

9 Concepts and modes of analysis

9.1 Simple Interest

Simple Interest is the interest paid only on the principal amount borrowed. No interest is paid on the interest accrued during the term of the loan.

$$SI = Pnr; A = P(1 + nr)$$

$$P = ₹10,000, n = 8 \text{ months } r = 10\%$$

$$SI = 10000 \times \frac{8}{12} \times 10\% = ₹1,250$$

9.2 Compound Interest

Compound interest means that the interest calculated on interest. The interest accrued on a principal amount is added back to the principal sum and the whole amount is then treated as new principal, for the calculation of the interest for the next period.

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

$$P = ₹100,000, i = 7.5\% \text{ compounded quarterly } n = 5$$

$$CA = 100000 \left(1 + \frac{7.5}{100 \times 4}\right)^{5 \times 4} = ₹14,499.48$$

Comparison with SI

$$\text{Amount for SI} = P(1 + rn)$$

$$= 10000(1 + 0.075(5))$$

$$= ₹ 13,750$$

CI gives ₹ 749.48 more

Power of compounding

Higher rate of return & longer duration

→ exponential growth

Rate of return

5% & 20% over 25 years shows huge growth due to compounding

9.3 Time value of Money (TVM)

⇒ Definition - Rupee today is worth more than rupee in the future

⇒ Reason - Can earn interest, inflation reduces future purchasing power

⇒ Present value (PV) - Current discounted value of future cash flow

⇒ Future value (FV) - Compounded value of present amount

⇒ Discount factor - PV of ₹ in future

⇒ Compounding factor - FV of ₹1 now

3.3.2 How is time value of money computed?

1. Future value of a single cash flow
 \Rightarrow Discrete intervals

$$\text{Future value (FV)} = \text{Present Value (PV)}(1+r)^t$$

$$FV = PV(1+r)^t$$

\Rightarrow Continuous compounding

$$FV = PV * e^{rt}$$

value of exponential (e) = 2.7183

Eg: Calculate the value of a deposit of ₹2000 made today, 3 years hence if the interest rate is 10%.

By discrete compounding

$$FV = 2,000 * (1 + 0.10)^3 = ₹2,662$$

By continuous compounding

$$FV = 2000 * e^{(0.10 * 3)} = ₹2699.72$$

2) Future value of an annuity

$$FVA = CF * (1+r)^{t-1} + CF(1+r)^{t-2} + \dots + CF(1+r)^1 + CF$$

Eg: you deposit 3000 annually in a bank for 5yr and your deposit earn a compound interest rate of 10%. what will be value of this series of deposits (an annuity at the end of 5 years) Assume that each deposit occurs at the end of the year

FV of this annuity

$$= ₹3000 * (1.10)^4 + ₹3000 * (1.10)^3 + ₹3000 * (1.10)^2 + ₹3000 * (1.10) + ₹3000$$

$$= ₹18315.30$$

$$FVA = CF * \frac{(1+r)^t - 1}{r}$$

$$= ₹3000 * \frac{(1.10)^5 - 1}{0.1}$$

$$= ₹3000 * 6.1051$$

$$= ₹18,315.30$$

3 Present value of a single cash flow

$$PV = FV / (1+r)^t \rightarrow \text{discrete discounting}$$

Eg: What is the present value of ₹5000 hence if the interest rate is 10% pa

$$PV = 5000 / 1.10^1 = ₹3756.57$$

$$PV = FV * e^{-rt} \rightarrow \text{continuous discounting}$$

$$PV = 10000 / e^{(0.1 * 2)} = ₹8187.297$$

4 Present value of an annuity

Discrete discounting

$$PVA = FV \frac{(1+r)^t - 1}{r * (1+r)^t}$$

Continuous discounting

$$PVA = FV * \frac{(1 - e^{-rt})}{r}$$

Eg What is the present value of ₹2000 received at the end of each year for 3 continuous years

$$\begin{aligned} PVA &= 2000 * [1 / 1.10] + 2000 * [1 / 1.10]^2 \\ &\quad + 2000 * [1 / 1.10]^3 \\ &= ₹ 4973.704 \end{aligned}$$

Using discrete discounting formula

$$PVA = FV \frac{(1+r)^t - 1}{r * (1+r)^t}$$

$$= 2000 * \frac{1.10^3 - 1}{0.1 * 1.10}$$

$$= 2000 * 2.4868$$

$$= ₹ 4973.704$$

1. If the question gives cash flows like this
 $\Rightarrow ₹2000$ received at the end of each year

$\Rightarrow ₹5000$ at the end of year 1, year 2, year 3

\Rightarrow PV of ₹10000 received after 5 years

\Rightarrow Use 10% discount rate

\rightarrow Discrete discounting

2. Continuous discounting

\Rightarrow Continuous compounded rate

\Rightarrow discounted continuously

\Rightarrow Use continuous compounding

\Rightarrow use e

3. If question mentions "per year" or "at the end of each year" \rightarrow it is DISCRETE discounting.

9.3.3 Effective Annual Return (EAR)

Actual annual return accounting for intra year compounding

10% pa with quarterly compounding

EAR = 10.38%

9.4.1 Annual Report

Yearly formal financial statement by a corporate showing assets, liabilities, revenues, expenses and earnings.

9.4.2 Features of an annual report, should one read carefully

- ⇒ Director's / Chairman's report
- ⇒ Management Discussion & Analysis (MD&A)
- ⇒ Auditor's Report
- ⇒ Profit & Loss account
- ⇒ Balance Sheet
- ⇒ Notes to accounts

9.4 Company analysis

i] Industry analysis

⇒ Study industry trends, government policies, demand, global factors

ii] Corporate analysis

⇒ Examine company operations, management capabilities, growth plans, its past performance vis-à-vis its competitor.

iii] Financial analysis

⇒ Check EPS, P/E ratio, equity size, estimate share price

3432 Balance Sheet vs P&L Statement

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Balance Sheet

Financial position at a point in time

⇒ **Assets**: Non-current assets (Property, Plant and Equipment (PP&E), investments),
current assets (inventory, cash, loans)

⇒ **Liabilities**: Equity (share capital, reserves),
Loans (current & non current)

Format

ASSETS	
Non current assets	xx
Current assets	xx
Total assets	xxx
LIABILITIES	
Equity	xx
Non Current liability	xx
Current liability	xx
Total liability	xxx

Profit & Loss statement

Performance over period of time

Profit & Loss = Revenue - Expense

9.4.5

Sources of funds

⇒ **Equity** - It consists of the equity share capital contributed by the shareholders and accumulated profits of the company which have not been distributed.

⇒ **loan fund** - It is the fund borrowed from outsiders

Repayable within a year - classified as "Current liabilities"

Repayable after a year - classified as "non-current liabilities"

⇒ **Preference Shares**: Fixed dividend, no voting, redeemed after fixed period, It is shown under "current / non-current" liability depending when it is repayable

9.4.6

Equity Share

Preference Share

Supposed to be owners of the company, have rights to get dividend as declared

Preference shares: have rights as to:-

⇒ Payment of dividend at a fixed rate during the life time of the company

⇒ Return of capital on winding up of the company

Can be traded and have voting rights

Cannot be traded and no voting rights. Can be redeemed after a pre-declared period

9.4.7 Capital Terms

& 9.4.8

- ⇒ Authorized Capital: Max capital allowed
- ⇒ Issue capital: Offered to public
- ⇒ Subscribed capital: Accepted by public
- ⇒ Called up capital: Portion requested for payment
- ⇒ Paid up capital: Actually received from shareholders

9.4.9 Property, Plant, & Equipment (PP&E) terms

⇒ Gross block / Gross Fixed Asset - Total acquisition cost

⇒ Depreciation - Reduction in asset value
Types:

→ Straight line method

- Constant annual method

→ Written down value method

- Depreciation rate decreases over a period of time

⇒ Net Block: Gross - Depreciation

⇒ Capital work in progress: Assets under construction

9.4.10 Current liabilities

⇒ A company may also accept advances from the customer. The customer thus have a liability to pay through the payment is deferred. These are known as Current liabilities.

⇒ The company may have to provide for certain expenses (not required to pay immediately) like dividend to shareholders, payment of tax etc. These are known as Provisions

⇒ Net working capital = Current Assets - Current liabilities

9.4.11 Balanced Sheet Summary

Total Capital Employed = Net Assets

9.4.12 Profit & Loss Account Analysis

Look at

⇒ Sales & Profit growth

⇒ Other income (steady vs one time)

⇒ Cost trends relative to sales

⇒ Operational profit vs net profit

⇒ Depreciation & interest trends

⇒ Earnings per share & financial ratios