

PRODUCTION AND COST

1. What do you mean by isoquant?

Ans:- The word isoquant is derived from two words iso and quant. Iso means equal and quant means quantity. An isoquant or equal product curve represents all those combinations of two factors of production, which represent equal level of production. Isoquants are often used in production theory to analyze how firms can achieve a certain level of output by efficiently combining inputs.

2. What are the properties of isoquant?

Ans:- Following are the properties of isoquant:-

(i) Downward sloping from left to right: An isoquant is negatively sloped due to the principle of marginal rate of technical substitution of labour for capital. If quantity of labour is increased, in that case the quantity of capital must be decreased so as to maintain same level of output.

(ii) Convex to the point of origin: An isoquant is convex to the point of origin. The convexity rule implies that as the producer substitutes labour for capital, the marginal rate of technical substitution diminishes.

(iii) Higher isoquant represent higher level of output : A different isoquant represents different levels of output, higher the level of isoquant, higher is the level of output and vice-versa.

(iv) Two isoquants can never cut each other : Two isoquants will never intersect each other because if they intersect each other, then at the point of intersection the level of output will be same, which is not possible.

(v) An isoquant cannot touch either x-axis or y-axis : If an isoquant touches either x-axis or y-axis, it will indicate that the product is produced with the help of one particular commodity which is not possible as because two commodities are required in an isoquant.

3. What do you mean by economies of scale?

Ans:- Economies of scale refer to the cost advantage that a business or an organisation can achieve when it increases its level of production or output. As the scale of production expands, the average cost of producing each unit of output tends to decrease, leading to greater efficiency and lower overall costs.

4. What do you mean by diseconomies of scale?

Ans:- Diseconomies of scale refer to the situation in which a business or an organization experiences an increase in average costs as it continues to expand its production or output.

5. What are the two types of economies of scale?

Ans:- The two types of economies of scale are as follows:

(i) Internal economies of scale: Internal economies of scale are the cost advantages that a firm achieves as a result of its own growth and expansion. These advantages arise from factors within the firm's control.

(ii) External economies of scale: External economies of scale are the cost advantages that multiple firms in the same industry or geographical area can achieve collectively as a result of the industry's growth.

6. What are the types of diseconomies of scale?

Ans:- Generally, there are two types of diseconomies of scale.

(i) Internal diseconomies of scale: Internal diseconomies of scale occur within a single firm as it grows larger. These diseconomies are often the result of challenges that arise due to increased size and complexity of the organization.

(ii) External diseconomies of scale: External diseconomies of scale occur when an entire industry or

cluster of firms in a particular region experiences ~~high~~ rising costs as it grows collectively.

7. Explain the different concepts of cost?

Ans: The different concepts of cost are as follows:

(i) Explicit costs: Explicit costs, also known as out of pocket costs, are the actual money expenses incurred by a business firm for resources such as labour, raw materials, rent, etc.

(ii) Implicit costs: Implicit costs are the opportunity cost associated with using resources that have alternative uses. These costs are not incurred as direct monetary expenses but represent the value of resources foregone in alternative uses.

(iii) Total costs: Total costs refer to the sum of both explicit and implicit costs. It includes all expenses, whether they are monetary outlays or opportunity costs.

(iv) Fixed costs: Fixed costs are costs that do not change with changes in the level of production or output. They remain constant regardless of the quantity produced. Examples include rent, salaries of permanent staff, and depreciation.

(v) Variable costs: Variable costs are costs that change in proportion to changes in production or output. As production increases, variable costs increase, and as production decreases, variable costs decrease. Examples include raw materials and direct labour.

(vi) Marginal cost: Marginal cost is the additional cost incurred by producing one more unit of output. It represents the change in total cost when production increases by one unit. MC is an important concept for decision making, as firms typically aim to produce as long as marginal cost is less than or equal to the market price.

(vii) Sunk costs: Sunk costs are costs that have already been incurred and cannot be recovered, regardless of future decisions. They should not influence present or future decisions, as they are irrelevant to current considerations.

(viii) Opportunity costs: Opportunity costs refer to the value of the next best alternative foregone when a particular choice is made. It represents the potential benefits that could have been gained by choosing an alternative course of action.

(ix) Economic costs: Economic costs include both explicit and implicit costs. They take into

account the opportunity costs associated with using resources in a particular way.

(2) Average cost: Average costs are calculated by dividing the total costs by the quantity produced. There are two common types of average costs:

(a) Average Total Cost (ATC): ATC is the total cost per unit of output. It includes both fixed and variable costs and is calculated as $ATC = TC / \text{Quantity}$.

(b) Average Variable Cost (AVC): AVC is the variable cost per unit of output. It is calculated as $AVC = VC / \text{Quantity}$.

8. State and explain the law of variable proportions.

Ans: Law of variable proportion occupies an important place in economic theory. This law examines the production function with one factor variable, keeping the quantities of other factors fixed. The law states that if the number of units of a variable factor is increased, keeping the quantities of other factors fixed, how output changes is the concern of the law.

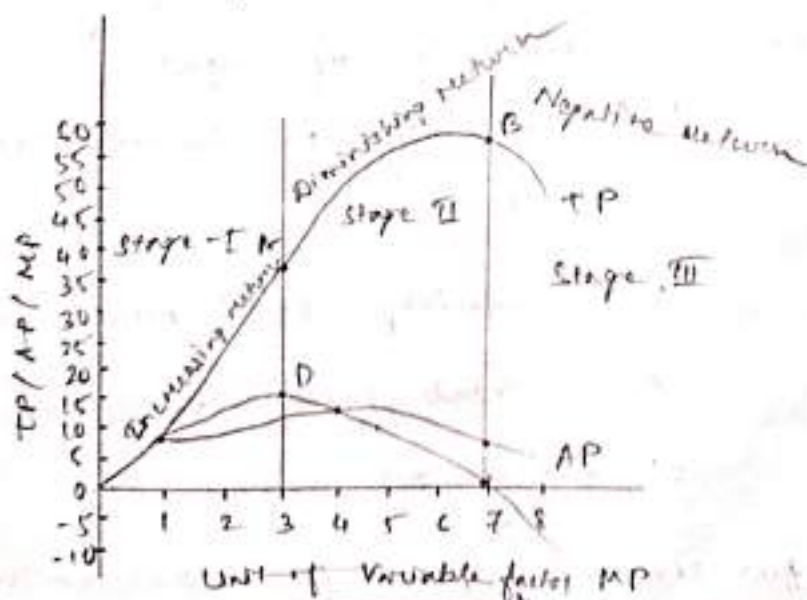
Suppose land, plant and equipment are the fixed factors and labour the variable factor. When the number of labourers is increased successively to have larger output,

the proportion between fixed and variable factors is altered and the law of variable proportion sets in. Thus, the law states that as the quantity of a variable input is increased by equal doses keeping the quantities of other inputs constant, total product will increase but after a point at a diminishing rate.

Let us illustrate the law with the help of following table.

Area of Land	No. of workers	Total Product (TP)	Average Product (AP)	Marginal Product (MP)
1 acre	1	6	6	6
1 acre	2	14	7	8
1 acre	3	24	8	10
1 acre	4	32	8	8
1 acre	5	35	7	3
1 acre	6	36	6	1
1 acre	7	36	5.1	0
1 acre	8	32	4	-4
1 acre				

An analysis of the above table on



An analysis of the above table and diagram shows that total product, average product and marginal product increases at first, reaches its maximum i.e. point B and then starts a declining. Up to 3rd labour, total product increases at an increasing rate and marginal product reaches its maximum level. This is known as stage I i.e. stage of increasing returns. From 4th labour to 6th labour, total product increases at a diminishing rate. This is known as stage of diminishing returns because marginal product diminishes as more labour is employed. Stage III is known as stage of negative returns because marginal product is negative in this stage.

9. What do you mean by Cobb-Douglas production function?

Ans:- Cobb-Douglas production function is a widely used mathematical representation of production in economics. It takes the form:

$$Q = A \times L^\alpha \times K^\beta$$

where Q = Quantity of output

L = Quantity of labour unit input

K = Quantity of capital input

A = Total factor productivity

α and β are constants.

This function suggests that output is a

result of labour and capital inputs, with each input being raised to a certain power and multiplied by a productivity factor. The Cobb-Douglas^{douglas} function is commonly used to analyse and predict how changes in labour and capital inputs affect output.

The Cobb-Douglas production function has several properties. It exhibits constant return to scale if $\alpha + \beta = 1$, increasing return to scale if $\alpha + \beta > 1$, decreasing return to scale if $\alpha + \beta < 1$ and decreasing return to scale if $\alpha + \beta < 1$. It also implies that labour and capital are complements in production, as an increase in 1 input tends to lead to a positive change in the marginal productivity of other input.

Q: What do you mean by optimum factor combination?

Ans:- Optimum factor combination also known as optimum input mix, refers to the most efficient allocation of different factors of production to achieve the highest level of output or productivity in a given production function/process. It involves finding the right balance between the inputs while considering their costs and productivity contributions.

Mathematically, the optimal factor combination can be found by analysing the marginal products of labour and capital and comparing them to their respective input prices.

The point where the ratio of marginal product to input price is the same for both labour and capital represents the equilibrium point where the production process is operating at its most efficient level.

11. What do you mean by production function?

Ans:- A production function is a fundamental concept in economics that describes the relationship between inputs and the resulting output of goods and services in a production process. It provides a mathematical or functional representation of how combinations of inputs lead to different levels of output. The production function can be expressed as follows:

$$Q = f(L, K)$$

where,

Q = Quantity of output.

L = Units of Labour.

K = Units of capital.

f = functional relationship.

12. What are the traditional and modern approaches of cost curves?

Ans:- Traditional and modern approaches to cost curves refer to different methods of analysing and understanding the relationship between costs and levels of production in

economies.

Traditional

- ① Traditional Approach: The traditional approach to cost curve is based on the concepts of fixed costs, variable costs, total costs, average costs and marginal costs. The main cost curves in this approach include:

(a) Total cost curve: It shows the total cost incurred by a firm for different levels of production.

(b) Average total cost curve: It represents the average costs per unit of output.

(c) Average variable cost curve: It represents the average variable cost per unit of output.

(d) Average fixed cost^{curve}: It represents the average fixed cost per unit of output.

(e) Marginal cost curve: It represents the additional cost incurred by producing one more unit of output.

- ② Modern Approach: This approach includes long run average cost curve and economies of scale.

(a) Long run average cost curve: It represents the average cost per unit of output when all inputs can be changed in the long run.

(b) Economies of scale: Given technology.

13. What are the traditional and modern approach of cost?

Ans:- Following are the traditional approach of cost:

- (i) Historical focus: Traditional cost accounting relies heavily on historical data and actual costs incurred in the past.
- (ii) Pre-determined rates: It often uses pre-determined overhead rates based on estimates, which can lead to variances between actual and budgeted cost.
- (iii) Limited transparency: Traditional method can lack transparency and may not capture indirect or overhead costs accurately.

Modern Approach

- (i) Activity based costing: Modern cost management often employs ABC which allocates the costs based on activities that drive costs providing a more accurate picture of cost drivers.
- (ii) Lean and continuous improvement: Modern approaches often align with lean principles that focus on continuous improvement in cost management.
- (iii) Real time data: It leverages real time data and technology, allowing for quicker adjustments and decision making.

14. What are the different types of internal economies of scale?

Ans:- Following are the different types of internal economies of scale:

(i) Technical economies: These arise from the efficient use of technology and production techniques.

(ii) Financial economies: Larger firms usually have better access to financial resources. They can negotiate better terms with lenders, have a lower cost of borrowing and can manage cash flows more efficiently.

(iii) Marketing economies: Larger firms can spread their marketing and advertising cost over a larger sales base. They may also benefit from greater brand recognition and customer loyalty.

(iv) Purchasing economies: Bulk purchasing of leads to lower cost per unit. Larger firms can negotiate discounts with suppliers and achieve economies of scale through their purchasing power.

15. What are the different types of external economies of scale?

Ans:- Following are the different types of external economies of scale:

(i) Infrastructure economies: When multiple firms

in an industry are located in the same area, they can benefit from shared infrastructure such as transportation networks, utilities and communication systems.

(ii) Research and development facilities: When research institutions, universities, etc. are located nearby, firms can benefit from shared access to cutting edge research and technology, reducing their research and development costs.

(iii) Market access: Firms located near each other can collectively attract more customers due to the convenience of shopping in a centralized location.

(iv) Environmental efficiencies: Shared environmental initiatives and sustainable practices among nearby firms can lead to cost savings through resource conservation and reduced waste.

Q. What are the different types of internal diseconomies of scale?

Ans:- Following are the different types of internal diseconomies of scale:

(i) Inefficiency in resource allocation: Larger firms may struggle to allocate resources efficiently, leading to over investment in some areas and under investment in others.

(i) Quality control challenges: Maintaining consistent product or service quality can become more challenging as a company grows. Quality control issues can result in waste and increased costs.

(ii) Logistical challenges: Managing and co-ordinating the logistics of a large scale operation, including transportation, inventory management and warehousing can become increasingly complex and costly.

(iii) Co-ordination problems: Large organisations often have multiple departments and teams working on different aspects of the business. Co-ordination between these units can become challenging, leading to duplicated efforts and inefficiencies.

17. What are the different types of external diseconomies of scale?

Ans:- (i) Scarcity of skilled labour: If multiple firms in an industry are concentrated in one area, they may find difficulty and retain skilled workers.

(ii) Negative externalities: The concentration of firms in one particular area can result in negative externalities such as pollution and noise which may trigger strict regu-

actions are legal actions.

(iii) Utility and Infrastructure shortage: When many firms share the same utility or infrastructure, businesses may face higher degree of ^{cost} ~~loss~~ ^{loss} on purchasing property. High demand for office or production space can drive up property values and rents.

18. What do you mean by Isocost?

Ans:- An isocost curve also known as cost minimisation curve is a graphical representation used in micro economics to show all the combinations of two input factors that a firm can use to produce a particular level of output while keeping the total production cost constant.

19. What are the different types of long run and short run cost curve?

Ans:- The different types of long run and short run cost curve are as follows:

Short run cost curves:

① Total Cost Curve (TC): The total cost curve shows the total cost of production at different levels of output while holding at least one input fixed, typically capital. It has an upward-sloping shape because of diminishing returns to the variable input (usually labour).

(i) Variable Cost Curve (VC): The variable cost curve represents the costs that change as output varies while keeping some inputs fixed. It is always upward-sloping since variable costs typically increase as more units are produced.

(ii) Fixed Cost Curve (FC): Fixed costs are costs that do not change with changes in production levels in the short run. The fixed cost curve is horizontal because fixed costs remain constant regardless of the level of output.

(iii) Average Total Cost Curve (ATC or AC): The average total cost curve shows the average cost per unit of output. It is calculated by dividing total cost by the quantity produced. The ATC curve is U-shaped due to economies of scale at low levels of production and diseconomies of scale at higher levels.

(iv) Average Variable Cost Curve (AVC): The average variable cost curve represents the variable cost per unit of output and is calculated by dividing variable costs by the quantity produced. Like the ATC curve, it is typically U-shaped due to diminishing returns to the variable input.

(v) Average Fixed Cost Curve (AFC): The average fixed cost curve shows the fixed cost per unit of output and is calculated by dividing fixed cost by the quantity produced. It declines continuously

as output increases because the fixed cost is spread over more units.

Long Run Cost Curves:

① Long Run Average Cost curve (LRAC = $\sum$ LAC):
In the long run, all inputs are variable, and firms can choose their production facility size. The LRAC curve represents the minimum average cost per unit of output when all inputs are variable. It is also U-shaped, but it differs from the short-run ATC curve as it reflects the cost-minimizing choices for all inputs.

② Long Run Marginal Cost curve (LRMC): The long-run marginal cost curve shows the additional cost incurred by producing one more unit of output when all inputs are variable. It can differ from the short-run marginal cost curve due to changes in the production process and input proportions.

These cost curves play a fundamental role in cost analysis, production decisions, and pricing strategies for firms. They help firms understand how their costs change with varying levels of production and guide their choices about production techniques and capacity planning in the short run and long run.