* Scarcity of Resources:

Refers to the limited availability of resources relative to the unlimited wants and needs of individuals & society.

* Relevance of Economics ~~of~~ for Engineers:

→ Resource Allocation
→ Cost-Benefit Analysis
→ Project Management
→ Innovation and Technological Advancements.

* Managerial Economics:

The integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by management.

→ Scope of Managerial Economics:

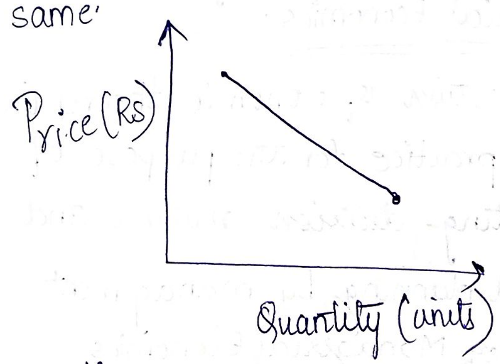
1) Demand Analysis.
2) Cost Analysis
3) Production and Supply Analysis
4) Pricing Decisions, Policies and Practices.
5) Profit Management
6) Capital Management

* Demand:

It is the quantity bought by an individuals at a given point of time at a given price.

* Law of demand:

It states that higher is the price; lower the demand and vice versa; when all other factors except price remain the same.



→ Assumptions:

* Inverse Relationship
* Price and demand
* All other demand determinants remain same except for price.

→ Exceptions for law of demand:

* Price ↑ses; Quantity ↑ses (or) remains same
* Price ↓ses; Quantity ↓ses (or) remains same
* Commodities:
  - → Giftencase: potatoes selling in Ireland.
  - → Speculative goods
  - → Fear of scarcity
  - → Basic Needs.

→ Elasticity of demand:

The degree of responsiveness of quantity demanded to a change in the variables namely, price of the commodity, income of the consumer, price of substitute product and advertisement expenditure.

→ Price Elasticity:

It is the measure of responsiveness of quantity demanded of a commodity to a given change in the price of a commodity.

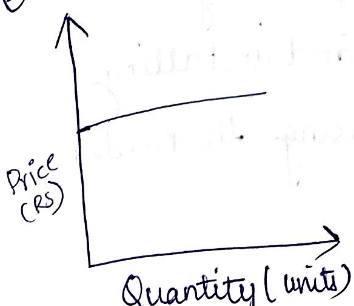
$$e_p = \frac{\text{Proportionate change in quantity demanded of a commodity}}{\text{Proportionate change in the price of the commodity.}}$$

$$= \frac{\left(\frac{Q_2 - Q_1}{Q_1}\right)}{\left(\frac{P_2 - P_1}{P_1}\right)} = \frac{\left(\frac{Q_2 - Q_1}{Q_2 + Q_1}\right)}{\left(\frac{P_2 - P_1}{P_2 + P_1}\right)}$$

* Types of price elasticity:

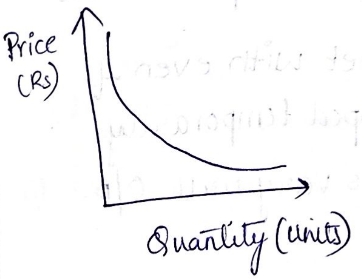
1) perfectly elastic demand. ($e_p = \infty$)
2) Perfectly inelastic demand ($e_p = 0$)
3) Unitary elastic demand ($e_p = 1$)
4) Relatively elastic demand ($e_p > 1$)
5) Relatively inelastic demand ($e_p < 1$)

1) $e_p = \infty$

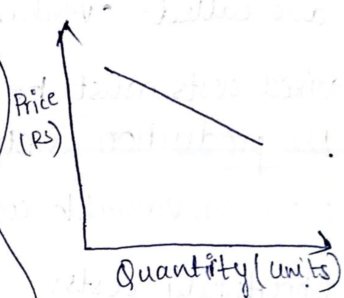


2) $e_p = 0$

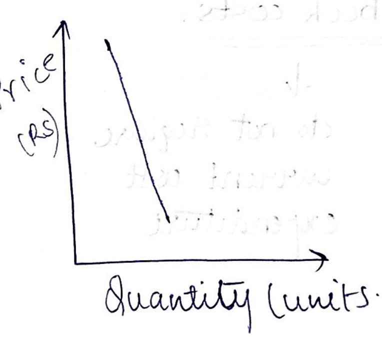
3) $e_p = 1$



4) $e_p > 1$



5) $e_p < 1$



* Cost:

Cost of commodity is given by expenses for buying and installing machinery ; on purchasing the needed raw materials etc.

* Types of Costs:

1) Fixed and variable costs:

also called overhead and prime costs.

→ fixed costs must be met with even if the production is stopped temporarily.

→ prime (or) variable costs vary with O/P.

2) Opportunity costs:

→ Includes actual expenses incurred to hire the factors of production.

3) Out of pocket and book costs:

↓ payments to outsiders when the firm purchases an asset.

↓ do not require current cost expenditure

4) Replacement & Historical Costs

↓ prices that would have to be paid currently.

↓ cost of an asset at price originally paid

5) Past and Future Costs

↓ actual costs incurred in the past

↓ Estimated costs.

6) Separable and Common costs.

↓ direct cost.

↓ indirect costs.

7) Explicit (PAID-OUT) and Implicit (IMPUTED)

↓ Expenses paid by firm (recognised)

↓ theoretical costs (unrecognised)

8) Average Cost:

total cost divided by the no. of units produced

9) Marginal Cost:

addition to total cost due to an ↑se of O/P by 1 unit.

* Cost Accounting:

is the classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services.

* Cost Accountancy:

is the application of costing & cost accounting principles, methods & techniques to the science, art & practice of cost control.

* Cost Sheet:

Statement designed to show O/P of a particular accounting period along with breakup costs.

* Break Even point:

1) Per unit info is given:

→ contribution per unit = Selling price per unit − Variable cost per unit.

→ Break-even point = $\frac{\text{Fixed Cost}}{\text{Contribution per unit}}$

→ Sales to earn a desired profit = $\frac{\text{Fixed Cost + desired profit}}{\text{contribution per unit}}$

2) When info is given for total output:

→ $\frac{P}{V}$ ratio = $\frac{\text{contribution}}{\text{Sales}} \times 100$.

→ Break even point = $\frac{\text{Fixed Cost}}{\text{P/V ratio}}$.

→ Margin of Safety = Actual Sales − Break Even sales = Profit / $\frac{P}{V}$ ratio

3) When 2 periods info is given:

$$\frac{P}{V} \text{ ratio} = \frac{\text{Change in profits}}{\text{Change in sales}} \times 100$$

other formulae similar in 2

* Assumptions:

- → Costs can be perfectly classified as fixed and variable costs.
- → Selling price does not change as volume changes.
- → No closing stock
- → Product mix remains same.

* Managerial Significance:

- → Ascertainment of profit on a particular level of sale volume.
- → Calculation of sales required to earn a particular profit.
- → Estimation of vol. of sales required to maintain the present level of profit.
- → Comparisons to be made in respect of lines product, sales area; method of sale.

* Limitations:

- → If FC, VC, changes; BEP changes.
- → All costs are not perfectly classifiable.
- → Total cost & revenue lines are not always straight.