Maths for finance

$(1.02)^{4.8}$ = 1.02 √ 12 times -1 X 4.8 + 1 X = X = 12 times

$\sqrt[5]{7}$ = 7 √ 12 times -1 ÷ 5 + 1 X = X = 12 times

Simple Interest

$SI = \frac{P \times r \times t}{100}$

"Difference b/w amt of any two consecutive year is equal to one year."

Amt. = SI + Principal

$= P \times \frac{r}{100} \times t + P$

$= P\left[1 + \frac{rt}{100}\right]$

Compound Interest

CI = A - P

$= P(1+i)^n - P$

$= P\left[(1+i)^n - 1\right]$

Amt. = $P(1+i)^n$ → no. of period

↓ interest of rate

Effective rate

$E = \left[(1+i)^n - 1\right]$

Formula of scrap value under WDV Dep.

$A = P(1-i)^n$

A ← scrapvalue

P ↓ cost

i → Rate of Dep.

Conversion period

1. Annually = $A = P(1+i)^n$
2. semi-annually = $A = P\left(1+\frac{i\%}{2}\right)^{n\times 2}$
3. Quarterly = $A = P\left(1+\frac{i}{4}\right)^{n\times 4}$
4. monthly = $A = P\left(1+\frac{i\%}{12}\right)^{n\times 12}$

Annuity

future value of single cash flow formula

$$FV = Cf(1+i)^n$$

↳ cash flow

FV of Annuity Regular = $FVAR = A_i \times \underbrace{FVAF(n,i)}_{\text{factors}}$

$$FVAR = A_i \times \left[\frac{(1+i)^n - 1}{i}\right]$$

FV of Annuity Due = $FVAD = A_i \times \left[\frac{(1+i)^n - 1}{i}\right] \times (1+i)$

Present value of single cash flow = $PV = \frac{Cf}{(1+i)^n}$

Present value of Annuity Regular = $PVAR = A_i \times PVAF(n,i)$

$$PVAF = A_i \times \left[\frac{1}{i}\left(1 - \frac{1}{(1+i)^n}\right)\right]$$

$PVAF = A_i \times (1+i) \div$ = n times GT

Present value of Annuity Due = $PVAD = A_i \times PVAF(n-1,i) \times A_i$

Application of MOF

Leasing = $PV = A_i \times PVAF(n, i)$

"Leasing में दो party होती है, Lessor and lessee. जिसके पास Asset होती है उसको Lessor बोलते है, He is the owner of Asset ; दूसरी party जो user है, जिसको Asset चाहिए उसे Lessee बोलते है।"

Lessee = सस्ता दुढेगा। Lessor = जहाँ ज्यादा पैसे मिले।

Capital Expenditure = $PV = A_i \times PVAF(n, i)$

Bond = $PV = A_i \times PVAF(n, i)$ = Annuity

$\frac{CF}{(1+i)^n}$ = Single cash flow.

Other concepts

Perpetuity $\Rightarrow PVP = \frac{A_I}{i}$

Present Value of Growing perpetuity = $\frac{A_I}{i - g}$

Growth rate ← g

If $g > i$ present value not possible

Net Present Value = NPV < 0 reject the proposal

NPV ≥ 0 accept

NPV = PV of cash Inflows − PV of cash Outflows.

Real Rate = Nominal − Inflation