Commercial Mathematics

- To encourage the habit of saving among low and middle income groups, banks and post offices provide **Recurring Time Deposit schemes**.
- The fixed time period for which an investor deposits a fixed amount every month is called **maturity period**.
- After completing the maturity period, the investor gets the amount deposited with the interest. The total amount received by the investor is called **maturity value**.
- The interest is compounded quarterly at a fixed rate in this scheme.

Example:

Suresh has a Recurring Deposit Account in a bank. He deposits Rs 1000 per month for one year. At the time of maturity, he gets Rs 19020. What is the rate of simple interest?

Solution:

Money deposited per month, p = Rs 1000

Maturity period, n = 12 months

$$\text{S.I.} = p \times \frac{n(n+1)}{2} \times \frac{r}{100}$$
$$\text{S.I.} = 1000 \times \frac{12 \times 13}{2} \times \frac{r}{100}$$
$$\text{S.I.} = 780r$$

Amount of maturity = 19020

$p \times n + \text{S.I.} = 19020$

$1000 \times 12 + 780r = 19020$

$780r = 19020 - 12000$

$780r = 7020$

$$r = \frac{7020}{780} = 9$$

Thus, the rate of interest is 9% per annum.

- Terminology related to shares and dividends:
  - The original value of a share is called the **nominal value (N.V)**. It is also called registered value, printed value, or face value (F.V).
  - The price of a share at a particular time is called **market value (M.V)**. This market value changes from time to time.
  - If the market value and the nominal value of a share are equal, then the share is called a **share at par**.

  For example, if a share of Rs 100 is being sold at a price of Rs 100, then the share is called at par.

  - If the market value (M.V) of a share is more than the face value (F. V) of the share, then the share is called **share at premium or above par**.

  For example, if a share of Rs 100 is being sold at a price of Rs 165, then it is called share at a premium of Rs 65 or share at Rs 65 above par.

  - **Share at discount** − If the market value of a share is less than the face value of the share, then it is called the share at discount or below par.

  For example, if a share of Rs 100 is being sold out for Rs 90, then the share is called at a discount of Rs 10 or at Rs 10 below par.

  - Dividend is always calculated as the percentage of the face value of the share. Therefore, **dividend is the profit of the shareholders from their investments in the company.**

  Example:

  Rajesh invests Rs 6500 in shares, which pay 8% dividend when a share of Rs 100 costs Rs 120. What is the annual income of Rajesh from shares?

  Solution:

  Face value of the share = Rs 100

Market value of the share = Rs 120

Income from Rs 120 = 8% of Rs 100 = Rs 8

Income from Rs 6500 $= \text{Rs}\dfrac{8 \times 6500}{120}$ = Rs 433.33

Thus, the income of Rajesh from shares is Rs 433.33.

Goods and Services Tax (GST)

GST is a comprehensive indirect tax which replaced all the indirect taxes that were earlier levied by the central and the state governments. All the taxes like VAT, Service tax, Excise Duty, Custom Duty, etc, are now subsumed under GST. However, petroleum products and alcohol for human consumption is taxed separately by the individual state governments. So, GST is one indirect tax for the whole nation. It was launched all over India with effect from 1st July 2017.

Components of GST:

GST is levied under three categories:

1. Central Goods and Service Tax (CGST): Collected by the central government on an intra-state sale.
2. State Goods and Service Tax (SGST) or Union Territory GST (UTGST): Collected by the state/union territory government on an intra-state sale.
3. Integrated Goods and Service Tax (IGST): Collected by the central government on an inter-state sale.

The mechanism of input credit under GST:

Input credit means reducing the taxes paid on input from taxes to be paid on output. The tax paid at the time of purchase is called '**Input tax**' and the tax collected at the time of sale is called '**Output tax**'.
When a trader pays GST to the government, he deducts the input tax from the output tax and pays the remaining tax.

Payable GST = Output tax − Input tax credit