Chapter 6

Mathematics of Finance

Objectives

After completion of the chapter, the students will be aware of the following topics :

1. Simple Interest
2. Compound Interest
3. Nominal and Effective Rates of Interest
4. Present Value or Capital Value
5. Equated Obligations
6. Discount
7. Depreciation

Individuals or institutions borrow or lend money. Interest can be defined as the *price* for borrowing or the *premium* for lending money. The use of money bears a cost in the form of interest paid or foregone and thus has a time value. This chapter deals with the models that can be used to determine the value of a given sum of money at some future reference or the present value of a sum due at a future date.

When a person A borrows money from person B, then he has to pay some extra money for the use of borrowed money. This extra money is called ***Interest***. The amount borrowed is called ***Principal*** and the sum of principal and the interest is called the ***Amount***.

6.1 Simple Interest

When interest is payable on the principal only, it is called ***Simple Interest***.

If P denotes principal and interest rate is $i\%$ and t denotes time for which the principal is borrowed or invested, then interest I is given by

$$I = \frac{P \times i \times t}{100} = P \times r \times t$$

Where $r = \frac{i}{100}$ is termed as interest on a rupee.