Date: / /

Q) R = 10%. No. of shares = 21.7

payout = 50%

Total payout = 50% [86 c] = 43c

g = 7.5%

$$P.V[\text{payout}] = \frac{43c}{.2.5} \times 100$$

$$= 43c[40]$$

P.V = 1720 c

$$\text{Share price} = \frac{1720}{21.7} = 79.26$$

Stock valuation using multiples :

→ Price of stocks at time t (P_t) = Benchmark PE ratio × EPS_t

Valuation Model [Valuation Triad] → Cost of capital / rate of return

share value — Future cash flows

cost of capital

Fisher's equation :

Real interest rate = Nominal interest rate - rate of inflation

Q) r = 6 %. F.V = 100K n = 10 ye = 120 mont

interest rate monthly = $(1.06)^{1/12} - 1$

$= 0.0048$

$100K = \frac{C}{0.0048}\left[(1.0048)^{120} - 1\right]$

$\frac{(100K)(48\times10^{-3})}{0.776} = C$

$\Rightarrow C = 615.6$

Q) r = 5 %. C = 4000 n = 4 years = 48 months

interest rate = $(1.025)^{1/12} - 1 = 0.0021$

$P.V = \frac{C}{r}\left[1 - \frac{1}{(1+r)^{48}}\right]$

$= \frac{4000}{0.0021}\left[1 - \frac{1}{(1.0021)^{48}}\right]$

$(1.025)^{1/6}$

Eff. rate = 0.0041

1.106

$P.V = 182554.03$

Interest rates :-

Equivalent n-period discount rate = $(1+r)^n - 1$

→ APR

$$\text{Interest rate} = \left(1 + \frac{r}{n_1}\right)^{n_2} - 1$$

n_2 → Final answer

r → APR

n_1 → Annual compounding (or) Semi compounding (or) monthly compounding

Q) APR = 5% $C = 4000$ $n = 48$

$$\text{Interest rate} = (1.025)^{1/6} - 1$$

$$= 0.0041$$

$$P.V = \frac{4000}{0.0041}\left[1 - \frac{1}{(1.0041)^{48}}\right]$$

$$= \frac{4000}{0.0041}\left[1 - \frac{1}{1.22}\right]$$

$$= \frac{4000}{0.0041}\left[\frac{0.18}{1.8}\right]$$

$$= 175929.6$$

Q) $n = 28$ years $\quad C = 2623.33 \quad r = \frac{4.8}{12} = 0.4\%$

$= 28 \times 12$

$= 336$

$$P.V = \frac{2623.33}{0.004}\left[1 - \frac{1}{(1.004)^{336}}\right]$$

$\downarrow 3.824$

$P.V = 484328.18 \longrightarrow$ Present owe.

$$P.V_{[1\text{ year before}]} = \frac{2623.33}{0.004}\left[1 - \frac{1}{(1.004)^{348}}\right]$$

$\downarrow 4.011$

$= 492324.02 \longrightarrow$ Last year.

Decline in balance

$= 7995.84$

Loan paid last year $= 2623.33 \times 12 = 31479.96$

Interest last year $= 23484.12$

$\rightarrow$ Real interest rate $= \frac{r - i}{1 + i}$

Q) $r = 10\%$ $i = 4\%$

$$r_r = \frac{0.06}{1.04} = 0.0576 = 5.76\%$$

$C = 25000$

$$P.V = \frac{25000}{0.0576}\left[1 - \frac{1}{(1.0576)^3}\right]$$

$\downarrow$ 1.183

$$P.V = 67140.39$$

Q) $r_1 = 0.91\%$ $r_2 = 0.98$ $r_3 = 1.26$ $r_4 = 1.69$ $r_5 = 2.01$

$C = 1000$

$$P.V = 1000\left[\frac{1}{1.0091} + \frac{1}{(1.0098)^2} + \frac{1}{(1.0126)^3} + \frac{1}{(1.0169)^4} + \frac{1}{(1.0201)^5}\right]$$

$\downarrow$ 0.99 $\downarrow$ 0.98 $\downarrow$ 0.963 $\downarrow$ 0.935 $\downarrow$ 0.905

$$= 4773.3$$

→ Repo rate [Repurchasing operation]

Q) r_1 1st year = 0.01 r_1 2nd year = 0.02

r_1 3rd year = 0.04 $r_1 = 1\%$

~~$1 + (0.01)(0.02) = (1+r_2)^2$~~ 1.0302

~~$1 + 0.0002 = (1+r_2)^2$~~ 1.01491

~~$1.0002 = (1+r_2)^2$~~

$r_2 = 1.49\%$ $r_3 = 2.32\%$

Bond Valuation :

Q) $C = 80$ $t = 10$ $r = 8\%$ $F.V = 1000$

$$P.V = \frac{80}{.08}\left[1 - \frac{1}{(1.08)^{10}}\right]$$

$$= \frac{80^{10}}{8} \times 100\left[1 - \frac{1}{(1.08)^{10}}\right]$$

$$P.V = 1000\left[1 - \frac{1}{(1.08)^{10}}\right]$$

$$P.V\ [bond] = \frac{1000}{(1.08)^{10}}$$

Price of bond = 1000

Q) F.V = 1000 r = 10%

For semi annually YTM = 12%

for semi anually it will be 6%

P = 50

$$P.V = \frac{50}{0.06}\left[1 - \frac{1}{(1.06)^{40}}\right] + \frac{1000}{(1.06)^{40}}$$

$\times 10.286$

↓ Cash flows

↓ Present value of bond

$$= 752.24 + 97.22$$

$$= 849.5$$

$$EAR = \left(1 + \frac{APR}{k}\right)^{n} - 1$$

$$= (1.06)^{1/2} - 1$$

Q) n = 30 $r_1 = 10$ $r_2 = 5$ $r_3 = 3$ YTM = 5%

F.V = 100 $P_1 = 10$ $P_2 = 5$ $P_3 = 3$

$$(P.V)_1 = \frac{10}{0.05}\left[1 - \frac{1}{(1.05)^{30}}\right] + \frac{100}{(1.05)^{30}}$$

$$= 176.91$$

$$(P.V)_3 = \frac{3}{0.05}\left[1 - \frac{1}{(1.05)^{30}}\right] + \frac{100}{(1.05)^{30}}$$

$$= 69.3$$

Q) Zero coupon

$n = 15 \quad r_1 = 5\% \quad r_2 = 6\%$

$F.V = 1000$

$\%$ change $= 13.3$

10% coupon rate

$n = 30 \quad Y_1 = 5\% \quad Y_2 = 6\%$

$F.V = 100$

$r = 10\%$

$P = 10$

$$P.V_1 = \frac{10}{0.05}\left[1 - \frac{1}{(1.05)^{30}}\right] + \frac{100}{(1.05)^{30}}$$

$$= 153.72 + 23.13$$

$$= 176.85$$

$$P.V_2 = \frac{10}{0.06}\left[1 - \frac{1}{(1.06)^{30}}\right] + \frac{100}{(1.06)^{30}}$$

≈ 155.05

$\therefore \%$ change $= 12.3$

→ Fluctuation rate increases with increase in period.

$$PV = \frac{C_1}{(1+YTM_1)} + \frac{C_2}{(1+YTM_2)^2} + \cdots + \frac{C+FV}{(1+YTM_n)^n}$$

Investment Decision Rules :

1) NPV rule → NPV = P.V(Benefits) − P.V(costs)

NPV should be +ve for a profit

2) IRR rule →

Q) n=3 r=10% P.V= 1000000 Cost = 500000

P.V(costs) = 375657.4 → 3rd year $(p.v)_1 = 454545.5$

P.V(Benefits) = 1000000 $(p.v)_2 = 413.223.1$

NPV = 624342.6 − 867768.64

NPV = −243426.1

3) Payback rule → Getting cash flows payback within pre-specified period.

Profitability Index = $\frac{\text{NPV (value created)}}{\text{Initial investment (resource consumed)}}$

→ Projects taken following the P.I ranking completely exhausts the available resource.

→ Only single resource constraint.

→ Current acc deficit = Capital acc. surplus
↳ ECB [External
↓
Bonds, land

Assets :-

Q) 5000 Salvage value = 1000
↓
1600 → Depreci. 1st
↓
960 → Depre in 2nd
↓
576 → Depre in 3rd

After 3 years it will be → (1864) → cost

Depre in 4th = 345.6

→ Market value of equity = Shares out. × Market price per share

→ Enterprice value = Market value of equity + Debt - cash
↓
How can one company acquire another
↓
much amount

Gross profit = Total sales - cost of sales

Gross profit - Operating expenses = Operating income
↓
Before interest and taxes
(EBIT)

Pretax income = Operating income (EBIT) - interests

Net income = Pretax income - tax

EPS (earning per share) = Net income / N.o of shares outstanding

Dilution → N.o of shares outstanding increases.

→ Statement of cash flows.

i) Operating activity

→ Financial statement analysis.