- Elasticity

  - Price Elasticity:

    1. Percentage change in quantity upon percentage change in price of the quantity.
    2. $e > 1$ implies that rate of change in quantity demanded is greater than rate of change in price hence the quantity is elastic and total revenue would increase if price is decreased and vice versa.
    3. $e < 1$ implies rate of change in quantity demanded is less than rate of change in price hence total revenue would increase if price is increased and vice versa.
    4. $e = 1$ implies that total revenue change in quantity and price are proportionate and hence total revenue is not affected.

  - Income Elasticity

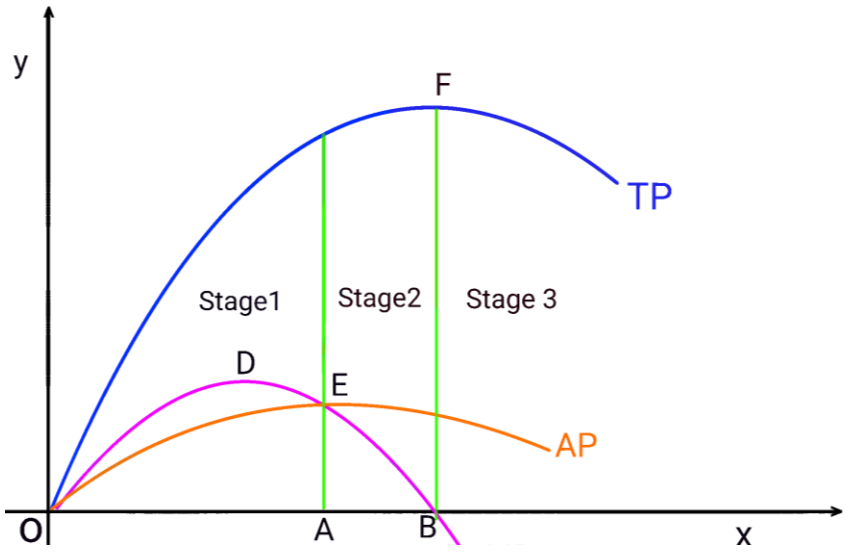
    1. Percentage change in quantity demanded upon percentage change in income
    2. Positive for normal goods and negative for inferior goods

  - Cross Elasticity

    1. Percentage change in quantity demanded upon percentage change in price of another product
    2. Positive for substitutes and negative for complementary goods

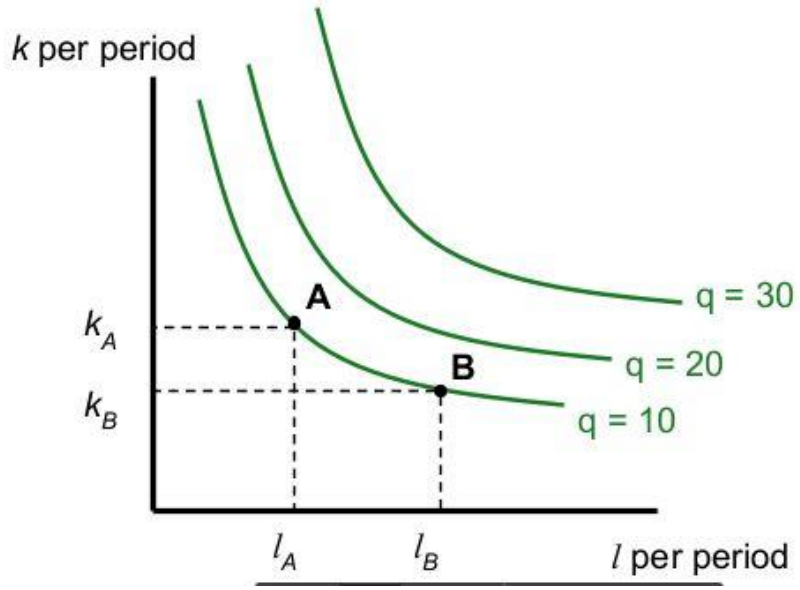
- Elasticity is affected by the presence of close substitutes. The higher the number of substitutes, the greater the elasticity of a product.

- Production function gives the maximum achievable output for different sets of inputs (labour, capital and raw material)
- In short run only the inputs for labour and raw material are varied and in the long run all three inputs are varied
- Marginal production function is given by the derivative of the production function with respect to a certain input
- Average production function is derived by dividing the production function with the units consumed of a particular input
- Stage I of production starts with the origin and end at the intersection of AP and MP
- Stage II of production starts the intersection of AP and MP and ends when MP = 0 (MP intersects the x axis)
- Stage III starts at the end of stage II and progresses until the producer shuts down production



- Isoquants refer to curves that are formed by different combinations of inputs that produce the same amount of output
- The marginal rate of technical substitution is the amount of input A a firm can give up per unit increase in the amount of input B such that the total production remains the same

- MRTS = MP(L) / MP(K)
- Isoquants have similar properties to indifference curves
  - They are convex to the origin
  - They never cross
  - They are negatively sloped

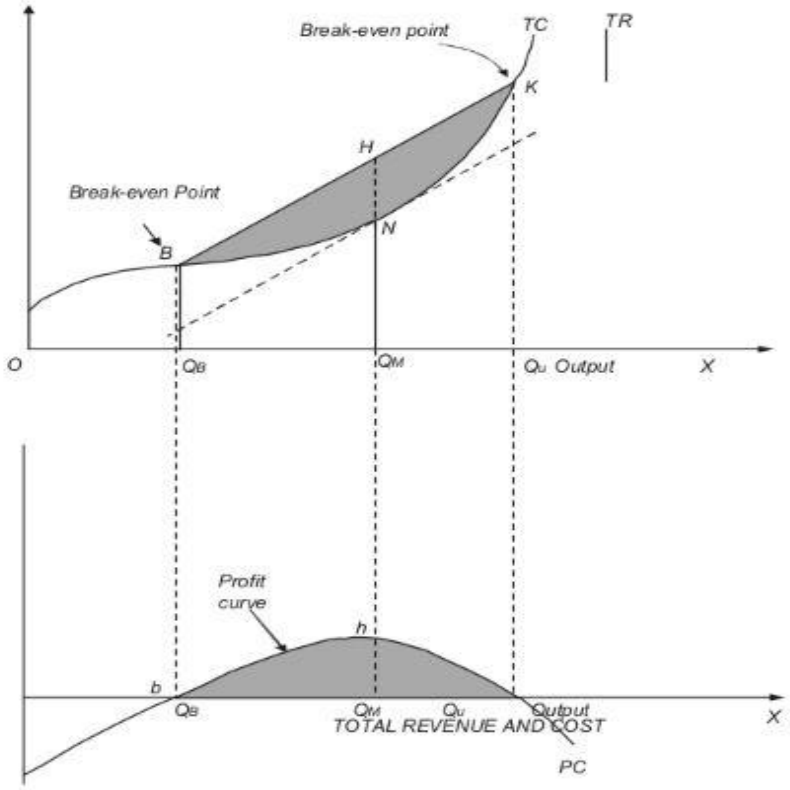


- Economic Costs = Accounting Costs + (Implicit Costs / Opportunity Cost)
- Social Costs = Private Costs + (Positive Externalities – Negative Externalities)
- Accounting Costs can be further divided into fixed costs (also called overhead costs) and variable costs
- Fixed costs are related to the inputs of the production function that cannot be varied in the short run such as capital
- Variable costs are costs related to inputs of the production function that are easily varied in the short run. These may include wages or costs of raw materials.
- TC = TFC + TVC
- Perfect Competition:

- Large number of firms
- Homogenous products
- Ease of entry and exit in market
- Perfect information so that one price prevails
- Firms are price takers and output adjusters

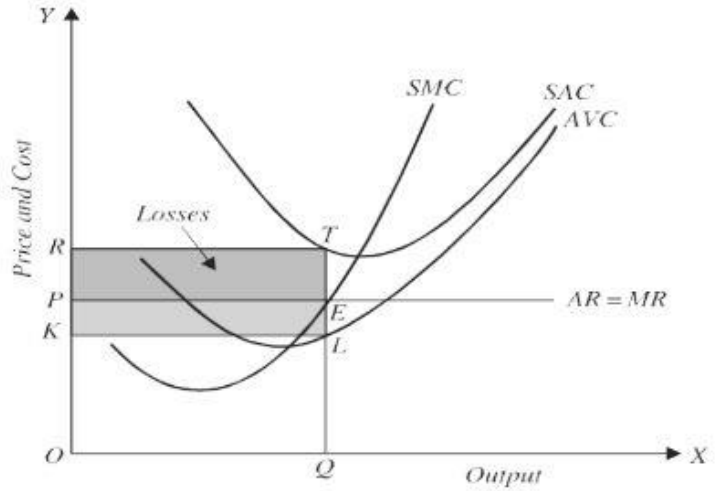
- In perfect competition the total revenue increases linearly with the quantity demanded
- Marginal Revenue and Average Revenue are equal and constant in perfect competition
- Profit is maximized when Marginal Revenue equals Marginal Cost or Market Price equals cost (Both statements are true since in perfect competition market price equals marginal revenue)
- Break even point occurs when Total Revenue equals Total Cost (TR = TC) and MC is positive (which implies that cost will only increase whereas revenue will remain constant)

Revenue and Cost curves:



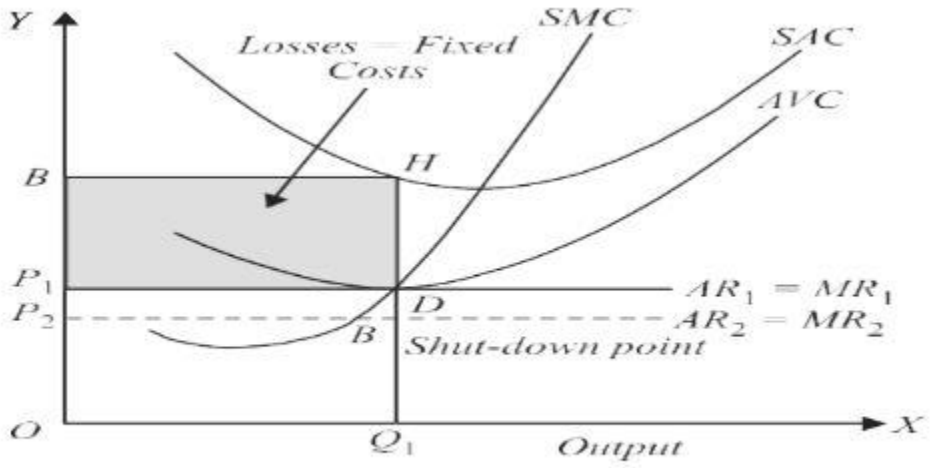
Production with loss Condition:

- Revenue covers variable costs but not overhead (fixed) costs



Shutdown Condition:

- Revenue unable to cover even the fixed costs



Quiz Notes:

- Indifference Curves are convex due to diminishing marginal rate of substitution (fewer and fewer quantity of one good is given up for an increase in the other since a scarce commodity becomes more valuable)

- Law of Equimarginal Utility states:

  "A consumer will distribute their income across various goods so that the last unit of currency spent on each good provides the same level of marginal utility."

  $MUx / Px = MUy / Py$

  $QxPx + QyPy = I$ (where I is the total income)

- The Law of Equimarginal Utility assumes that:
  - Good are divisible
  - Income is constant

- Economies of scale: Increasing output decreases average cost per unit product
- Diseconomies of scale: Increasing output increases average cost per unit product
- Constant returns to scale: Increasing or decreasing output has no affect on average cost