equiv. to 4 yr loan on principal 10L − 2·39L.

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→ Rule of 72 :- Time taken to double = $n = \frac{72}{r}$.

→ Rule of 69 :- $n = 0.35 + \frac{69}{r}$ (doubling period)

→ Zero - Coupon bond → nothing in between, only lumpsum amount in the end.

→ Default F.V. of bond = ₹1,000

→ Say, F.V. = ₹1,000

12% coupon annually 5 year, at the end of 5 year, get ₹1,000.

If required rate of return = 10%, what would you like to ~~get~~ pay for it?

$= 120 \times PVIFA_{(0.10,5)} + 1000 \times PVIF_{(0.10,5)}$

$= 454.89 + \frac{1000}{(1.10)^5} = 1075.81$

→ If price > FV → premium bond, else it is called a discount bond. $\left(\text{Value} \propto \frac{1}{r}\right)$.

→ If no difference, then it is an at par bond.

→ E.g.:-

Price = Rs. 1050 → traded right now at ₹1050.

FV = Rs. 1000

Coupon = 10% annually (always on FV)

Redemption value = Rs. 1000

No. of yrs to maturity = 6 (YTM = Yield To Maturity)

$$1050 = \frac{100}{(1+YTM)^1} + \frac{100}{(1+YTM)^2} + \cdots + \frac{100}{(1+YTM)^6} + \frac{1000}{(1+YTM)^6}$$

(YTM = r)

$$\Rightarrow 1050 = 100 \times \frac{1}{r}\left(1 - \frac{1}{(1+r)^6}\right) + \frac{1000}{(1+r)^6}$$

Assume YTM = 10% ⇒ 1000.

→ Approximate Formula:-

$$YTM = \frac{\text{Coupon} + \frac{RV - MP}{n}}{0.6 \times MP + 0.4 \times RV}$$

$$= \frac{100 + \frac{1000 - 1050}{6}}{0.6 \times 1050 + 0.4 \times 1000} = \frac{100 - \frac{50}{6}}{1030}$$

$= 8.89\%$

→ Valuation :-

$V_0 = f\left([CF_1, CF_2, \dots, CF_n]\right)$

$$\boxed{V_0 = \sum_{t=1}^{n} \frac{CF_t}{(1+i)^t}}$$

→ Expected Rate of Return (RoR) $\propto$ Risk

→ Equity share → doesn't promise how much you will get / when or if you will get.

→ MP = Rs. 80/-

$Div_t = Div_{t+1} = \dots = Div_\infty = Rs\ 5/-$

$\frac{A}{r}$, with growth = $\frac{A}{r-g}$

without growth

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→ CF Framework :-

$$V_0 = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t}$$

→ Valuation of Equity Shares using Dividend Discounting Model:-

Constant Model (no Growth)

$V_0 = \frac{D_1}{r}$ $(D_0 = D_1 = \dots = D_\infty)$

→ K_e → cost of equity.

With constant Growth

$$V_0 = \frac{D_1}{K_e - g}$$

→ 12%, 1000, 120

↳ cost for company

12% × (1 − Tax)

→ $D_0 = Rs.\ 10$

$g = 5\%$ $\qquad V_0 = \frac{D_0 \times (1+g)}{K_e - g}$

$K_e = 12\%$

~~$K_e = 12\%$~~

→ $R_f + R_p = K_e$

R_f ← Risk-free rate of return

R_p ← Risk premium

Risk Premium (R_p) = f (risk).

$r \propto$ risk premium

→ CAPM – Capital Asset Pricing Model

$$CAPM = R_f + \underbrace{\beta(R_m - R_f)}_{\text{Risk Premium}}$$

R_f – Risk-free Rate of Return

R_m – Market rate of return

$$r_i = \alpha + \beta r_m + e$$

β – Proxy for systematic risk

More the β, more the risk.

→ $\beta = 0.9$, $R_f = 7\%$, $R_m = 15\%$

$K_e = 0.07 + 0.9 \times (0.15 - 0.07) = 14.2\%$

→

D_1	D_2	D_3	D_4	
10	12	15	17	$g = 4\%$ further

$$\frac{10}{1.142} + \frac{12}{(1.142)^2} + \frac{15}{(1.142)^3} + \frac{17}{(1.142)^4} + TV_4/(1.142)^4$$

$$TV_4 = \frac{17 \times 1.04}{0.142 - 0.04} = 173.33$$