

TIME VALUE OF MONEY

Question 1

Explain the relevance of time value of money in financial decisions. (PCC-May 2008)(2 marks)

Answer

Time value of money means that worth of a rupee received today is different from the worth of a rupee to be received in future. The preference of money now as compared to future money is known as time preference for money.

A rupee today is more valuable than rupee after a year due to several reasons:

- ◆ Risk – there is uncertainty about the receipt of money in future.
- ◆ Preference for present consumption – Most of the persons and companies in general, prefer current consumption over future consumption.
- ◆ Inflation – In an inflationary period a rupee today represents a greater real purchasing power than a rupee a year hence.
- ◆ Investment opportunities – Most of the persons and companies have a preference for present money because of availabilities of opportunities of investment for earning additional cash flow.

Many financial problems involve cash flow accruing at different points of time for evaluating such cash flow an explicit consideration of time value of money is required.

Question 2

A person is required to pay four equal annual payments of Rs. 4,000 each in his Deposit account that pays 10 per cent interest per year. Find out the future value of annuity at the end of 4 years. (PCC-May 2007)(2 marks)

Answer

$$FVA = A \left(\frac{(1+i)^n - 1}{i} \right)$$

$$4,000 \left(\frac{(1+.10)^4 - 1}{.10} \right)$$

$$4,000 \times 4.641 = \text{Rs. } 18,564$$

Future Value of Annuity at the end of 4 years = Rs. 18,564

Question 3

A company offers a Fixed deposit scheme whereby Rs. 10,000 matures to Rs. 12,625 after 2 years, on a half-yearly compounding basis. If the company wishes to amend the scheme by compounding interest every quarter, what will be the revised maturity value?

(PCC-Nov. 2008)(3 marks)

Answer

Computation of Rate of Interest and Revised Maturity Value

Principal = Rs. 10,000

Amount = Rs. 12,625

$$10,000 = \frac{12,625}{(1+i)^4}$$

$$P_n = A \times (PVF_{n,i})$$

$$10,000 = 12,625 (PVF_{4,i})$$

$$0.7921 = (PVF_{4,i})$$

According to the Table on Present Value Factor ($PVF_{4,i}$) of a lump sum of Re. 1, a PVF of 0.7921 for half year at interest (i) = 6 percent. Therefore, the annual interest rate is $2 \times 0.06 = 12$ percent.

i = 6% for half year

i = 12% for full year.

Therefore, Rate of Interest = 12% per annum

$$\text{Revised Maturity Value} = 10,000 \left(1 + \frac{12}{100} \times \frac{1}{4} \right)^{2 \times 4}$$

$$= 10,000 \left(1 + \frac{3}{100} \right)^8$$

$$= 10,000 (1.03)^8$$

$$= 10,000 \times 1.267 \text{ [Considering } (CVF_{8,3}) = 1.267]$$

Revised Maturity Value = 12,670.