Quick Study Pointers

Production Function

- Shows the relationship between inputs (factors of production) and output.
- Describes how output changes when input quantities are varied.
- Two types: Short-run (some inputs fixed) and Long-run (all inputs variable).

Factors of Production

- **Land**: Natural resources used in production (e.g., land, water).
- **Labor**: Human effort (skilled or unskilled work).
- **Capital**: Man-made resources like machinery, tools, and buildings.
- **Entrepreneur**: Organizes other factors of production to create a business.

Law of Variable Proportions

- In the short run, when more units of a variable input (e.g., labor) are added to fixed inputs (e.g., land), output increases initially but eventually decreases.
- Three phases: Increasing returns, diminishing returns, and negative returns.

Law of Returns to Scale

- In the long run, all inputs can be varied.
- If inputs are increased proportionally:
  - **Increasing returns to scale**: Output increases more than proportionally.
  - **Constant returns to scale**: Output increases proportionally.
  - **Decreasing returns to scale**: Output increases less than proportionally.

Cost

- **Fixed Cost**: Costs that do not change with output (e.g., rent).
- **Variable Cost**: Costs that change with output (e.g., raw materials).
- **Total Cost**: Sum of fixed and variable costs.
- **Average Cost**: Total cost divided by the quantity of output.

- **Marginal Cost**: The cost of producing one additional unit.
- **Opportunity Cost**: The value of the next best alternative that is forgone.

Short-run vs. Long-run Costs

- **Short-run**: Some inputs are fixed, and costs include both fixed and variable.
- **Long-run**: All inputs can be adjusted, and costs are more flexible.

Break-even Analysis

- Determines the point where total revenue equals total costs (no profit or loss).
- Formula: