UNIT-III PRODUCTION CONCEPT AND COST CONCEPT

Production Concept and Cost Concept

Theory of Production

Production Function:

1. **Definition:** The relationship between the quantity of inputs used and the quantity of output produced.
   - **Formula:** Q=f(L,K)Q = f(L, K), where QQ is the quantity of output, LL is labor, and KK is capital.

Isoquants:

1. **Definition:** Curves that represent combinations of different inputs that produce the same level of output.
   - **Properties:** Downward sloping, convex to the origin, and do not intersect.

Cost Minimization

1. **Objective:** To produce a given level of output at the lowest possible cost.
2. **Iso-cost Line:** Represents combinations of inputs that cost the same amount.
   - **Equation:** C=wL+rKC = wL + rK, where CC is total cost, ww is the wage rate, rr is the rental rate of capital.

Cost Curves

Total, Average, and Marginal Costs:

1. **Total Cost (TC):** The sum of fixed and variable costs.
   - **Formula:** TC=TFC+TVCTC = TFC + TVC, where TFCTFC is total fixed cost and TVCTVC is total variable cost.
2. **Average Cost (AC):** Total cost divided by the quantity of output.
   - **Formula:** AC=TCQAC = \frac{TC}{Q}
3. **Marginal Cost (MC):** The additional cost of producing one more unit of output.
   - **Formula:** MC=ΔTCΔQMC = \frac{\Delta TC}{\Delta Q}

Long Run and Short Run Costs

1. **Short Run:** Period in which at least one input is fixed.

- **Short Run Cost Curves:** Include Total Fixed Cost (TFC), Total Variable Cost (TVC), Total Cost (TC), Average Fixed Cost (AFC), Average Variable Cost (AVC), Average Total Cost (ATC), and Marginal Cost (MC).

2. **Long Run:** Period in which all inputs can be varied.
   - **Long Run Cost Curve:** Represents the lowest possible cost at which a firm can produce any given level of output.

Equilibrium of a Firm Under Perfect Competition

1. **Characteristics:** Many buyers and sellers, homogeneous products, free entry and exit, and perfect information.
2. **Equilibrium Condition:** MR=MCMR = MC, where MRMR is marginal revenue and MCMC is marginal cost.
3. **Profit Maximization:** Firms produce the output level where MR=MCMR = MC.

Monopoly and Monopolistic Competition

Monopoly:

1. **Characteristics:** Single seller, no close substitutes, and high barriers to entry.
2. **Profit Maximization:** Monopolist produces the output level where MR=MCMR = MC.

Monopolistic Competition:

1. **Characteristics:** Many sellers, differentiated products, and free entry and exit.
2. **Equilibrium:** Firms maximize profit where MR=MCMR = MC in the short run and earn zero economic profit in the long run.