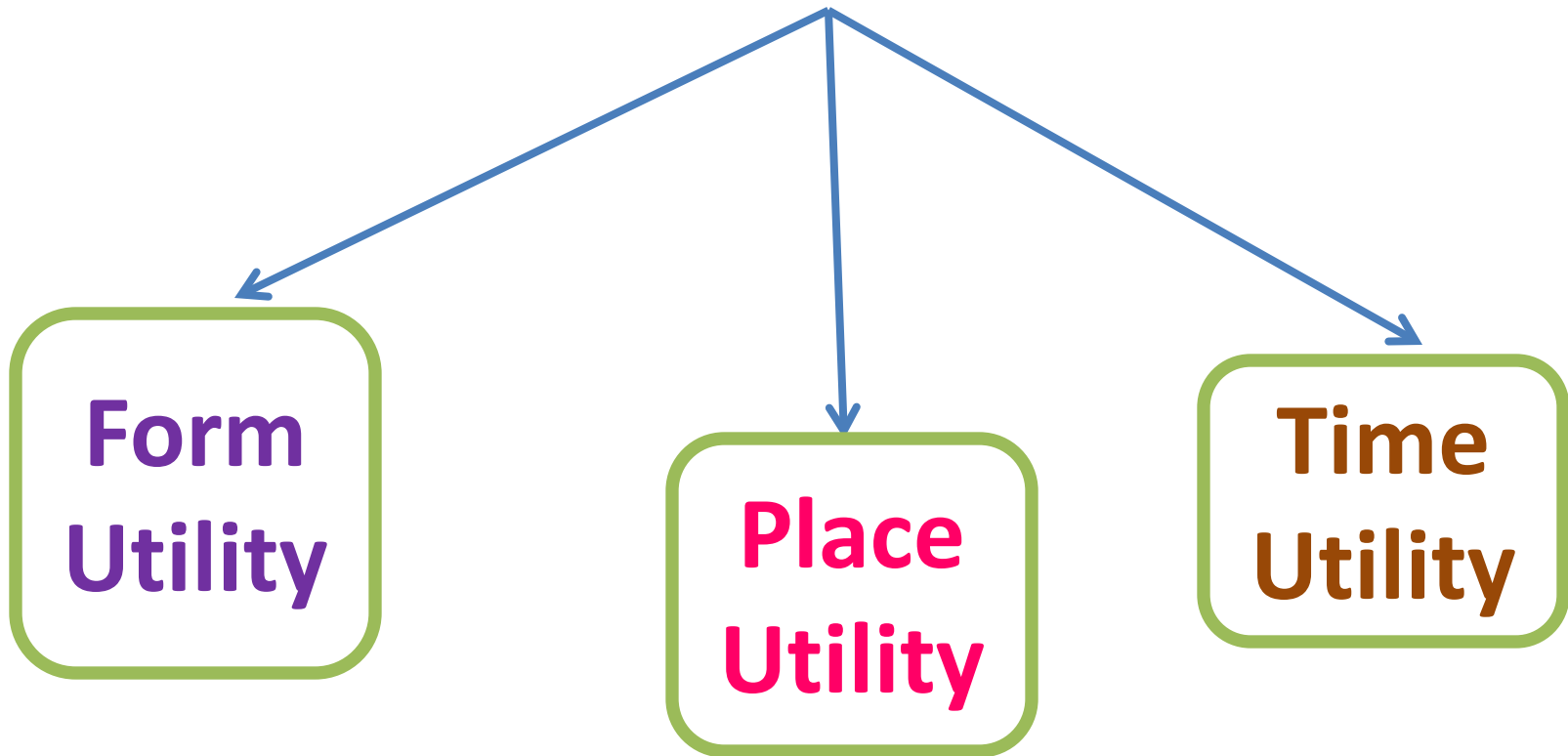
Theory of Production

General Economics

Production

- In General, Production means, “Any Activity of Making Something Material.”
- In Economics, Production means, “Any Economic Activity which is directed to the Satisfaction of the Wants of the People.
- Production means “Creation or Addition of Utility”.

Production



Production

- **Form Utility**

Changing the Form of Natural Resources i.e.

Converting the Raw Material into items

Possessing Utility.

For Example, Changing the form of a Log of

Wood into a Table or Changing the form of Iron

into a Machine.

Production

- **Place Utility**

Changing the Place of Resources from the Place where they are of little or no use to another place where they are of Greater use.

Extraction from Earth

- Removal of Coal , Gold etc from Mines & Supplying them to Markets.

Transferring Goods from Where they give little or no Satisfaction to places where Utility is More.

- Apples in Kashmir Orchards

Production

- **Time Utility**

Making Available Materials at times when they are not Normally Available.

For Example, Harvested Food Grains are Stored for use till next Harvest. Canning of Seasonal Fruits is undertaken to make them available during off Season.

Production

Wool

Form Utility
Created

Changed to Woollen Cloth

Place Utility
Created

Transported to Market

Used in Winters

Time Utility
Created

Factors of Production

Natural Resources

- Land

Human Resources

- Labour
- Capital
- Entrepreneur

Land

Land in Economics does not mean Soil or Earth's Surface alone but refers to all Free Gifts of Nature which would include Natural Resources, Fertility of Soil, Water, Air, etc.

Characteristics of Land

- Land is a Free Gift of Nature.
- Land is Strictly Limited in Quantity.
- Land cannot be Shifted from one place to another place.
- Properties of Land cannot be Destroyed.
- Land does not Yield any Result unless Human Efforts are employed.

Labour

- Labour is referred to as “Mental or Physical Exertion directed to Produce Goods or Services “.
- Work done for the Sake of Pleasure or Love does not represent Labour in Economics. Eg. If a Person Sings before his Friends, it will not be Labour as it is done for the Sake of Pleasure.

Characteristics of Labour

- **Directly connected with Human Efforts.**
- **Highly 'Perishable'**
 - **A Labourer cannot Store his Labour.**
- **Inseparable from Labourer**
- **Labour Power differs from Labourer to Labourer**
- **All Labour is not Productive.**

Capital

- Capital is that part of Wealth of an Individual or Community which is used for further Production of Wealth.
- It is a Stock Concept which yields a Periodical Income which is a Flow Concept.
- It is Termed as “Produced Means of Production” or “Man Made Instruments of Production” e.g. Factories, Dams, etc.

Capital Formation

- It means a Sustained Increase in the Stock of Real Capital in a Country.
- Also Known as Investment.
- Stages of Capital Formation:
 - Savings
 - Mobilization of Savings
 - Investment

Entrepreneur

- Entrepreneur mobilizes all the Factors of Production i.e. Land, Labour & Capital, Combines in the Right Proportion, Initiates the Process of Production & bears Risk involved in it.
- Also known as “The Organiser”; “The Manager”; “The Risk Taker”.

Functions of Entrepreneur

- **Initiating a Business Enterprise & Resource Co-Ordination**
- **Risk Bearing or Uncertainty Bearing**
 - **Financial Risk**
 - **Technological Risk**
- **Innovations**

Production Function

- It states the relationship between Inputs & Output.
- It defines the Minimum Quantities of various Inputs that are required to Yield a given Quantity of Output under a given State of Technology.

Production Function

Short Period

- **Capital is a Fixed Factor**
- **Law of Variable Proportions is applied**

Long Period

- **All Variable Factors**
- **Law of Returns to Scale is applied**

Basic Concepts to Law of Variable Proportions

**Total
Product**

**Average
Product**

**Marginal
Product**

Total Product (TP)

- Total Product is the Total Output resulting from the efforts of all the Factors of Production combined together at any Time.
- One Factor kept Constant, Total Product will vary with the Quantity used of the Variable Factor.
- Total Product rises as more & more Units of Variable Input is employed.

Average Product (AP)

- Average Product is the Total Product per unit of the Variable Factor. i.e.

$$AP = \frac{\text{Total Product}}{\text{Units of Variable Factor}}$$

Marginal Product (MP)

- **Marginal Product is the Change in Total Product per unit Change in the Quantity of Variable Factor. i.e., Marginal Product is the Addition made to the Total Production by an Additional Unit of Output.**

$$MP = TU_n - TU_{n-1}$$

Product Schedule

Quantity of Labour	Total Product (TP)	Average Product (AP)	Marginal Product (MP)
(1)	(2)	(3)	(4)
1	100	100.0	100
2	210	105.0	110
3	330	110.0	120
4	430	107.5	100
5	520	104.0	90
6	600	100.0	80
7	670	95.7	70
8	720	90.0	50
9	750	83.3	30
10	760	76.0	10
11	740	67.2	-20

Relationship Between AP & MP

- **Derived from Total Product**
- **MP > AP, when AP rises as a result of an Increase in Quantity of Variable Input**
- **MP = AP, when AP is Maximum i.e. MP curve cuts the AP curve at its Maximum**
- **MP < AP, when AP falls as a result of a Decrease in Quantity of Variable Input**

Law of Variable Proportions

- It refers to Input-Output relationship, when the Output is Increased by varying the Quantity of one Input.
- Law Operates in Short-Run when all the Factors of Production cannot be Increased or Decreased.
- Law states that “As we Increase the Quantity of One Input which is combined with other Fixed Inputs, the Marginal Physical Productivity of the Variable Input must eventually Decline.

Law of Variable Proportions

- The Law of Variable Proportions states that if the Input of one Resource is Increased by equal Increments per unit of Time while the Inputs of other resources are held Constant, Total Output will Increase, but beyond some point the resulting Output Increased will become Smaller & Smaller.

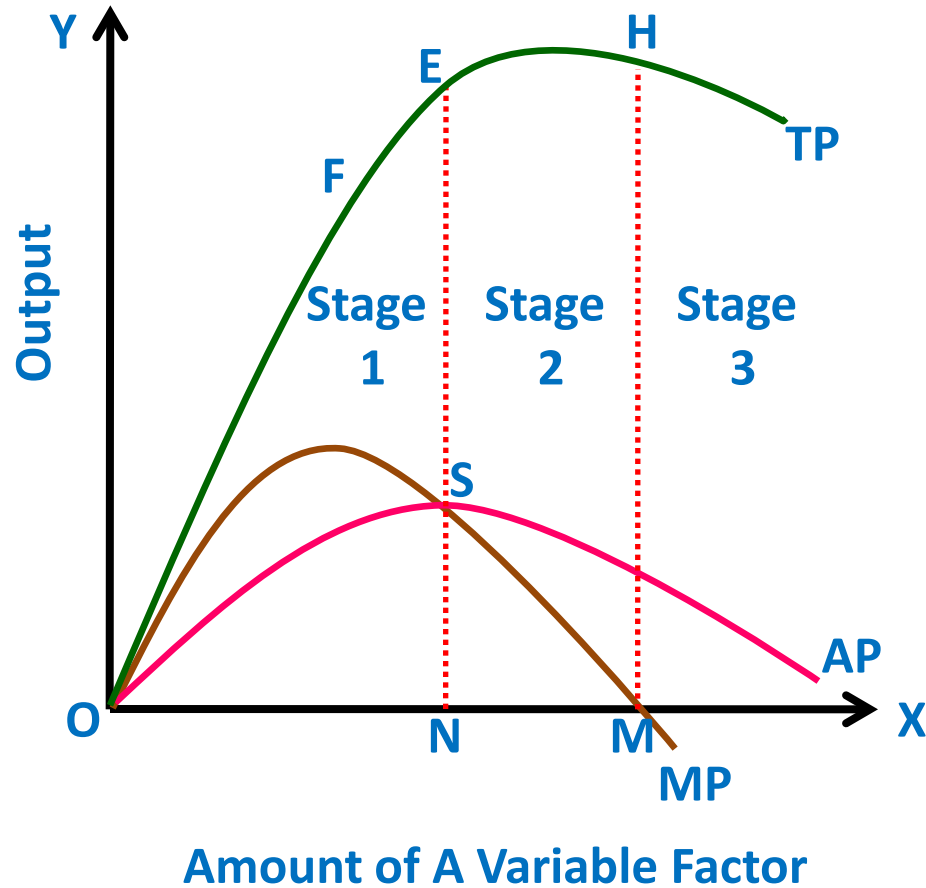
By: Leftwitch

- The Law states that an Increase in some Input relative to other Fixed Input will, in a given State of Technology, cause Total Output to Increase; but after a point the extra Output resulting from the same addition of extra Inputs is likely to become Less & Less.

Assumptions to the Law

- **One of the Factor is Variable while all other Factors are Fixed.**
- **All Units of the Variable Factor are Homogenous.**
- **State of Technology is Constant.**
- **Factors of Production can be used in Different Proportions.**

Law of Variable Proportions



Law of Variable Proportions

Stages	Total Product	Marginal Product	Average Product
1st Stage (O to E) (MP > AP) Law of Increasing Returns	Initially it increases at an increasing rate. Later at diminishing rate	Initially increases & reaches the maximum point. Then starts declining	Increases & reaches its maximum point. Here AP=MP
2nd Stage (E to H) (MP < AP) Law of Diminishing Returns	Increases at diminishing rate & reaches its maximum point	Decreases & becomes zero at point M.	After reaching its maximum point, begins to decrease.
3rd Stage (Beyond H) Law of Negative Returns	Begins to fall	Becomes Negative	Continues to diminish but remains positive.

Stage of Operation

- **A Rational Producer will not Produce in**
 - **Stage 3 as MP of Variable Factor is Negative.**
 - **Stage 1 as Factors of Production are Under-Utilised.**
- **A Rational Producer will always Produce in Stage 2 where both the Marginal Product & Average Product of the Variable Factors are Diminishing. At which particular Point in this Stage, a Producer will decide to Produce depends upon the Prices of Factors.**

Causes of Applicability of the Law

- Underutilization of Fixed Factor
- Fixed Factors of Production
- Optimum Production
- Imperfect Substitute

Law of Returns to Scale

- It refers to Input-Output relationship, when the Output is Increased by varying the Quantity of All Inputs.
- Law Operates in Long-Run when all the Factors of Production can be Increased or Decreased.
- It is the study of Behaviour of Output in response to Change in Scale i.e. All Factors are Increased or Decreased in Same Proportion.

Law of Returns to Scale

Constant Returns to Scale

- With the Increase in the Scale in some Proportion, Output Increases in Same Proportion

Increasing Returns to Scale

- With the Increase in the Scale in some Proportion, Output Increases in Greater Proportion

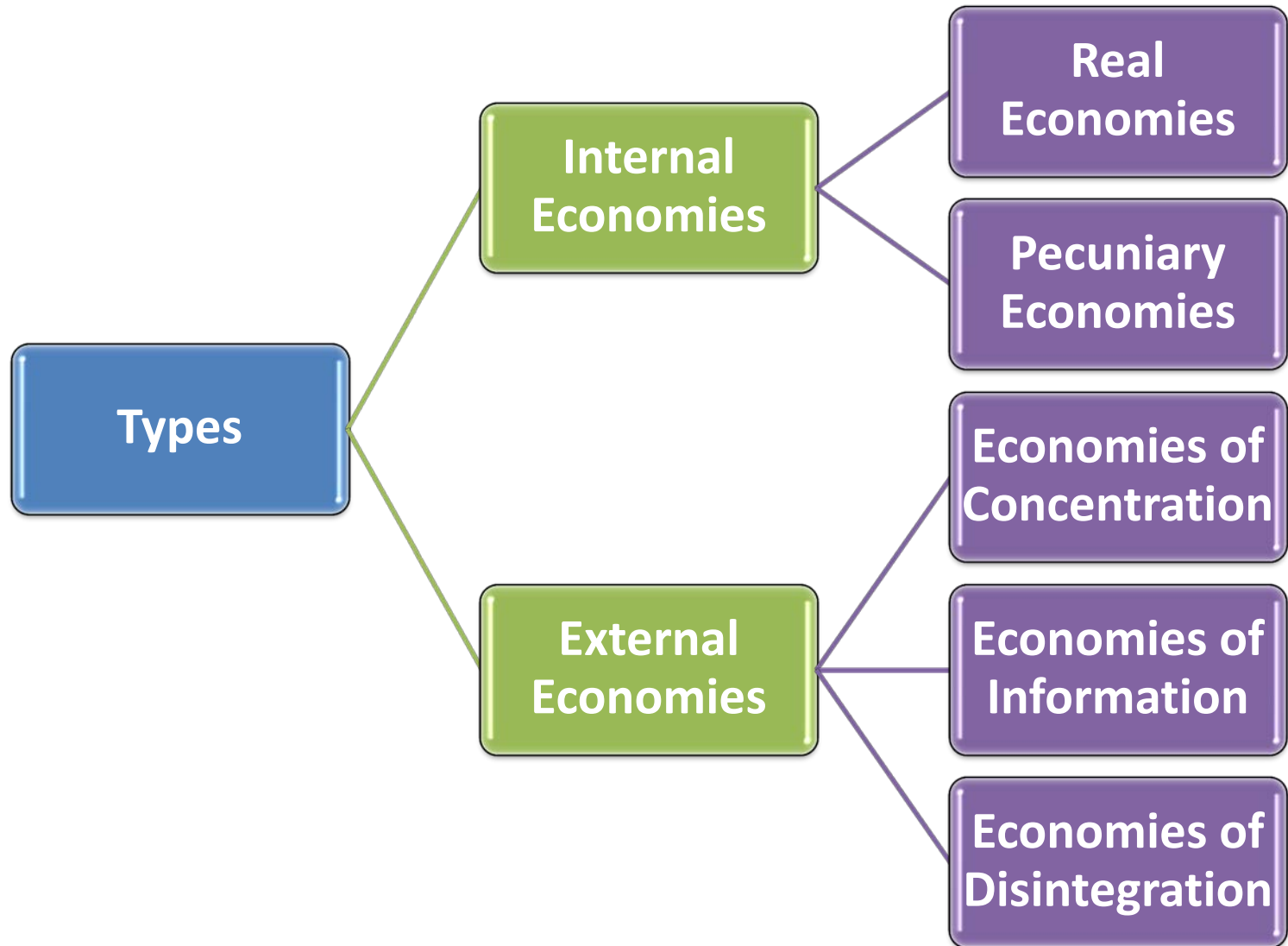
Decreasing Returns to Scale

- With the Increase in the Scale in some Proportion, Output Increases in Smaller Proportion

Economies of Scale of Production

- According to Stigler, “Economies of Scale is Synonym of Returns to Scale”.
- When Scale of Production is Increased, up to a Point, One gets Economies of Scale. Thereafter Diseconomies of Scale will follow.
- Increasing Returns to Scale is the result of these Economies.

Economies of Scale of Production



Internal Economies of Scale

- When a Firm Increases its Scale of Production, it enjoys several Economies which are termed as “Internal Economies”.
- According to **Cairncross**, “Internal Economies are those which are open to a Single Factory, or a Single Firm independently of the action of Other Firms. They result from an Increase in the Scale of Output of a Firm & cannot be achieved unless Output Increases”.

Real Economies of Scale

- **Real Economies** are those associated with a **Reduction in the Physical Quantity of Inputs, Raw Materials, Various types of Labour & Various Types of Capital.**
- **These are of following types:**
 - a) **Labour Economies**
 - b) **Technical Economies**
 - c) **Inventory Economies**
 - d) **Marketing Economies**
 - e) **Managerial Economies**
 - f) **Transport & Storage Economies**

Real Economies of Scale

- **Labour Economies**

Increase in Scale of Production results into the following Economies of Labour:

a) Specialization

b) Time Saving

c) New Inventions

d) Automation of Production Process

Real Economies of Scale

- **Technical Economies**

These Economies influence the Size of the Firm. These result from Greater Efficiency of the Capital Goods employed by the Firm. These are of following types:

a) Economies of Increased Dimension

b) Economies of Linked Processes

c) Economies of Use of By-Product

Real Economies of Scale

- **Inventory Economies**

A Large-sized Firm enjoys several types of Inventory Economies such as:

a) Large Stock of Raw Materials

b) Large Stock of Spare Parts & Small Tools

As such there is no Fear of Stoppage of Production.

Real Economies of Scale

- **Marketing Economies**

A Large-sized Firm enjoys several types of Marketing Economies such as:

- a) Economies on Account of Advertisement**
- b) Appointment of Sole Distributors & Authorized Dealers**
- c) Economies on account of Research & Development**

All this enables the Firm to Produce Quality Products.

Real Economies of Scale

- **Managerial Economies**

- a) **Appointment of Efficient & Talented Managers.**

- b) **Decentralization of Task**

With the Increase in Production, the Management Cost goes on Falling.

Real Economies of Scale

- **Transport & Storage Economies**
 - a) **Own Transportation System**
 - b) **Own Storage & Godown Facilities.**

With this the Firm is able to Sell its Products at the Opportune Time & at Favourable Price.

Pecuniary Economies of Scale

- **Pecuniary Economies are Economies realized from paying Lower Prices for the Factors used in Production & Distribution due to bulk buying by the Firm as its size Increases.**
- **For Example, Procurement of Raw Material at Low Prices, Concessional Loans from Bank, Large Discounts & Commissions on Advertisement & Publicity of their Products, etc.**

External Economies of Scale

- **External Economies of Scale** refers to all those **Benefits & Facilities** which are available to all the **Firms** in a given **Industry**.
- In the words of **Cairncross**, “**External Economies** are those which are shared in by a number of **Firms** or **Industries** when the **Scale of Production** in **Industry** or **Group of Industries** **Increases**. They are not **Monopolized** by a **Single Firm** when it grows in **Size**, but are conferred on it when other **Firms** grow **Larger**”.
- The following 3 are **External Economies**:
 - a) **Economies of Concentration**
 - b) **Economies of Information**
 - c) **Economies of Disintegration**

Economies of Concentration

- When several Firms of an Industry establish themselves at one place, then they enjoy many benefits together.
- For Example, Availability of Developed means of Communication & Transport, Trained Labour by Products, Development of New Inventions pertaining to that Industry, etc.

Economies of Information

- When the number of Firm in an Industry Increases, then it becomes possible for them to have concerted efforts & collective activities such as Publication of Scientific & Trade Journals providing sundry Information to the Firms of a given Industry.

Economies of Disintegration

- When an Industry develops, the Firms engaged in it Mutually Agree to divide the Production Process among them. Every firm Specializes in the Production of a particular item concerning that Industry.
- It is of Two Types:
 - Horizontal Disintegration
 - Vertical Disintegration

Diseconomies of Scale

- When a given percentage Increase in all the Factors causes less than proportionate Increase in Output after a point, is referred to as Diseconomies of Scale. i.e. Increase in Scale beyond the Optimum level, results in Diseconomies of Scale.
- It is of Two kinds:
 - Internal Diseconomies
 - External Diseconomies

Internal Diseconomies of Scale

- These Diseconomies arise when a given Firm Increases its Scale of Production beyond a certain Point.
- These do not affect the entire Industry.
- These arise because of 2 reasons:
 - a) Unwieldy Management
 - b) Technical Difficulties

External Diseconomies of Scale

- **These Diseconomies are suffered by all the Firms in an Industry irrespective of their Scale of output.**
- **For Example, when many Firms are localized at a particular place, then it becomes difficult for Means of Transport to cope up with the additional burden of Traffic, and hence Transport Costs go up.**

Q1

Which of the Following is not a Characteristic of Land?

- a) Its Supply for the Economy is Limited.**
- b) It is Immobile.**
- c) Its Usefulness depends upon Human efforts.**
- d) It is Produced by our Forefathers.**

Q2

Which of the Following is Considered Production in Economics?

- a) Tiling of Soil.**
- b) Singing a Song before Friends.**
- c) Preventing a Child from falling into a Manhole on the road.**
- d) Painting a Picture for Pleasure.**

Q3

Identify the Correct Statement:

- a) The Average Product is at its Maximum when Marginal Product is equal to Average Product.
- b) The Law of Increasing Returns to Scale relates to the effect of changes in Factor Proportions.
- c) Economies of Scale arise only because of Indivisibilities of Factor Proportions.
- d) Internal Economies of Scale can accrue only to the Exporting Sector.

Q4

Which of the following statement is True?

- a) Accumulation of Capital depends solely on Income.**
- b) Savings can also be affected by the State.**
- c) External economies go with Size and Internal Economies with Location**
- d) The Supply Curve of Labour is upward slopping curve.**

Q5

In the Production of Wheat, all of the following are Variable Factors that are used by the farmer except:

- a) The Seed & Fertilizer used when the crop is planted.**
- b) The field that has been cleared of trees & in which crop is planted.**
- c) The tractor used by the farmer in planting & cultivating not only wheat but also corn & barley.**
- d) The number of hours that the farmer spends in cultivating the wheat fields.**

Q6

The Marginal Product of Variable Input is Best described as:

- a) Total Product divided by the number of Units of Variable Input.**
- b) The Additional Output resulting from One Unit Increase in the Variable Input.**
- c) The Additional Output resulting from a One Unit Increase in both the Variable & Fixed Units.**
- d) The Ratio of the Amount of Variable Input being used to the Amount of the Fixed Input being used.**

Q7

Diminishing Marginal Returns Implies:

a) Decreasing Average Variable Costs.

b) Decreasing Marginal Costs.

c) Increasing Marginal Costs.

d) Decreasing Average Fixed Costs.

Q8

The Short-Run, as Economists use the phrase, is characterized by:

- a) At least one Factor of Production & Firms are neither Leaving nor Entering the Industry.**
- b) A Period where the Law of Diminishing Returns does not hold.**
- c) No Variable Inputs – that is all of the Factors of Production are Fixed.**
- d) All Inputs being Variable.**

Q9

The MP, AP & TP Curves encountered by the firms producing in the Short run exhibit all of the following relationships except:

- a) When TP is rising, AP & MP may be either rising or falling.
- b) When MP is (-)ve, TP & AP are falling.
- c) When AP is at a maximum, $MP = AP$, & TP is rising.
- d) When MP is at a maximum, $AP = MP$, & TP is rising.

Q10

To Economists, the main difference between the Short run & Long run is that:

- a) In the Short Run all Inputs are Fixed, while in the Long Run all Inputs are Variable.**
- b) In the Short Run the Firm varies all of its Inputs to find the Least-Cost combination of Inputs.**
- c) In the Short Run, at least one of the Firm's Input levels is fixed.**
- d) In the Long run, the Firm is making a constrained decision about how to use existing Plant & Equipment efficiently.**

Q11

Which of the following is the best definition of the “Production Function”?

- a) The relationship between Market Price & Quantity Supplied.**
- b) The relationship between Firm’s Total Revenue & Cost of Production.**
- c) The relationship between the Quantities of Inputs needed to produce a given Level of Output.**
- d) The relationship between the Quantity of Inputs & the Firm’s Marginal Cost of Production.**

Q12

The “Law of Diminishing Returns” applies to:

- a) The Short Run, but not the Long Run.
- b) The Long Run, but not the Short Run.
- c) Both the Short Run & the Long Run.
- d) Neither the Short Run nor the Long Run.

Q13

Diminishing Returns occurs:

- a) When units of a Variable Input are added to a Fixed Input & Total Product Falls.
- b) When units of a Variable Input are added to a Fixed Input & Marginal Product Falls.
- c) When the size of the Plant is increased in the Long Run.
- d) When the Quantity of Fixed Input is increased & Returns to the Variable Input Falls.

Q14

Which of the following statement is True?

- a) The Services of a Doctor is considered Production.**
- b) Man create Matter.**
- c) The Services of a Housewife is considered Production.**
- d) When a Man creates a table, he creates Matter.**

Q15

Which of the following is a function of an Entrepreneur?

- a) Initiating a Business Enterprise.**
- b) Risk Bearing.**
- c) Innovating.**
- d) All of the Above.**

Q16

If Decreasing Returns to Scale are present, then if all Inputs are increased by 10% then:

- a) Output will also Decrease by 10%.**
- b) Output will Increase by 10%.**
- c) Output will Increase by less than 10%.**
- d) Output will increase by more than 10%.**

Q17

The Production Function is a relationship between a given combination of inputs and:

- a) Another combination that yields the same Output.**
- b) The Highest Resulting Output.**
- c) The Increase in Output generated by One-Unit Increase in One Output.**
- d) All Levels of Output that can be generated by those Inputs.**

Q18

If the Marginal Product of Labour is below the Average Product of Labour, it must be true that:

- a) The Marginal Product of Labour is Negative.
- b) The Marginal Product of Labour is Zero.
- c) The Average Product of Labour is Falling.
- d) The Average Product of Labour is Negative.

Q19

The Average Product of Labour is Maximized when Marginal Product of Labour:

- a) Equals the Average Product of Labour.**
- b) Equals Zero.**
- c) Is Maximized.**
- d) None of the Above.**

Q20

The Law of Variable Proportions is drawn under all of the assumptions mentioned below except:

- a) The Technology is Changing.
- b) There must be some Inputs whose Quantity is kept fixed.
- c) We consider only Physical Inputs and not Economically Profitability in Monetary Terms.
- d) The Technology is given and stable.

THE END

Theory of Production