CA FINAL AFM

SECURITY VALUATION

By CA GAURAV JAIN

Equity Valuation

⇓

Absolute Valuation ⇓ Absolute Data ⇓ Present Value Models

Relative Valuation ⇓ Comparables ⇓ P/E Ratio

= M/S

EPS

KE

?

= 10 times

1 → 10

P/E Valuation

MPS = EPS × P/E Ratio

Subject

XYZ Ltd

Comparable by Industry

P/E Valuation → $\frac{MPS}{EPS}$ 10 = 10 times

E

P/S → –ve

$\frac{MPS}{Sales/Share}$ → ₹ / Sh

Topline

EV/EBITDA

P/B

$\frac{EV \rightarrow Eq + Debt + PSC}{EBITDA}$

NCC

Defⁿ

Profit available for all without any Distribution

Sales
− VC
C
− FC incl. Dep
EBITDA

P/B

$\frac{MPS}{BVPS}$ ⇒ Financial Inst. + NBFC's + Bank's

Eq.

Eq.

$\Rightarrow \frac{150}{100} = 1.5$

$\frac{90}{100}$ → PSU Bank's

NPA's

$$\underline{\underline{P/B}} = \frac{MPS}{BVPS} \quad ?$$

$$MPS = BVPS \times P/B \text{ Ratio}$$

BVPS → Subj.

P/B Ratio → Industry

SMV

EV

EBITDA

Total Value

2 : 1

3 : 2

Capital Structure

TE — Earnings available for ESHs

RE

Div.

MPS — Same

Total MV

Free-float MV

Total No. of shares × MPS

Free-float No. of shares × MPS

$$MPS \Rightarrow \frac{\text{Total MV}}{\text{Total No. of shares}}$$

Free-float No. of Shares

Total Shares

(−)

Promoter's Holding

Management Hold.

Govt. Holding.

Strategic Holding

DVR

Ob

MPS ⇒ $\dfrac{\text{FF Mkt. Cap.}}{\text{FF No. of Shares}}$

FF No. of Shares × MPS

FF Mkt. Cap.

NSE → Nifty } ⇒ FF Mkt. Cap.

BSE → Sensex

90% ⇒ FF Mkt. Cap.

Russel → Total Mkt. Cap.

⇒ DY :- Dividend Yield

⇓

Return

Actual Amt. Invested

MPS 1000

Div. 100

$\frac{100}{1000} \times 100 \Rightarrow 10\%$

$$\boxed{DY \Rightarrow \frac{\text{Total Dividend}}{\text{Total Amt. Invested}} \times 100}$$

or

$$\boxed{DY = \frac{DPS}{MPS} \times 100} \quad p.a.$$

Eg.

1 year

1000 ———————— Div ⇒ 100

$$DY = \frac{100}{1000} \times 100 = 10\% \; p.a.$$

Eg. $t = 3$ mths

$$DY = \frac{100}{1000} \times 100 = 10\%$$

for 3 mths

Annualized Yield :-

$$\Rightarrow \frac{10\%}{3} \times 12 \Rightarrow 40\% \text{ p.a.}$$

EY :- Earnings Yield

$$\Rightarrow \frac{\text{Earnings for Eq. SH's}}{\text{Actual Amt. Invested}} \times 100$$

or

$$\boxed{EY \Rightarrow \frac{EPS}{MPS} \times 100}$$

⇒ **DPR** → **Dividend Pay-out Ratio**

EPS

DPS   REPS

$$\frac{DPS}{EPS} \times 100 \qquad \frac{50}{100}$$

$DPR \Rightarrow 50\%$

$RR = 50\%$

$RR + DPR = 100\%$ or 1

$$\boxed{RR = \frac{REPS}{EPS} \times 100}$$

⇒ **DR** ⇒ $\boxed{\text{Dividend Rate}}$ — %of

%age of **Dividend**

~~MPS → % age~~

DR = 200%

FV per Share 10/Sh

FV/Sh = 5/Sh

↓

100%

DPS = 5/Sh

DPS ⇒ 20/Share

$$\boxed{DR = \frac{DPS}{FV/Share} \times 100}$$

Crux :-

DY → % of MPS

DPR → % of EPS

DR → % of FV/Share

⇒ P/E Ratio ⇒ $\frac{MPS}{EPS}$ ₹12 / ₹1

= 10 times

Investor is ready to pay Now 10 times of its earnings

₹1 → ₹10

India → 22-25 times

Nifty

1 → 22

1 → 15

P/E Valuation :

$$\boxed{MPS \Rightarrow EPS \times P/E\ Ratio}$$

⇓ Subject co. ⇓ Subject co. ⇓ Comparable Co.

$$\boxed{V_E = V_F - V_D}$$

or

$$\boxed{V_F = V_E + V_D}$$

⇓ Corporate Valuation ⇓ Equity Val. ⇓ Bond Val.

P/E Ratio

⇓

Trailing P/E (Past)

$$\boxed{P/E \Rightarrow \frac{MPS_0}{EPS_0}}$$

Leading P/E (Future)

$$\boxed{P/E = \frac{MPS_0}{EPS_1}}$$

⇒ PEG Ratio :-

$$\Rightarrow \frac{P/E \text{ Ratio}}{\text{Earning growth rate}}$$

PEG Ratio

X Ltd. $\Rightarrow \frac{20 \text{ times}}{10\%} \Rightarrow 2$

Y Ltd. $\Rightarrow \frac{20 \text{ times}}{25\%} \Rightarrow 0.80$

PEG < 1 → Under-valued

PEG > 1 → Over-valued

PEG = 1 → Correctly valued

Stock Dividend :- (Bonus Share)

Free → No. of eq. Shares

No. of Shares = ↑

Bonus = 20% → 100 → 120 Shares

Additional

3 : 2 → $\boxed{\text{5 Shares after Bonus}}$

Add 1 : 2 → 3 shares

after Bonus

B/S

ESL

R&S

Assets

Capitalization of Prof.

XXX ⟷ XXX

Same

Cash Dividend

R&S ⇓	Cash ⇓ XXX
XXX	XXX

Ratio's

$CR = \frac{CA}{CL} \Rightarrow \frac{\Downarrow}{\text{same}}$

Short-term Solvency (-ve)

$\boxed{CR \Rightarrow \Downarrow}$

$\frac{D}{E} \Rightarrow \frac{D \text{ (same)}}{E \Downarrow} \Rightarrow$ No Impact

R&S $\Downarrow$ = Risk $\Uparrow$

$\boxed{\text{Leverage} = \Uparrow}$

Risk $\Uparrow$

Cash Dividend $\Rightarrow$ Impact Share Price (-ve)

Bonus

CR $\Rightarrow$ No Impact

D/E $\Rightarrow$ No Impact

No of Shares ⇑ DPS / EPS / BVPS / RCPS

NAV / Share

⇒ ⇓ ⇒ ⇓

Why Bonus:

= ?

1) Liquidity → Easily tradeable

2) Marketability

2800 → 1300 / 1400

1:1

BJE

1/2

Liquidity + Broader Ownership

$\Downarrow$ $\Downarrow$

Easily tradeable

1cr. 131

1cr → 1000 Invest

% of Holdg Same

2cr.

No. of Investors = $\Uparrow$

1) Liq. ⇗

2) Mak → ⇗

Bonus

$\Uparrow$ No of Shares

3) Stock Split:-

1) Marketability

2) Liquidity

FV → 100 ⟶ 20 FV

Split 5 : 1 ⇒ After split 5 shares

Not Additional Shares

B/S

No. of Sh ↑ FV/Sh ↓

Same

Assets

X

xxx

No. of Share ↑ DPS/EPS/MPS ↓↓.

$\boxed{\text{\% of Holdg} \Rightarrow \text{Same}}$

Cum-Dividend Ex-Dividend

Declare Div. = 10/Sh

CMP = 100/Sh ⇒ Cum-Dividend Price

100 − 10 = 90/Share ⇒ Ex-Divid Price

Cash → 1000

~~Div~~ = 0

1000 → Share → Sell.

1000 → Home Made

2000 − 1000 = 1000

↓

⇒ ✓

Buy → New Shares

⇒ 1000

100 × 10

Sell 10 Sh

r
↓
Actual Rate of Return

K_e
↓
Expected Rate of Return

Actual return = r | $K_e = ?$ |
--- | --- | ---
15% | 10% | I
15% | 20% | II
20% | 20% | III

Case I: If $r > K_e$

20% > 10%

optimum D/P R → 0%

or optimum RR = 100%

obj → To Max. the wealth

Hence Proved

wealth Max. → MPS Maximised

$r < K_e$

10% < 15%

Optimum D/P R = 100%
Optimum RR = 0%

Wealth Max → MPS Max

↑ DPS ↑ MPS +ve Direct

$r = 10\%$ $K_e = 10\%$

30 : 70
70 : 30
40 : 60

Any Pay-out is optimum
Reten is optimum

DPS → MPS → Constant

SECURITY VALUATION

Valuation:- As per Walter's

$P_0 \Rightarrow$ Price of the share as on today

$P_0 \Rightarrow$ (i) PV of all future dividend

(ii) PV of all return on retained Earnings

$r\,[EPS - DPS]$

Assumptions:-

(i) Going Concern assumption

(ii) EPS & DPS are constant
10 5

(iii) r & K_e are constant

15% 10% - - - - ∞

(iv) No new equity will be issued.

No external finance.

Not Relevant for Exams

PART I PV of all future dividend

$$\frac{DPS}{(1+K_e)^1} + \frac{DPS}{(1+K_e)^2} + \frac{DPS}{(1+K_e)^3} - - - - - \infty$$

(Annuity upto perpetuity)

$$\boxed{CR = \frac{1}{1+K_e}}$$

Sum of infinite series of GP

$$\boxed{\frac{FT}{1-CR}}$$

$$\frac{CF}{DR}$$

$$\boxed{\frac{DPS}{K_e}} \qquad \frac{\frac{DPS}{(1+K_e)^1}}{1-\frac{1}{1+K_e}}$$

$$\frac{\frac{DPS}{\cancel{1+K_e}}}{\frac{\cancel{1}+K_e-\cancel{1}}{\cancel{1+K_e}}} \qquad \frac{DPS}{K_e}$$

Hence Proved

$$P_0 = \underbrace{\frac{DPS}{K_e}}_{I^{st}} + \underbrace{\boxed{\frac{\frac{r}{K_e}[EPS-DPS]}{K_e}}}_{II^{nd}} \quad \text{---} \; B$$

Part II PV of all return on retained Earnings

For 1st year

IInd year

~~(E/S - D/S)~~

$$\frac{r[E/S - D/S]}{(1+K_e)^2} - \frac{-r[E/S-D/S]\,g}{(1+K_e)^3}$$

For IInd year:- E/S-D/S

IInd

IIIrd

$$\frac{r[E/S-D/S] \text{ ---- } g}{(1+K_e)^3}$$

1st year $CR = \frac{1}{(1+K_e)}$

Sum of infinite series of GP

$$\frac{FT}{1-CR}$$

$$\frac{\dfrac{\gamma[E/S - D/S]}{(1+K_e)^2}}{1 - \dfrac{1}{1+K_e}} \Rightarrow \frac{\dfrac{\gamma[E/S - D/S]}{(1+K_e)^{\cancel{2}}}}{\dfrac{\cancel{1}+K_e-\cancel{1}}{\cancel{(1+K_e)}}}$$

1st eq.

$$\Rightarrow \frac{\gamma[E/S - D/S]}{K_e(1+K_e)^1} \text{ - - - - (i)}$$

2nd eq

$$\Rightarrow \frac{\gamma[E/S - D/S]}{K_e(1+K_e)^2} \text{ - - - (ii)}$$

3rd

$$\frac{\gamma[E/S - D/S]}{K_e(1+K_e)^3} \text{ - - - (iii)}$$

Adding all the terms:-

$$\frac{r[EPS-DPS]}{K_e(1+K_e)^1}+\frac{r[EPS-DPS]}{K_e(1+K_e)^2}----\infty$$

$$\boxed{CR=\frac{1}{1+K_e}}$$

$$\frac{\dfrac{r[EPS-DPS]}{K_e(1+K_e)^1}}{1-\dfrac{1}{1+K_e}}\Rightarrow\frac{\dfrac{r(EPS-DPS)}{K_e\cancel{(1+K_e)}}}{\dfrac{\cancel{1}+K_e-\cancel{1}}{\cancel{(1+K_e)}}}$$

$$\frac{\frac{r}{K_e}[EPS-DPS]}{K_e}\rightarrow \text{Hence Proved}$$

II^nd Part

$$\boxed{P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}}$$

Q.1A

EPS = 6 K_e = 10% r = 20% DPR = 30%

W.No. DPS = 6 × 30% ⇒ 1.8/Share

As per Walter's

$$P_0 \Rightarrow \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$\Rightarrow \frac{1.8}{.10} + \frac{\frac{.20}{.10}[6 - 1.8]}{.10}$$

P_0 ⇒ 102/Share

(ii) When r > K_e i.e. 20% > 10%,

The optimum DPR should be 0%

this is not the optimum DPR as per Walter's

Proof: At 0% DPR

Hence:- DPS = 0

$$P_0 = \frac{0}{.10} + \frac{\frac{.20}{.10}[6-0]}{.10}$$

$P_0 = 120$/Share $\rightarrow$ MPS $\rightarrow$ Max.

$r > k_e$ DPS $\Uparrow$ MPS $\Downarrow$ $\rightarrow$ Increase

DPS $\Downarrow$ MPS $\Uparrow$

Q.1B

PAT = 30 lakhs $r = 20\%$ $K_e = 16\%$

$P_0 = 42$/Share DPS = ? DPR = ?

Solⁿ W.No.1

PAT =	30,00,000
(−) Pref. Div. (12% of 100 lakhs)	→ 12,00,000
EFE	18,00,000
÷ No. of eq. Shares	3,00,000
EPS	6/Share

As per Walter's

$$P_0 \Rightarrow \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$42 \Rightarrow \frac{\dfrac{DPS}{.16} + \dfrac{.20}{.16}[6 - DPS]}{.16}$$

$$42 = \frac{DPS + 1.25[6 - DPS]}{.16}$$

$$6.72 = DPS + 7.5 - 1.25 DPS$$

$$-0.78 = (-)0.25 DPS$$

$$\boxed{DPS \Rightarrow 3.12/\text{Share}}$$

$$DPR = \frac{3.12}{6} \times 100 \Rightarrow \underline{\underline{52\%}}$$

The approximate DPR should be 52%, so as to keep share price at ₹42/share

$\boxed{Q \cdot 1E}$ Nov. 2020

PAT = 300 cr   No of Share = 15,00,000

$EPS \Rightarrow \frac{300\ cr.}{15,00,000} = ₹\ 2000/\text{Share}$

$K_e = 13\%$ $r = 17\%$

$\boxed{DPR = 15\% \mid 30\% \mid 60\% \mid 90\%}$

(i) DPR = 15%   DPS = 300/Share

$$P_0 = \frac{300}{\cdot 13} + \frac{\frac{\cdot 17}{\cdot 13}\left[2000 - 300\right]}{\cdot 13}$$

$\Rightarrow ₹\ 19408 \cdot 28$

(ii) DPR = 30%   DPS $\Rightarrow$ 600/Share

$$P_0 = \frac{600}{.13} + \frac{\frac{.17}{.13}[2000 - 600]}{.13}$$

$\Rightarrow$ ₹ 18698.22 ✓

(iii) D/P R = 60% D/S = 1200/Sh

$$P_0 = \frac{1200}{.13} + \frac{\frac{.17}{.13}[2000 - 1200]}{.13}$$

$P_0 \Rightarrow$ ₹ 17278.10

(iv) D/P R = 90% D/S = 1800

$$P_0 = \frac{1800}{.13} + \frac{\frac{.17}{.13}[2000 - 1800]}{.13}$$

$\Rightarrow$ ₹ 15857.99 ✓

Extra DPR = 0% DPS = 0

$$P_0 = \frac{0}{.13} + \frac{\frac{.17}{.13}[2000 - 0]}{.13}$$

$P_0 \Rightarrow$ ₹ 20118.34

Extra DPR = 100%

$$P_0 \Rightarrow \frac{2000}{.13} + \frac{\frac{.17}{.13}[2000 - 2000]}{.13}$$

$\Rightarrow$ 15384.62

$\boxed{r > K_e}$ ← Maximum MPS

at 0% DPR 20118.34

Minimum MPS

at 10% D/R $\underline{\underline{15984.62}}$

Hence $\underline{\underline{\text{Proved}}}$

⇒ Gordon's Model :- / Growth Model :-

DDM :-

1) Relevant Theory.

2) r & K_e, DPR

3) $r > K_e$ → optimum DPR = 0%

$r < K_e$ → optimum DPR = 100%

$r = K_e$ → Any.

Valuation:

PV of all future dividend, growing at constant rate

$$D_1 \quad D_2 \quad D_3 \quad \ldots \infty$$

$D_0 = 10$

$$\frac{10(1+g)^1}{(1+K_e)^1} \quad \frac{10(1+g)^2}{(1+K_e)^2} \quad \frac{10(1+g)^3}{(1+K_e)^3}$$

$$\boxed{CR = \frac{1+g}{1+K_e}}$$

Sum of infinite series of GP $= \dfrac{FT}{1-CR}$

$$\frac{\frac{D_0(1+g)}{1+K_e}}{1-\frac{1+g}{1+K_e}} \Rightarrow \frac{\frac{D_0(1+g)}{\cancel{(1+K_e)}}}{\frac{\cancel{1}+K_e-\cancel{1}-g}{\cancel{1+K_e}}}$$

$$\boxed{P_0 = \frac{D_0(1+g)}{K_e - g_c} \text{ or } \frac{D_1}{K_e - g_c}}$$

$\Rightarrow$ $\underline{\underline{K_e > g}}$ $\qquad \dfrac{D_0(1+g)}{K_e - g_c}$

$K_e < g$ $\times$ $P_0 = \underline{\underline{-ve}}$

$\Rightarrow$ $\boxed{g = \underline{\underline{RR \times ROE}}}$

or $\boxed{g = b \times r}$

$\Rightarrow$ PV of all return on return Earnings

$\Rightarrow$ growing at constant rate

$g \Rightarrow RR \times ROE$

Application:-

1) $P_0 = \frac{D_0(1+g)}{K_e - g_c}$ or $\frac{D_1 = ?}{K_e - g_c}$

$D_1 = ?$

$EPS \times DPR = DPS$

$EPS \times (1 - RR) = DPS$

We know that:

$RR + DPR = 100\%$

Note: $EPS_0 \longrightarrow DPS_0(1+g)$

$= DPS_1$

$\boxed{EPS_1 \longrightarrow DPS_1 \cancel{(1+g)}}$

Note:

EPS (Question is not clear)

EPS_0 EPS_1 → Assume to be EPS_1 (As per ICAI)

Note:

$D_0(1+g) = D_1$

(P) $EPS_0(1+g) = EPS_1 \Rightarrow DPS_1$

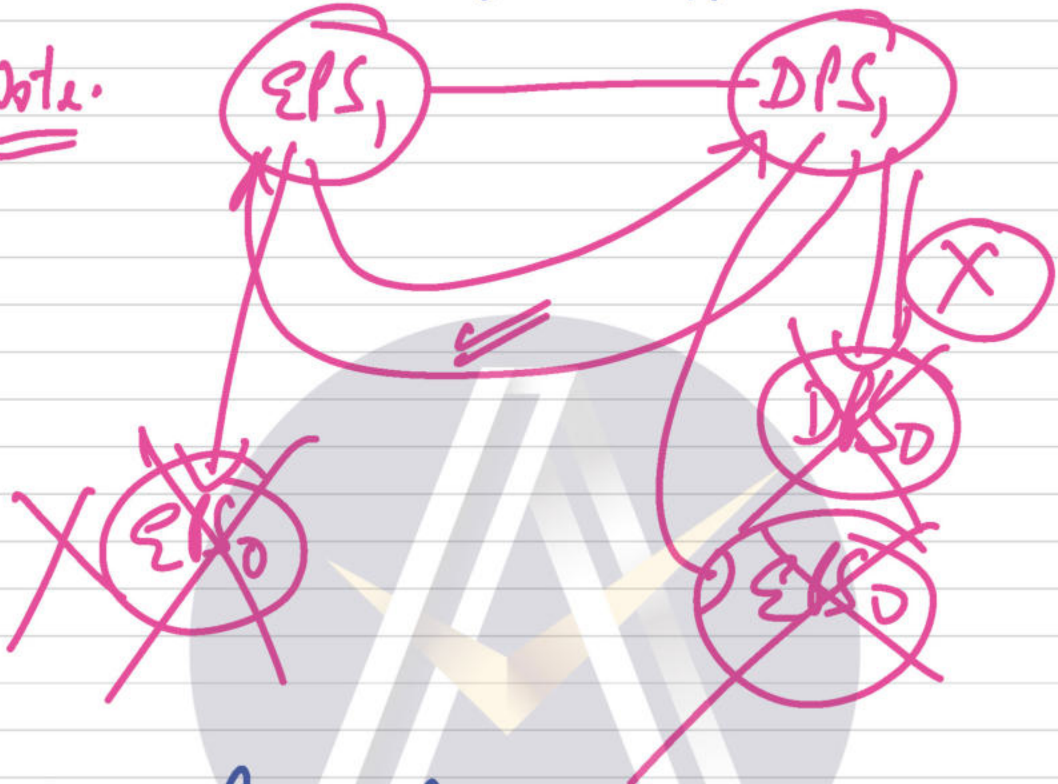
Yes

'No'

'Yes'

⇒ growth is always moving forward

Note.



Note. $P_0 = \dfrac{D_0(1+g)}{K_e - g_c}$ or $\dfrac{D_1}{K_e - g_c}$

or $\dfrac{EPS_1 \times DPR = DPS_1}{K_e - g_c}$

or

$$\frac{EPS_1 (1-RR) = DPS_1}{K_e - g_c}$$

2) One year DDM :-

1 year

$P_0 = ?$

$$\frac{D_1 + P_1}{(1+K_e)^1}$$

$$P_0 = \frac{P_1 + D_1}{(1+K_e)^1}$$

If P_0 is given, Cal. P_1

& If P_1 is given, Cal. P_0

Price at the end of each year:-

| 1 year | 1 year | 1 yr | 1 yr | 1 yr |

$P_0 \leftarrow P_1 \leftarrow P_2 \leftarrow P_3 \leftarrow P_4 \leftarrow P_5$

$$P_0 = \frac{P_1 + D_1}{(1+K_e)^1} \qquad P_1 = \frac{P_2 + D_2}{(1+K_e)^1}$$

$$P_2 = \frac{P_3 + D_3}{(1+K_e)^1}$$ ---- So on

3) If $\boxed{EPS = DPS}$

$5 = 5$

then $DPR = 100\%$ $RR = 0\%$

Then $g = RR \times RoE$

$$\boxed{g = 0\%}$$

$$P_0 = \frac{D_0(1+\cancel{g})}{K_e - \cancel{g}} \Rightarrow \boxed{\frac{D_0}{K_e}}$$

D_0 ------ E

$$\boxed{P_0 = \frac{EPS}{K_e}}$$ or $K_e = \frac{EPS}{P_0}$

$$\Rightarrow \boxed{K_e = \frac{EPS}{MPS}}$$

$K_e = EY$

ICAI $\Rightarrow$ or $$\boxed{K_e = \frac{1}{P/E\ Ratio}}$$

[In the last]

Investment Decision:

$\boxed{P_0 = ?}$ ⟹ CMP

Valuation

Exchange

(i) $P_0 = 1000$ CMP = 900

U/V → Buy

(ii) $P_0 = 1000$ —— CMP = 1100

O/V → Sell #

Investor is already holding the stock.

Not to Invest → No Holding

(iii) $P_0 = 1000$ → CMP = 1000

C/V

B/S

Q 2A of May 2018 (SM)

$P/E \Rightarrow \frac{MPS_0}{EPS_0} = 8 \text{ times}$

$EPS_0 = 10/Sh$ $\quad RR = 50\%$

$DPR = 50\%$

$\boxed{DPS_0 = 10 \times 50\% = 5/Sh}$ a/f

$g = 15\%$ $\quad K_e = ?$

(i) $P_0 = \frac{D_0(1+g)}{K_e - g} \Rightarrow \frac{5(1+.15)}{K_e - .15}$

W.No

$P/E \text{ Ratio} = 8 \text{ times}$

$\frac{MPS}{EPS} = 8 \text{ times}$

$80 = \frac{5(1+.15)}{K_e - .15}$

$MPS = 8 \times 10$

$= 80/share$

$K_e = \frac{5(1+.15)}{80} + .15$

$\Rightarrow 22.19\%\ p.a.$

(ii) $K_e = 22.19\%$ $g = 16\%$

$P_0 = \frac{5(1+.16)}{.2219 - .16} \Rightarrow ₹\ \frac{5.8}{.0619}$

$\Rightarrow ₹\ 93.70/share$

(iii) $P_0 \Rightarrow \frac{5(1+.18)}{.20 - .18} \Rightarrow 295/share$

Q.2C

i) $K_e = ?$ Using CAPM

$$K_e = R_f + \beta [R_m - R_f]$$

$$K_e = 10\% + 1.2 [15\% - 10\%]$$

$$\Rightarrow 16\%$$

$$P_0 \Rightarrow \frac{D_0(1+g)}{K_e - g_c} \Rightarrow \frac{3(1+.12)}{.16 - .12}$$

$P_0 \Rightarrow$ ₹ 84/Share

Q. 2E

(i) Walter's

$$P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$\Rightarrow \frac{6}{.20} + \frac{\frac{.25}{.20}[10-6]}{.20}$$

$$P_0 \Rightarrow 55/\text{share}$$

(ii) Gordon's

$$P_0 = \frac{D_1}{K_e - g} \Rightarrow \frac{6}{.20 - .40 \times .25}$$

$$\Rightarrow ₹ 60/\text{share}$$

Q-24

W.No. Cal. of K_e :-

Existing

$$K_e = R_F + \beta [R_m - R_F]$$

$$= 12\% + 1.3 [5\%] \Rightarrow 18.5\%$$

Revised

$$10\% + 1.4 [4\%] \Rightarrow 15.6\%$$

$P_0 \Rightarrow$ **Existing :-**

$$P_0 = \frac{D_0(1+g)}{K_e - g} \Rightarrow \frac{3(1+.09)}{.185 - .09}$$

$$\Rightarrow ₹\ 34.42/\text{Share}$$

Revised

$P_0 =$

P_0 P_0

$$P_0 = \frac{2.5(1+.07)}{.156-.07} \Rightarrow ₹\,31.10/\text{sh}$$

$$P_0 = 34.42 \longrightarrow CMP = 40/\text{sh}$$

O/V Sell

The MPS of ₹40 is higher in comparison to current equilibrium price of 34.42 as well as revised price of ₹31.10.

Under this situation, we should sell the share.

Q.21 (wl)

W. No

ATR = 1.1

Assets = 600 lakh

$$ATR = \frac{T}{A} = 1.1 \text{ times}$$

⇒ Turnover ⇒ 600 × 1.1 = 660 lakh

Effective Intt rate ⇒ 8%

Debt + Bond ⇒ 125 + 50
= 175 lakh

⇒ Intt = 175 l × 8% ⇒ 14 lakh

⇒ operating Margin = 10%

operating Cost = 90%

⇒ DPR = 16.67% Tax = 40%

i) Income Statement :-

	₹ lakh
Sales	660
(–) Op. Expenses @ 90%	594
EBIT	66
(–) Int.	14
EBT	52
(–) Tax @ 40%	20.80
PAT	31.20
DPR = 16.67% Div.	5.20
Retained Earnings	26 lakhs

(ii) $g = RR \times ROE$

$= 83.33\% \times 7.8\%$

$\Rightarrow 6.5\%$

$ROE \Rightarrow \dfrac{\text{Earnings for Equity}}{\text{Eq. Sh's fund}}$

$\Rightarrow \dfrac{31.2 \text{ lakh}}{100 + 300 \text{ lakh}}$

$ROE = \underline{\underline{7.8\%}}$

(iii) $P_0 = \dfrac{D_0(1+g)}{K_e - g}$

Dividend per share $\Rightarrow \dfrac{5.20 \text{ la}}{10 \text{ lakh}} \Rightarrow \underline{0.52/\text{Share}}$

$$P_0 \Rightarrow \frac{0.52(1+.065)}{.15-.065}$$

$$P_0 \Rightarrow 6.51/\text{Share}$$

(iv) Investment Decision:-

$P_0 = 6.51/\text{Sh} \longrightarrow \text{CMP} = 14/\text{Sh}$

O/V

The stock is over-valued. Hence, Investor should not invest in the 'co'

SECURITY VALUATION

Q.2K

$EPS_0 = 2.5$/share $DPS_0 = ₹1$/share

$g = 2\%$ $K_e = 14\%$

(a) Cal. P/E Ratio Using Gordon's

$$P_0 = \frac{D_0(1+g)}{K_e - g_c}$$

$$P_0 \Rightarrow \frac{1(1+.02)}{.14 - .02}$$

P_0 (MPS) $\Rightarrow$ ₹ 8.5/share

$$P/E \text{ Ratio} = \frac{MPS}{EPS} \Rightarrow \frac{8.5}{2.5} \Rightarrow 3.4 \text{ times}$$

(b) Current P/E Ratio = 7 times

$$P/E = \frac{MPS}{EPS} = 7$$

$MPS = 7 \times 2.50 \Rightarrow 17.5/\text{share}$

Using Gordon's :-

$$P_0 \Rightarrow \frac{D_0(1+g)}{K_e - g}$$

$$17.5 \Rightarrow \frac{1(1+g)}{.14 - g}$$

$2.45 - 17.5g = 1 + g$

$1.45 \Rightarrow 18.5g$

$$\boxed{g \Rightarrow 7.84\%}$$

Q.24 V. Imp.

$P_0 = 146$ $\quad$ $D_1 = 3.36$ | Share $\quad$ $g = 7.5\%$

(a) $K_e = ?$ $\quad$ $g = 7.5\%$ p.a.

As per Gordon's :-

$$P_0 = \frac{D_1}{K_e - g}$$

$$K_e = \frac{D_1}{P_0} + g$$

$$\Rightarrow \frac{3.36}{146} + .075$$

$$\boxed{K_e \Rightarrow 9.80\% \text{ p.a.}}$$

(b) ROE = 10% (r)   RR = 60%

Revised g = ?   Revised K_e = ?

Revised 'g' $g \Rightarrow RR \times ROE$

$\Rightarrow 60\% \times 10\%$

$g \Rightarrow \underline{6\%}$ p.a.

Hint:

$D_1 \rightarrow EPS_1 \leftarrow$ New DPR (40%) $\rightarrow$ Revised D_1

Old RR

(2) $\Rightarrow$ Accordingly, dividend will also get changed & to Cal K_e,

First we cal. Previous RR & then EPS, assuming ROE will be same. & then cal. Revised D_1 using New RR / DPR

1) Previous RR :-

$$g = RR \times ROE$$

$$7.5\% \Rightarrow RR \times 10\%$$

$$RR = 75\% \qquad DPR = 25\%$$

2) Cal. of EPS_1

$$DPS_1 = 3.36 \rightarrow DPR = 25\%$$

$$\text{Now } 100\% \Rightarrow \frac{3.36}{25\%} \Rightarrow \underset{EPS_1}{13.44} / \text{Sh}$$

3) Revised D_1 :-

Revised RR = 60%   D/R = 40%

$D_1 \Rightarrow 13.44 \times 40\% \Rightarrow 5.376$ / share

$P_0 = 146$ $DPS_1 = 5.376$ / Sh $g = 6\%$

$$K_e = \frac{5.376}{146} + .06$$

Revised $K_e \Rightarrow 9.68\%$ p.a.

Cal. of ROE :- (Return on Equity)

Amt. Invested

ESH's fund

EFE (Return)

$$\boxed{ROE \Rightarrow \frac{\text{Earnings available for ESH's}}{\text{Eq. SH's fund}}}$$

B/S

Approach 1 :- ESH's fund Approach

Approach 2 :- Net Asset Valuation for ESH's

2) **BVPS:-**

$$\Rightarrow \frac{\text{Eq. SH's fund}}{\text{No. of eq. share}}$$

3) **P/E Valuation**

$$\text{P/E Ratio} = \frac{\text{MPS}}{\text{EPS}} \text{ — ?}$$

$$\boxed{\text{MPS} = \text{EPS} \times \text{P/E Valuation}}$$

Crux

MPS

EPS $\Rightarrow \dfrac{\text{EFE}}{\text{No of eq. share}}$

P/E Ratio

BVPS

→ $\frac{\text{ESH's fund}}{\text{No of eq. Shs}}$

ROE

→ $\frac{\text{EFE}}{\text{ESH's fund}}$

$$\boxed{EPS_1 = BVPS_0 \times ROE}$$

Concept 1: Cal. of 'g'

Method 1: $g_c = RR_c \times ROE_c$

Method 2: CAGR → CA Inter:

[Compounded Annual growth rate]

Example:-

Year	DPS
2015	1.10 → Base
2016	1.25
2017	1.39
2018	1.85
2019	1.98
2020	2.20 → Current Value / FV

① ② ③ ④ ⑤

$g = ?$

CAGR

$$\boxed{FV = PV(1+g)^{n-1}}$$

$$2.20 = 1.10(1+g)^{6-1}$$

$$\left[\frac{2.20}{1.10}\right]^{1/5} - 1 \Rightarrow g$$

a → $\frac{2.20}{1.10}$, b → $1/5 = .20$

a^b

$$\boxed{g = 14.87\%\ p.a.}$$

CAGR

1. $\sqrt{a}$ 12 times
2. -1
3. $\times b$
4. $+1$
5. $\times =$ 12 times

Concept: Application of FC

⇓

New equity only

$$\boxed{K_r < K_{new\ equity}}$$

Reason:- Floating Cost

FV ⇓ Denomination of a share

SEBI

₹100 | ₹10 | 5 | 1

IP	NP
Face Value + Premium (−) Discount = IP	⇓ Co's Point of view $\boxed{IP - FC}$ = NP

Gordon's $P_0 = \dfrac{D_1}{K_e - g_2}$

↓

NP

$$\boxed{P_0 - FC} = \frac{D_1}{Ke - g}$$

Net Proceeds

$$\boxed{\begin{array}{l} IP - FC \\ CMP - FC \end{array}}$$

New eq.

Existing Share Price

Q.3

CMP = 125   Fc = 4% of IP

IP = 125

(a) Cal. 'g' = ?

$FV = PV(1+g)^{n-1}$

$14 = 10(1+g)^{5-1}$

$\left[\frac{14}{10}\right]^{1/4} - 1 \Rightarrow g$

$\boxed{g \Rightarrow 8.78\% \text{ p.a.}}$

(b) Cost of Existing Equity:-

→ No Adj. of FC

$$P_0 \Rightarrow \frac{D_0(1+g)}{K_e - g_c}$$

D_0 = Last Paid Dividend

$$125 = \frac{14(1+.0878)}{K_e - .0878}$$

$$K_e = \frac{14(1+.0878)}{125} + .0878$$

K_e [Existing eq] $\Rightarrow$ 20.96 % p.a.

(c) Cal. Cost of New eq:-

$$\underbrace{P_0 - FC}_{NP} = \frac{D_0(1+g)}{K_e - g}$$

$$125 - 125 \times 4\% = \frac{14(1+.0878)}{K_e - .0878}$$

$$125 - 5 = \frac{14(1+.0878)}{K_e - .0878}$$

$$K_e \Rightarrow \frac{14(1+.0878)}{120} + .0878$$

$$\boxed{K_e \Rightarrow 21.47\% \text{ p.a.}}$$

$$\Rightarrow \boxed{\begin{gathered} K_r < K_{\text{New equity}} \\ \underline{\underline{\text{or}}} \\ K_{\text{New eqt}} > K_r \end{gathered}}$$ Hence Proved

Q.4A

W.No.1

$EPS \Rightarrow \dfrac{\text{EFE}}{\text{No. of eq. Shares}}$

$\Rightarrow \dfrac{2,00,000}{20,000} \Rightarrow 10/\text{Share}$

$DPS \Rightarrow \dfrac{1,50,000}{20,000} \Rightarrow 7.5/\text{Sha}$

$DPR \Rightarrow \dfrac{7.5}{10} \Rightarrow 75\%$

$RR \Rightarrow 25\%$

$(r)\ ROE \Rightarrow \dfrac{\text{EFE}}{\text{Eq. SH's fund}}$

$$\Rightarrow \frac{2,00,000}{20,00,000} \times 100 = 10\% \text{ p.a.}$$

$$K_e = 1/\text{P/E Ratio} = \frac{1}{12.5} = 8\% \text{ p.a.}$$

(a) $r = 10\%$ $K_e = 8\%$

$DPR = 75\%$

Co.'s Dividend Pay-out ratio is not optimum according to Walter's :-

When $r > K_e$ i.e. $10\% > 8\%$,

The optimum DPR should be 0%.

At this point, MPS will be maximum

At 75% DPR

$$P_0 = \frac{\frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}}{}$$

$$P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$\Rightarrow \frac{7.5}{.08} + \frac{\frac{.10}{.08}[10 - 7.5]}{0.08}$$

$P_0 \Rightarrow$ ₹ 132.81 / Share

At 0% DPR :-

$$P_0 \Rightarrow \frac{0}{0.08} + \frac{\frac{.10}{.08}[10 - 0]}{0.08}$$

$$\boxed{P_0 \Rightarrow ₹\ 156.25 / \text{Share}}$$

Thus, MPS is maximum at 0% DPR. It can be seen that P_0 will increase by adopting 0% DPR.

(b) When $r = K_e$, D/P will not effect the MPS.

If $r = 10\%$ then $K_e = 10\%$

We know that:-

$$K_e = \frac{1}{P/E \text{ Ratio}}$$

$$\cdot 10 = \frac{1}{P/E \text{ Ratio}}$$

$$\boxed{P/E \text{ Ratio} = 10 \text{ times}}$$

Hence, if P/E = 10 times, D/P will not effect the MPS.

(c) If P/E Ratio = 8 times

$K_e = \frac{1}{8} \Rightarrow 12.5\%$

$r \Rightarrow 10\%$

This is not the optimum DPR as per Walter's, when $r < K_e$ i.e. $10\% < 12.5\%$, optimum DPR should be 100%.

At this DPR, MPS will be Maximum.

At 75% DPR

$$P_0 = \frac{7.5}{.125} + \frac{\frac{.10}{.125}[10 - 7.5]}{.125}$$

$P_0 \Rightarrow$ ₹ 76/Share

At 100% D/R:-

$$P_0 = \frac{10}{.125} + \frac{\frac{.10}{.125}[10-10]}{.125}$$

$$\boxed{P_0 = ₹80/\text{share}}$$

Thus, it can be seen that P_0 will increase by adopting 100% D/R.

Q.4B (a) 2-3 marks

$EPS_1 = BVPS \times ROE$

$\Rightarrow 137.80 \times 15\% \Rightarrow 20.67/\text{Sh}$

$RR = 60\%$ $DPR = 40\%$

$D_1 = 8.268$

$K_e = 18\%$ $r = 15\%$

Walter's :-

$$P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$\Rightarrow \frac{8.268}{.18} + \frac{\frac{.15}{.18}[20.67 - 8.268]}{.18}$$

$P_0 \Rightarrow 45.93 + 57.42$

$P_0 \Rightarrow ₹103.35$

Gordon's:-

$$P_0 = \frac{D_0(1+g) = D_1}{K_e - g}$$

$g \Rightarrow RR \times ROE$

$\Rightarrow 60\% \times 15\% = 9\%$

$$P_0 = \frac{20.67 \times 40\%}{.18 - .09} \Rightarrow ₹\ 91.87/Share$$

Concept :- Minimum & Maximum MPS as per Walter's :-

1) $r > K_e$

Optimum DPR = 0%
→ MPS → Maximum

DPR = 100%
→ MPS → Minimum

2) $r < K_e$

Optimum DPR = 100%
→ MPS → Maximum

DPR = 0%
→ MPS → Minimum

Q.5 Imp. ICAI

$r = 20\%$ $\quad DR = 18\%$ $\quad FV = 10$/share

$DPS = 10 \times 18\% = 1.8$/sh $\quad DPR = 36\%$

$EPS \Rightarrow \frac{1.8}{36\%} \Rightarrow 5$/share

$P/E = 7.25 = \frac{MPS}{5}$

$P_0 \Rightarrow MPS = 7.25 \times 5 \Rightarrow 36.25$

As per Walter's :-

$$P_0 \Rightarrow \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$36.25 \Rightarrow \frac{1.8}{K_e} + \frac{\frac{.20}{K_e}[5 - 1.8]}{K_e}$$

$$36.25 K_e = 1.8 + \frac{.20}{K_e}[3.2]$$

$$36.25 K_e^2 = 1.8 K_e + 0.64$$

<u>or</u> $-36.25 K_e^2 + 1.8 K_e + 0.64 = 0$

<u>Quadratic equation</u>

$$-\boxed{ax^2 + bx + c = 0}$$

$$x \Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$K_e \Rightarrow \frac{-1.8 \pm \sqrt{(1.8)^2 - 4 \times (-)36.25 \times 0.6}}{2 \times (-)36.25}$$

$$K_e \Rightarrow \frac{-1.8 \pm 9.80}{-72.50}$$

~~At (+) ⇒ (−) 11.03 %~~

$\boxed{\text{At } (-) \Rightarrow 16\% \text{ p.a.}}$ $K_e = 16\%$ p.a.

(K_e cannot be negative)

(ii) Limiting Value → Minimum Value

$r = 20\%$ $K_e = 16\%$

If $r > K_e$ i.e. $20\% > 16\%$,

At 0% MPS → Max

100% MPS → Minimum

At 100% DPR:

EPS = 5 DPS = 5/Share

$$P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}[EPS - DPS]}{K_e}$$

$$\Rightarrow \frac{5}{.16} + \frac{\frac{.20}{.16}[5-5]}{.16}$$

$P_0 \Rightarrow$ ₹ 31.25/Sh (Linity Value)

Concept: HPR :- Holding Period Return

1 year

$P_0 = 1000$ $\xrightarrow{CG}$ $D_1 = 100$, $P_1 = 1100$

$$HPR = \frac{1100 - 1000 + 100}{1000} \times 100 = 20\% \text{ p.a.}$$

$$HPR = \boxed{\frac{P_1 - P_0}{P_0}} + \boxed{\frac{D_1}{P_0}}$$

$\Downarrow$ CG Yield ; DY

$$\boxed{HPR = CG\ Yield + DY}$$

Annualized Yield:-

$y\ t = 3$ mths

HPR = 20% for 3 mth.

Annualized Return / Yield :-

$$\Rightarrow \frac{20\%}{3} \times 12 \Rightarrow 80\%\ pa$$

Q.6

IV = ?

(i) $D_1 = 2.15$/share $g = 11.2\%$ $K_e = 15.2\%$

$$P_0 = \frac{D_1}{K_e - g} = \frac{2.15}{.152 - .112}$$

(IV) $P_0 = ₹\ 53.75$/share.

(b)

$CMP = IV = 53.75 \rightarrow P_1 = ?$

$D_1 = 2.15$

One year DDM

$$P_0 = \frac{P_1 + D_1}{(1+K_e)^1}$$

$$53.75 = \frac{P_1 + 2.15}{(1+.152)^1}$$

$$\boxed{P_1 \Rightarrow ₹\ 59.77 / \text{share}}$$

(c)

53.75 —————— 59.77 + 2.15

$$CGY \Rightarrow \frac{P_1 - P_0}{P_0} \Rightarrow \frac{59.77 - 53.75}{53.75} \times 100$$

$$\Rightarrow 11.2\%\ p.a.$$

$$DY = \frac{D_1}{P_0} \Rightarrow \frac{2.15}{53.75} \times 100$$

$\Rightarrow$ 4% p.a.

HPR = CGY + DY

15.2% p.a.

Multi-Stage Model :- V.V.V.Imp.

[2 Stage / 3-Stage]

⇒ **Application of Gordon's :-**

Gordon's

g_c - - - - - - - - g

$$\boxed{P_0 = \frac{D_1}{K_e - g_c}} \quad \text{or} \quad \boxed{\frac{D_0(1+g)}{K_e - g_c}}$$

(i) g = Constant

or

(ii) $K_e > g_c$

Any assumption (Break) → Multi-stage Model

$P_0 = ?$

20% 18% 15% 10%

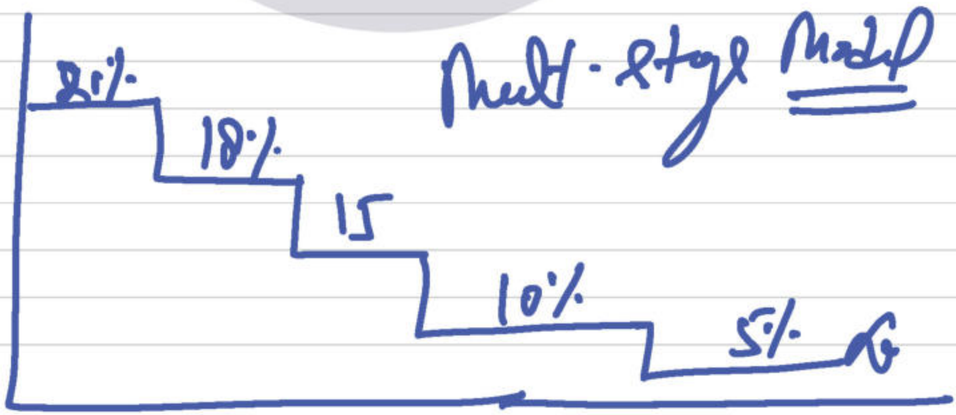
High growth Period

P_4

$$\boxed{P_0 = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4 + P_4}{(1+K_e)^4}}$$

$$\boxed{P_4 \Rightarrow \frac{D_4(1+g_c)}{K_e - g_c}}$$

Multi-stage Model



Q.7A

$D_0 = 4/\text{Share}$

$g = 20\%$ $\quad g = 20\% \quad g_c \text{ --- } 10\%$

$$P_0 \Rightarrow \frac{D_1}{(1+K_e)^1} + \frac{D_2 + P_2}{(1+K_e)^2}$$

$$D_1 = D_0(1+g) = 4(1+.20) \Rightarrow 4.80$$

$$D_2 = 4.80(1+.20) \Rightarrow 5.76$$

$$P_2 \Rightarrow \frac{D_2(1+g_c)}{K_e - g_c} \Rightarrow \frac{5.76(1+.10)}{.15 - .10}$$

$$\Rightarrow 126.72/\text{Sh.}$$

Cal. of P_0 ⇒ Tabular Presentation

Year	CF's	PVF @ 15%	PV
1	4.80	0.8696	4.174
2	5.76	0.7561	4.355
2	126.72	0.7561	95.813

$P_0 \Rightarrow ₹\ 104.342$

Q.7C (SM)

$D_0 = 14/\text{share} \quad g = 9\% \quad P_3 = 360/\text{share}$

(a) $\underline{K_e = 13\%}$

$$P_0 \Rightarrow ? = \frac{D_1^{\,9\%}}{(1+K_e)^1} + \frac{D_2^{\,9\%}}{(1+K_e)^2} + \frac{D_3^{\,9\%} + P_3}{(1+K_e)^3}$$

$D_1 = 14(1.09) \Rightarrow 15.26$

$D_2 \Rightarrow 14(1.188) \Rightarrow 16.63$

$D_3 = 14(1.295) \Rightarrow 18.13$

$P_3 \Rightarrow 360/\text{share}$

Cal. of P_0 = ?

Year	CF's	PVF@13%	PV
1	15.26	0.885	13.51
2	16.63	0.783	13.02
3	18.13	0.693	12.56
3	360	0.693	249.48

$P_0 \Rightarrow$ ₹288.57/Sh

(b) $g_c = 9\%$ - - - - - - ∞

$$P_0 = \frac{D_0(1+g_c)}{K_e - g_c}$$

$$\Rightarrow \frac{14(1+.09)}{.13 - .09} \Rightarrow ₹\ 381.50/Sh$$

(c)

$g_c = 9\%$

$P_3 = ?$

$$P_3 = \frac{D_3(1+g_c)}{K_e - g_c}$$

$$\Rightarrow \frac{18.13(1+.09)}{.13 - .09}$$

$P_3 \Rightarrow$ ₹ 494.04 / Share

$\Rightarrow$ $\boxed{8860017983}$

Q.7D Nov.2015

(a)

2015 25% DPR = 40% 2016 21% $g_c = 10\%$ DPR = 50%

$$\frac{D_1}{(1+K_e)^1} + \frac{D_2 + P_2}{(1+K_e)^2}$$

$$P_2 \Rightarrow \frac{\cancel{D_2}(1+g_c)}{K_e - g_c}$$

2015 $g = 25\%$

$EPS_1 = 9.60(1+.25)$

$\Rightarrow$ ₹ 12/Share

× 40%

4.8/Share

$DPS_1 = 3.84(1+.25)$

$\Rightarrow 4.8/Sh$

2016

EPS$_2$ $12(1+.25) \Rightarrow 15$/share

DPS$_2$ $\Rightarrow 15 \times 40\%$

$\Rightarrow 6$/share

DPS$_2$ = $4.8(1+.25)$

$\Rightarrow 6$/share

DPR = 40%

$$P_2 \Rightarrow \frac{\cancel{D_2}(1+g_c)}{K_e - g_c}$$

$$P_2 \Rightarrow \frac{[15 \times 50\%](1+.10)}{.15 - .10}$$

$$P_2 \Rightarrow \frac{8.25}{.15 - .10} \Rightarrow 165/\text{share}$$

(P) Or

$$\frac{\left[9.60(1+.25)^2 \times 50\%\right](1+.10)}{.15 - .10}$$

$$P_2 \Rightarrow \frac{8.25}{.15-.10} \Rightarrow ₹ 165/\text{Share}$$

$$P_0 \Rightarrow \frac{D_1}{(1+K_e)^1} + \frac{D_2+P_2}{(1+K_e)^2}$$

$$\Rightarrow \frac{4.80}{(1+.15)^1} + \frac{6+165}{(1+.15)^2}$$

$$P_0 \Rightarrow 4.80 \times 0.870 + (6+165) \times .756$$

$P_0 \Rightarrow ₹\ 133.45$ / Share ✓

(b) P/E Ratio $\Rightarrow \dfrac{MPS_0}{EPS_0}$

$\Rightarrow \dfrac{133.45}{9.60}$

$\Rightarrow 13.90$ times ✓

Q.7E

2003

$EPS_0 = €2.10$
$DPS_0 = €0.69$

$\left.\begin{matrix} EPS_0 = €2.10 \\ DPS_0 = €0.69 \end{matrix}\right\}$ 32.86%

$g = 15\%$ | $g_c = 6\%$

DPR = 65%

2004	2005	2006	2007	2008
$\frac{D_1}{(1+K_e)^1}$	$\frac{D_2}{(1+K_e)^2}$	$\frac{D_3}{(1+K_e)^3}$	$\frac{D_4}{(1+K_e)^4}$	$\frac{D_5 + P_5}{(1+K_e)^5}$

Upto 2008: $\beta = 1.40$

After 2008: $\beta = 1.1$

W.No.1 Cal. of K_e = ?

(i) **2004–2008**

$R_F = 6.25\%$ $\quad R_m - R_F = 5.50\%$

$K_e = R_F + \beta\,[R_m - R_F]$

$= 6.25\% + 1.40\,[5.5\%]$

$\Rightarrow 13.95\%$

(ii) After 2008

$\beta = 1.10$ times

$K_e = 6.25\% + 1.10\,[5.5\%]$

$\Rightarrow 12.30\%$

W.No.2

$EPS_1 \Rightarrow 2.42$ $\qquad DPS_1 = 0.79$

$EPS_2 \Rightarrow 2.78$ $\qquad DPS_2 = 0.91$

$EPS_3 \Rightarrow 3.20$ $\qquad DPS_3 = 1.05$

$EPS_4 \Rightarrow 3.68$ $DPS_4 = 1.21$

$EPS_5 \Rightarrow 4.23$ $DPS_5 = 1.39$

$$P_5 \Rightarrow \frac{\cancel{D_5}(1+g_c)}{K_e - g_c}$$

(i) $$P_5 \Rightarrow \frac{4.23(1+.06) \times 65\%}{K_e - g_c}$$

$$\Rightarrow \frac{2.91}{.123^{(*)} - .06}$$

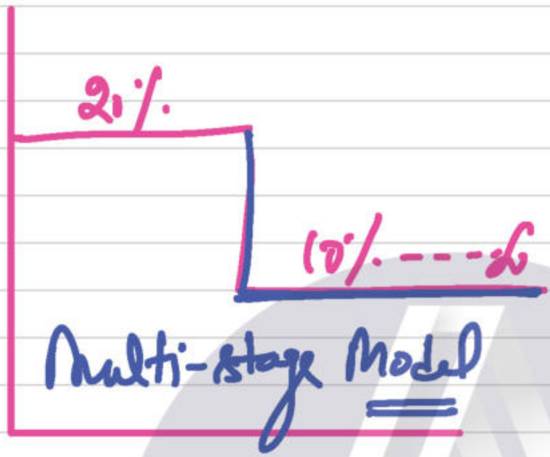
$$P_5 \Rightarrow ₹46.19 / \text{share}$$

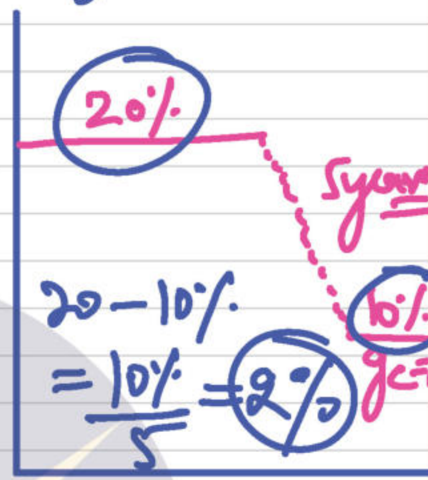
(ii)

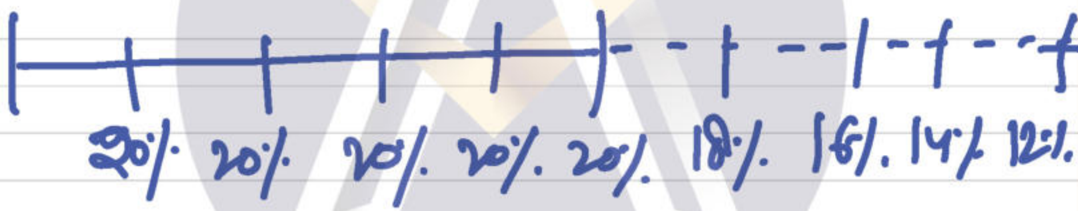
Year	CF's		PVF @ 13.95%	PV
2004	.79	D_1	0.8776	0.69
2005	.91	D_2	0.7701	0.70
2006	1.05	D_3	0.6759	0.71
2007	1.21	D_4	0.5931	0.72
2008	1.39	D_5	0.5205	0.72
2008	46.19	P_5	0.5205	24.04

$P_0 \Rightarrow$ ₹ 27.58/Share

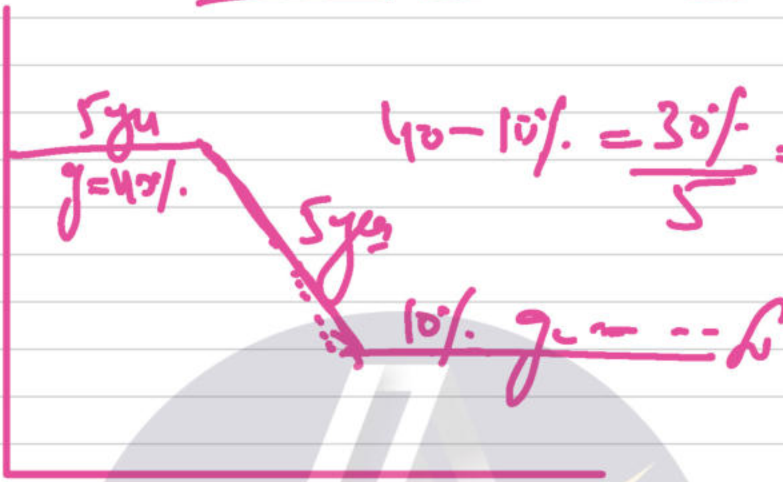
Concept:- Linearly Declining:-







Q.8B Nov.19



$\frac{40-10\%}{5} = \frac{30\%}{5} = 6\%$ p.a.

40%	40%	40%	40%	40%	34%	28%	22%	16%	10%
10%	10%	10%	10%	10%	18%	26%	34%	42%	50%

W.No.1

$EPS_0 = 4$

Year	'g'	EPS	DPR	DPS	
1	40%	5.60	10%	0.56	D_1
2	40%	7.84	10%	0.78	D_2
3	40%	10.98	10%	1.10	D_3

4	40%	15.37	10%	1.54	D_4
5	40%	21.52	10%	2.15	D_5
6	34%	28.84	18%	5.19	D_6
7	28%	36.92	26%	9.60	D_7
8	22%	45.04	34%	15.31	D_8
9	16%	52.25	42%	21.95	D_9
10	10%	57.48	50%	28.74	D_{10}

$$P_{10} \rightarrow \frac{D_{10}(1+g)}{K_e - g}$$

$$\Rightarrow \frac{28.74(1+.10)}{.17-.10}$$

$$\Rightarrow ₹\ 451.63/\text{Share}$$

Cal. of P_0:-

Year	CF'S	PVF@17%	PV
1	0.56	0.855	0.48
2	0.78	0.731	0.57
3	1.10	0.625	0.69
4	1.54	0.534	0.82
5	2.15	0.456	0.98
6	5.19	0.390	2.02
7	9.60	0.323	3.20
8	15.31	0.285	4.36
9	21.95	0.244	5.36
10	28.74	0.209	6.01
10	451.63	0.209	94.39

P_0 = ₹ 118.88/Share

Investment Action :-

$P_0 = \underline{118.88} \Longrightarrow CMP \Rightarrow \underline{\underline{125}}$

over-valued

The stock is over-valued, we should not invest at CMP i.e. @ 125/share

Q.8A → 8C V. Imp.

Sums

18% 18% 18% 18% 17% 16% 15% 14%

$D_1 = 6$ D_2 D_3 D_4 D_5 D_6 D_7 D_8

P_8

$D_1 \Rightarrow 6$/share

$D_2 \Rightarrow 6(1+.18) \Rightarrow 7.08$

$D_3 = 7.08\,(1+.18) \Rightarrow 8.35$

$D_4 \Rightarrow 8.35\,(1+.18) \Rightarrow 9.85$

$D_5 \Rightarrow 9.85\,(1+.17) \Rightarrow 11.52$

$D_6 \Rightarrow 11.52\,(1+.16) \Rightarrow 13.36$

$D_7 \Rightarrow 12.36(1+.15) \Rightarrow 15.36$

$D_8 \Rightarrow 15.36(1+.14) \Rightarrow 17.51$

$P_8 \Rightarrow \dfrac{D_8(1+g_c)}{K_e - g_c} \Rightarrow \dfrac{17.51(1+.14)}{.18-.14}$

$\Rightarrow 499.04/\text{Share}$

$P_0 = ?$

Year	CF's	PVIF@18%	PV
1	6	0.847	5.08
2	7.08	0.718	5.08
3	8.35	0.609	5.09
4	9.85	0.516	5.08
5	11.52	0.437	5.03
6	12.36	0.370	4.94

7	15.36	0.314	4.82
8	17.51	0.266	4.66
8	499.04	0.266	132.74

$P_0 \Rightarrow$ ₹ 172.52/Sh

Investment Action:

$P_0 \Rightarrow 172.52 \Longrightarrow CMP = 150/Sh$

Under-Valued

The stock is Under-priced, we should Buy at CMP i.e. at ₹ 150/Share

Extra Part:

$D_1 \quad D_2 \quad D_3 \quad D_4 \quad D_5 \quad D_6 \quad \dfrac{D_7 + P_7}{(1+.19)^7}$

$= 172.52/sh$

Q.9 V.V.Imp.

(i) $D_0 = 2$ $g = 6\%$ $K_e = 8\%$

Value of Share at Present Policy:-

$$P_0 = \frac{D_0(1+g)}{K_e - g_c}$$

$$= \frac{2(1+.06)}{.08 - .06} \Rightarrow 106/\text{Share}$$

If Board take-up the Decision:-

Revised P_0:-

$g = 7\%$

$D_1 = 0$ $D_2 = 0$ $D_3 = 0$ $D_4 = ?$

$P_0 = ?$ $\leftarrow$ $\dfrac{P_3}{(1+K_e)^3}$

$$P_3 \Rightarrow \frac{D_3(1+g) = D_4}{K_e - g_c}$$ given

$$P_3 \Rightarrow \frac{2.5}{.08 - .07} \Rightarrow ₹\,250/\text{Sh}$$

$$P_0 \Rightarrow \boxed{} \leftarrow P_3 = \frac{250}{(1+.08)^3}$$

$$P_0 \Rightarrow ₹\,198.46/\text{Share}$$

So, the Mkt. Price per share will increase from 106 to 198.46 due to the decision taken by Board

(ii)

DPS = 0	DPS = 0	DPS = 0
1 yr	1 yr	1 year
$\frac{2000}{P_1}$	$\frac{2000}{P_2}$	$\frac{2000}{P_3} = 250$

One-year DDM

$$P_2 = \frac{P_3 + D_3}{(1+K_e)}$$

P_2 $\qquad$ $P_3 +$

$$P_2 = \frac{250 + D}{(1+.08)^1} \Rightarrow ₹\,231.48/\text{Share}$$

$$P_1 \Rightarrow \underset{P_1}{|}\!\xrightarrow{\ 1\text{ year}\ }\!\underset{P_2 + D_2}{|} \qquad \frac{P_2 + D_2}{(1+K_e)^1}$$

$$P_1 = \frac{P_2 + D}{(1+.08)^1}$$

$$P_1 = \frac{231.48 + D}{(1+.08)^1} \Rightarrow \boxed{₹\,214.33}/\text{Share}$$

⇒ In order to maintain his receipt of ₹2000, Investor should sell shares

$$\underline{\underline{\text{Year 1}}} \quad \frac{2000}{214.33} \Rightarrow 9.33$$

or 10 shares

$\Rightarrow 10 \times 214.33$

$\Rightarrow ₹\ 2143.30$

Year 2

$\frac{2000}{231.48} \Rightarrow 8.64$

or

9 shares

$\Rightarrow 9 \times 231.48$

$\Rightarrow ₹\ 2083.32$

Year 3

$\frac{2000}{250} \Rightarrow 8$ shares

$= 8 \times 250$

$= ₹\ 2000$

Balance shares at the end of 3rd year:-

$\Rightarrow 1000 - 10 - 9 - 8$

→ 973 Shares

Dividend at the end of 4th year:-

= 2.5/Share (given)

Total Dividend → 973 × 2.5

→ 2432.50

Due to the decision, investor also get the improved income from 4th year.

Concept: IRR Technique :- (DR is missing)
$\downarrow$ K_e

1) Growth Model :-

$$P_0 = \frac{D_0(1+g)}{K_e - g}$$

$$\boxed{K_e = \frac{D_0(1+g)}{P_0} + g} \quad \text{or} \quad \boxed{\frac{D_1}{P_0} + g}$$

2) Multi-stage Model :-

outflow / Inflow

$$P_0 \Rightarrow \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4 + P_4}{(1+K_e)^4}$$

P_0 $\downarrow$ given

K_e $\downarrow$ K_e is missing

Use IRR Technique:-

(Internal Rate of Return)

IRR → DR at which PV of CI's is equal to PV of CO's

@ +ve NPV

@ -ve NPV

Interpolation:-

$$\boxed{IRR = LR + \frac{LR_{NPV}}{LR_{NPV} - HR_{NPV}} \times \text{Diff. value}}$$

Q.10 (SM)

(a) $D_0 = 1$ $\quad P_0 = 20$ $\quad g_c = 12\%$

As per DDM :- $\quad$ $K_e = ?$

$$P_0 = \frac{D_0(1+g)}{K_e - g_c}$$

$$20 = \frac{1(1+.12)}{K_e - .12}$$

$$K_e = \frac{1(1+.12)}{20} + .12$$

$$K_e \Rightarrow 17.6\% \text{ p.a.}$$

(b) $D_0 = 1 \quad P_0 = 2$

$P_0 =$ | 20% | 20% | 20% | 20% | 20% |

growth

$$P_0 \Rightarrow \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \frac{D_5 + P_5}{(1+K_e)^5}$$

?

@ +ve NPV

@ −ve NPV

$$K_e = LR + \frac{LRNPV}{LRNPV - HRNPV} \times \text{Diff. rate}$$

$$D_1 \Rightarrow 1(1+.20) \Rightarrow 1.20$$

$$D_2 = 1.20(1+.20) = 1.44$$

$$D_3 = 1.44(1+.20) \Rightarrow 1.73$$

$$D_4 = 1.73(1+.20) = 2.08$$

$$D_5 = 2.08(1+.20) = 2.50$$

$$P_5 \Rightarrow \frac{D_5(1+g_c)}{K_e - g_c}$$

$$P_5 \Rightarrow \frac{2.5(1+.10)}{K_e - .10}$$

DR at which $\underline{\underline{PV \text{ of } CI = PV \text{ of } CO}}$

$$20 \Rightarrow \frac{1.20}{(1+K_e)^1} + \frac{1.44}{(1+K_e)^2} + \frac{1.73}{(1+K_e)^3}$$

$$+\frac{2.08}{(1+k_e)^4}+\frac{2.50}{(1+k_e)^5}+\frac{\frac{2.5(1+.10)}{k_e-.10}}{(1+k_e)^5}$$

$\underbrace{\hspace{10em}}_{\text{Infla}}$

@ 15% NPV ⇒ 33.05 − 20

⇒ 13.05

@ 20% NPV ⇒ 16.06 − 20

⇒ (−) 3.94

$$K_e \Rightarrow LR + \frac{LRNPV}{LRNPV - HRNPV} \times \text{Diff rate}$$

$$\Rightarrow 15\% + \frac{13.05}{13.05 + 3.94} \times 5$$

$K_e \Rightarrow$ 18.84% p.a.

$D_1 \quad D_2 \quad D_3 \quad D_4 \quad D_5 + P_5$

$P_0 = ?$

$\frac{D_1}{(1+K_e)}$

$$P_0 = \frac{P_1 + D_1}{(1+K_e)^1} \qquad P_1 = \frac{P_2 + D_2}{(1+K_e)^2}$$

Concept: Coverage Ratio's :-

Income Statement

Sales

− V/C

C

− F/C (Excl. Depⁿ)

EBITDA

(−) Depⁿ & Amort.

EBIT

(−) Int.

EBT

(−) Tax

PAT

$\boxed{ICR = \dfrac{EBIT}{Int.}}$

Pref. Div. C.R

(–) Pref. Div.

EFE

(–) Equity Div.

RE → Tf to RE

$\frac{PAT}{Pref.\ Div.}$

$\frac{EFE}{Eq.\ Div.}$

Q.13

W.No. **Cal. of Int.**

₹ lakh

Term Loan 300 l × 12% ⇒ 36
Bank loan 200 l × 15% ⇒ 30
Public Deposit 100 l × 11% ⇒ 11

₹ 77 lakh

Existing ICR :- ⇒ $\frac{EBIT}{Int.}$

⇒ $\frac{90 \text{ lakh}}{77 \text{ lakh}}$

⇒ 1.17 times ✓

Revised Position :-

Cal. of Revised EBIT :-

$\Rightarrow$ 90 lakh (1 + .15)

$\Rightarrow$ 103.50 lakh ✓

Interest $\Rightarrow$ 77 lakh + 100 l × 16%

$\Rightarrow$ 93 lakhs

Revised ICR :- $\frac{EBIT}{Int.}$

$\Rightarrow \frac{103.50}{93} \Rightarrow$ 1.113 times

Comment:-

With the proposed increase in Sales the burden of Int. of Add. Borrowings of ₹ 100 lakh will adversely affected the Interest Coverage Ratio which will reduced from 1.17 to 1.11 times

The risk of existing bondholders & shareholders will increase due to such arrangement.

1 ⟹ 1.20 Sh. Q.14

	1	2	3	4	5	6	7
1 Share	20	20	20	24	24	24	24

1.20 Shares (from year 4)

1.20 Shares × 900 = 1080

FV = 100 DR = 20% CMP = 500

Bonus = 1 : 5 i.e. 20% Bonus

K_e = 12% Incidental Exp = 5% (Buy / Sell)

Assume, Mr. A want to purchase 1 share, then after Bonus the no. of eq. shares would be 1.20 shares.

Year	CF-S	PVF@12%	PV
1	20	.893	17.86
2	20	.797	15.94
3	20	.712	14.24
4	24	.636	15.26
5	24	.567	13.61
6	24	.507	12.17
7	24	.452	10.85
7	$[900 \times 1.20] \times 95\%$	.452	463.75

$\Rightarrow \underline{1026}$

$$P_0 \Rightarrow ₹\ 563.68$$

Investment Action:-

$P_0 \Rightarrow ₹ 563.68 \longrightarrow CMP = 500 + 5\% \Rightarrow \underline{\underline{525}}$

Under-priced

Buy.

Mr. A should Buy the share at CMP i.e. 500 + 5% i.e. ₹ 525/share including incidental expenses because stock is U/V.

(b) $x(1+.05) \Rightarrow ₹ 563.68$

$$x \Rightarrow \frac{563.68}{1.05}$$

$\Rightarrow ₹ 536.84$/share.

Maximum price Mr A should be ready to pay is £ 563.68 which will include incidental expenses.

So, max. price should pay only for share is £ $\frac{563.68}{1.05}$

= £ 536.84 / share

8860017983

7:30am

SECURITY VALUATION

Q.8C **V.Imp.**
(Mock Calculation)

$D_1 = 6$ $\quad g = 20\% \rightarrow 4$ year.

$1\% \rightarrow$ Decline $\rightarrow$ 3 years

D_1	D_2	D_3	D_4	D_5	D_6	D_7
20%	20%	20%	20%	19%	18%	17

$D_1 = 6$

$D_1 = 6$ | Share

$D_2 = 6(1+.20) \Rightarrow 7.20$

$D_3 \Rightarrow 7.20(1+.20) \Rightarrow 8.64$

$D_4 \Rightarrow 8.64(1+.20) \Rightarrow 10.37$

$D_5 \Rightarrow 10.37(1+.19) \Rightarrow 12.34$

$D_6 \Rightarrow 12.34(1+.18) \Rightarrow 14.56$

$D_7 \Rightarrow 14.56(1+.17) \Rightarrow 17.04$

$P_7 \Rightarrow \dfrac{D_7(1+g_c)}{K_e - g_c}$?

Cal. of PV of Dividend = ?

Year	CF's	PVF@20%	PV
1	6	0.8333	5.00
2	7.20	0.6944	5.00
3	8.64	0.5787	5.00
4	10.37	0.4823	5.00
5	12.34	0.4019	4.96

6	14.56	0.3349	4.88
7	17.04	0.2791	4.76

PV of Dividend ₹ 34.60

(ii) CMP = ₹ 172.45

Note: PV of Dividend 34.60

PV of Expected MPS at the end of 7th year 137.85 ⟹ P_7

$$P_7 = \frac{\dfrac{D_7(1+g_c)}{K_e - g_c}}{(1+.20)^7}$$

$$137.85 = \frac{\dfrac{17.04(1+g_c)}{.20-g_c}}{(1.20)^7}$$

$$493.94 = \frac{17.04(1+g_c)}{.20-g_c}$$

$$98.79 - 493.94\,g_c = 17.04 + 17.04\,g_c$$

$$510.98\,g_c = 81.75$$

$$g_c \Rightarrow \frac{81.75}{510.98}$$

$$\underline{\underline{g_c \Rightarrow 16\%\ p.a.}}$$

(ii) Stable $g = 15\%$.

Actual 'g' $= \underline{\underline{16\%}}$

Since, actual growth rate is more than target growth rate, it is worth to purchase share.

Concept:- Cash-Flow Based Models:-

⇓

Two types of CF's

⇓

FCFF

Free-cash flow for the firm

⇓

Long-term Investor's

⇓

Equity SH's / Debenture Holders

LTL / Pref SH's

⇓

FCFE

Free-cash flow for Equity

⇓

Equity SH's only

⇓

These are the CF's available for the Eq. SH's after Distribution to the

These are the CF's available for LT Investor's without any Distribution to the LT Investors'

$\Downarrow$

DR $\Rightarrow$ WACC | K_O

$\Downarrow$

V_F

Debentures / LTL
Pref. SH's ~~except~~ ~~Equity~~

$\Downarrow$

DR = K_e

$\Downarrow$

V_E

We know that:-

$$\boxed{V_F = V_E + V_D}$$

or $$\boxed{V_E = V_F - V_D}$$

1) Cal. of FCFF :-

NPV → (Concept)

NPV = PV of CI's — Initial Investment

(each year) ⇓ (CFO) Operating Activities (Whole firm)

Capital Expenditure p.a. ⇓ CF Investing Activities (Whole firm)

FA | W/C

Note: Dep × Tax Rate = Tax Savings on Depⁿ

Notes ↑ W/C → outflow (−)

↓ W/C → inflow (+)

Imp: If only change in W/C is given in the question, always consider it as Increase in W/C (outflow)

Note: Investment in FA:—

FA A/c

Op Bal.	xxx	Depⁿ	xxx
Capital Exp. (Bal. fig.)	xxx	Cl. Bal.	xxx

XXX XXX

Depⁿ ⇒ Capital Exp.

⇒ $\boxed{\text{Cap. Exp.} = \text{Depⁿ}}$ 100 cr. = 100 cr.

↳ maintain our capacity

⇒ Cap. Exp. > Depⁿ

↳ Increase the capacity

100 cr > 50 cr.

⇒ Net Investment in FA

Capital Expⁿ (–) Depⁿ

Note:

NOPAT

+ Depⁿ ✓

(−) Invt. in FA — Net Invt. in FA

(−) ↑ in W/C

FCFF

Note: DR = WACC

$$\boxed{K_0 = K_e W_e + K_d W_d}$$

$$K_e = R_F + \beta [R_M - R_F]$$

$$K_d \Rightarrow Int(1 - tax)$$

FCFF + Intt → Tax Svngs = ↑↑

WACC ⇒ ↓↓.

Double Accounting

Puzzle:-

FCFF → FCFE

PAT → FCFF → FCFE

EBITDA → FCFF → FCFE

Q.15 B

EBITDA	\$1000
Less: Depn & Amort.	\$400
EBIT	\$600
Less: Tax @ 30%	\$180
NOPAT	\$420
Add:- Depn	\$400
Less: Capital Exp.	\$500
Less: ↑ in W/C	\$50
FCFF	\$270

Cal. of FCFE :-

FCFF

NOPAT
+ Dep.
− Cap Exp.
− ↑ in W/C

$\left.\begin{array}{l}\text{}\\\text{}\end{array}\right\}$ Net Invt. in FA

$\}$ Net Invt. in W/C

FCFF

NOPAT
(−) Net Invt

FCFF

from call

FCFE

PAT
(−) Pref. Div.

EFE
(−) Equity Invt

FCFE

Ex I: If Debt - financing Ratio is given:-

Debt : Equity

↓ ↓

% of Debt % of Eq.

EBITDA	xxx
(−) Depn & Amort.	xxx
EBIT	xxx
(−) Int.	xxx
EBT	xxx
(−) Tax	xxx
PAT	xxx
(−) Pref. Div (if any)	xxx

EFE (Profit available for Eq.) XXX

(-) Equity Invt. XXX

FCFE

Equity Invt.

1) Net Investment → % of Equity

↓

Equity Invt.

Net Invt. → FA, W/C

2) Cap Exp.
Depn
W/C Invt

× % of equity

= Equity Invt.

EFE | PAT

+ Depⁿ → X % of Equity

(−) Cap. Exp. X % of Equity

(−) ↑ in W/C X % of Equity

} Equity Invt

FCFE ✓

Case II: If Debt-financing Ratio is not given :-

$\boxed{\text{Net Investment}}$ → all LT Invstg ✓

Net Invt. FA

Net Invt W/C

CapExp − Depⁿ

Net Investment (−)

(−) Net Borrowings → Issue (−) Redemption (+)

LT / ST

Equity Investment

It includes both Long-term & Short-term

GnI: PAT (−) Eq. Invt. FCFE

or PAT (−) Net Invt. (+) Net Borrow FCFE

Final Cruex.

Method 1	Method 2
PAT	PAT
+ Dep × % of Eq.	+ Dep^n
(−) Cap Exp. × % of Eq.	(−) Cap Exp.
(−) ↑ in w/c × % of Eq.	(−) ↑ in w/c
	(+) Net Borrowing
FCFE	FCFE

Q.13 B

Cal. of FCFE

EBITDA	\$1000
(–) Depn & Amort.	\$400
EBIT	\$600
(–) Intt.	\$150
EBT	\$450
(–) Tax @ 30%	\$135
PAT	\$315
+ Depn	\$400
(–) Cap Exp.	\$500
(–) ↑ in W/C	\$50

Net Inv

(+) Net Borrowings $80

FCFE $245 ✓

Concept:- Cal. of FCFE | FCFF using CFO [Cash flow from Operation]

EBITDA	xxx
(–) Depⁿ & Amort. (NCC)	xxx
EBIT	xxx
(–) Int.	xxx
EBT	xxx
(–) Tax	xxx
PAT	xxx
(+) Depⁿ	xxx
(–) ↑ in w/c	xxx
CFO	xxx

(+) Intt (1 − tax) xxx

(−) Invt in FA / Cap. Expenditure xxx

FCFF xxx

(−) Intt (1 − tax) xxx

(+) Net Borrowings xxx

FCFE xxx

(+/−) Issue / Re-purchase Buy-back xxx

(−) Equity Dividend xxx

Net Change in Cash Bal. xxx

Q.13B

FCFF = \$270 FCFE ⇒ \$245

Puzzle:-

1) **Cal. CFO:-**

PAT	\$315
+ Depⁿ	\$400
(−) ↑ in W/C	\$50
CFO →	\$665

2) **Calⁿ FCFF from CFO:-**

CFO	\$665

(+) Int (1-tax) $105
150 (1 - .30)

(−) Cap Exp $500

FCFF $2705

3) Cal. of FCFF from FCFE

FCFE ⇒ $245

(+) Int. (1-tax) $105
150 (1 - .30)

(−) Net Borrowing (a) $80

$2705

4) Cal. FCFF from Net Income:-

PAT	$315
(+) Intt. (1-tax)	$105
+ Depⁿ	$400
(−) Cap Exp.	$500
(−) ↑ in w/c	$50
	$270

5) Cal. FCFE from FCFF:-

FCFF	$270
(−) Intt (1-tax)	$105
(+) Net Borrowings	$80
FCFE →	$245

Q.15A

FA A/c

O/Bal.	\$2950	Depr	\$300
~~Cap Exp.~~ Bal fig.	\$850	Cl. Bal.	\$3500
	\$3800		\$3800

OR

FA	2008	2009
Gross	\$4150	\$500

\$850 → Cap. Exp.

Q.15C Imp.

W.No.1

FA A/c

Op Bal. (300-140)	\$160	Depn	\$50
Cap. Exp. (Bal. fig.)	\$100	Cl. Bal. (400-170)	\$210
	\$260		\$260

W.No.2 **Net Invt. in W/C**

↑ in A/c Rec.	↑ in Inventory
(30-15)	(40-30)
⇒ \$15 outflow	= 10 outflow

A/c Payable

(20 − 25)

= 0

↑ CA → 25   ↑ in CL = 0

↑ in W/C = 25 → outflow

(Note):-

→ O/D ×

→ STL ⊗

→ Notes Payable ⊗

A/c Payable
||
Creditors

W.No.3   Net Borrowings

$[114+20]_{2010} \longleftrightarrow [100+10]_{2009}$

$\Rightarrow \underline{\underline{\$24}}$

It includes LTL & STL

Cal. of FCFF & FCFE:-

FCFF:-

EBITDA [300 − 120 − 35]	\$145
(−) Depⁿ	\$50
EBIT	\$95
(−) Tax @ 30%	\$28.5
NOPAT	\$66.50

+ Dep^n $50

(−) Cap. Expenditure $100

(−) ↑ in W/C $25

FCFF $ (−) 8.50

Cal. of FCFE :-

EBITDA	$145
(−) Dep^n	$50
EBIT	$95
(−) Int.	$15
EBT	$80
(−) Tax @ 30%	$24
PAT	$56

+ Dep^n	\$50
(−) Cap. Exp.	\$100
(−) ↑ in w/c	\$25
(+) Net Borrowings	\$24
FCFE	\$5

Puzzle:- (MCQ.)

1) CFO ⇒ NI + Dep^n − ↑ in w/c

⇒ \$56 + \$50 − \$25

⇒ **\$81**

2) Cal. of FCFF from CFO:-

FCFF = CFO + Intt. (1 - tax)

(-) Invt in FA

⇒ \$81 + 15(1 - .30) - \$100

⇒ \$ (-) 8.50

3) Cal. of FCFE from CFO:-

⇒ CFO - Cap Expn + Net Borrowings

⇒ \$81 - \$100 + \$24

⇒ \$5

4) Cal. FCFF from FCFE :-

$\Rightarrow$ FCFE + Int. (1 − tax) − Net Borrowing

$\Rightarrow$ \$5 + 15(1 − .30) − \$24

$\Rightarrow$ (−) 8.50 (\$)

5 Cal. change in Cash :-

$\Rightarrow$ FCFE − Eq. Div. ± Issue/Redemption of Eq.

$\Rightarrow$ \$5 − 0 − 0

= \$5

Concept: Valuation Based on Multiples:-

1) P/E Multiple Approach:-

$$P/E\ Ratio = \frac{MPS}{EPS}$$

?

₹1

-ve

$$\boxed{MPS = EPS \times P/E\ Ratio}$$

2) P/S Ratio:-

$$\Rightarrow \frac{MPS}{Sales/Share}$$

MPS → Value of eq.

Sales/Share → for all

3) EV/Sales Ratio:-

$$\frac{EV \rightarrow \text{all}}{\text{Sales} \rightarrow \text{all}}$$

Manipulate

4) M

$$\boxed{\frac{EV \rightarrow \text{all}}{EBITDA \rightarrow \text{all}}}$$

(i) EBITDA :-

Sales

$-$ V/C

C

$(-)$ F/C excl. Depⁿ

EBITDA

OR

If PAT is given in the question

PAT / NI + tax + Interest + Dep^n

(Back Cal.)

= EBITDA

2) EV [Enterprise Value] :—

B/S

LT Investors

Pay-off

Net Assets

⇒ Assets – CL

Deb / LTL
ESH'S
PSH'S
Minority Holder's

If reduce our
COA
(–) Cash & Cash Eq.

EV ⇒ [MV of Equity
\+
MV of Debentures
\+
MV of Pref. Shares
\+
Minority Interest]

Less: Cash & Cash Equivalents

Less:- Investments [Long-term or Short-term]

→ Investments in Associates

→ Invt. in Subsidiaries.

→ Long-term & Short-Term

EV (Enterprise Value)

Q.16

(₹ lakhs)

W.No.1 Cal. of EV:-

MV of Equity [40 l × 22.50]	900
Mkt. of Debt	137
Less: Cash & Mark. Sec.	62.30
Less: Investments	327
EV	647.70 lakhs

W.N. 2 Cal. of EBITDA

NI + Tax + Int + Depⁿ

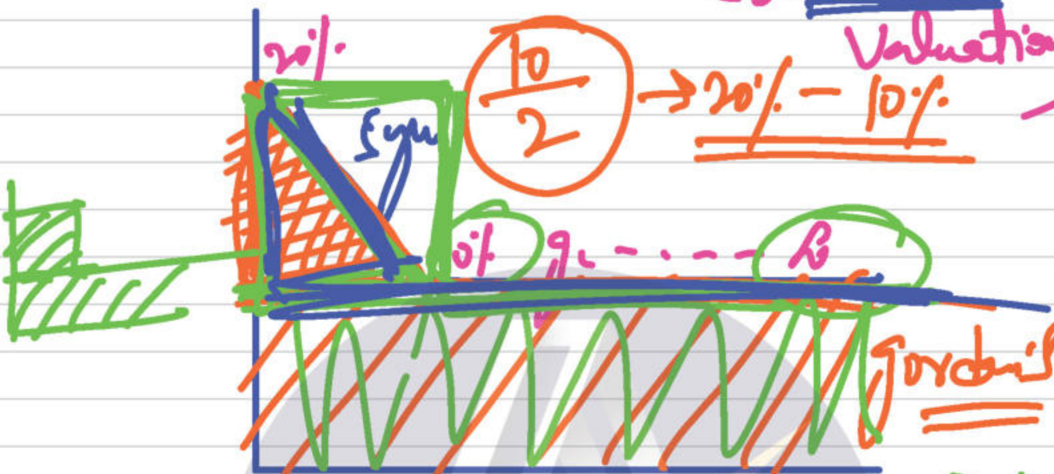
$\Rightarrow 137.50 + 95.90 + 6.70 + 10.40$

$\Rightarrow 250.70$ lakh

$$\frac{EV}{EBITDA} = \frac{647.70}{250.70} \Rightarrow 2.58 \text{ times}$$

H - Model :- (Half - Model)

(Short-cut Valuation)



20% − 10%

$$P_0 = \frac{D_0(1+g_L)}{K_e - g_L} + \frac{D_0 \times \frac{t}{2} \times [g_s - g_L]}{K_e - g_L}$$

$$\boxed{P_0 = \frac{D_0(1+g_L)}{K_e - g_L} + \frac{D_0 \times \frac{t}{2} \times [g_s - g_L]}{K_e - g_L}}$$

$$[20\% - 5\%] = 15\% \rightarrow \frac{10y}{2}$$

$$\frac{\times D_0}{K_e - g_c}$$

Ambiguous Question ✓

Q.12B

(a) $D_0 = 5 \quad g = 2\% \quad K_e = 10\%$

$$P_0 = \frac{D_0(1+g)}{K_e - g} = \frac{5(1+.02)}{.10 - .02}$$

$$\Rightarrow ₹\ 63.75/\text{Share}$$

(b) P/E Multiple Approach:-

(i) **P/E Valuation**

$M/S = EPS \times P/E \text{ Ratio}$ $\quad K_e = \frac{1}{P/E}$

$\Rightarrow 3 \times \frac{1}{\gamma}$ $\quad P/E = \frac{1}{\gamma}$

$= 3 \times \frac{1}{8\%}$

$\Rightarrow 3 \times 12.5 \Rightarrow 37.5/$ sh

$P_0 = 37.50$ —————— CMP $= 40$

O/V

The stock is O/V

(ii) Earnings growth Model:-

$$\frac{EPS_0(1+g)}{r/K_e - g_c} \Rightarrow \frac{3(1+.02)}{.08 - .02}$$

$\Rightarrow$ ₹ 51/share

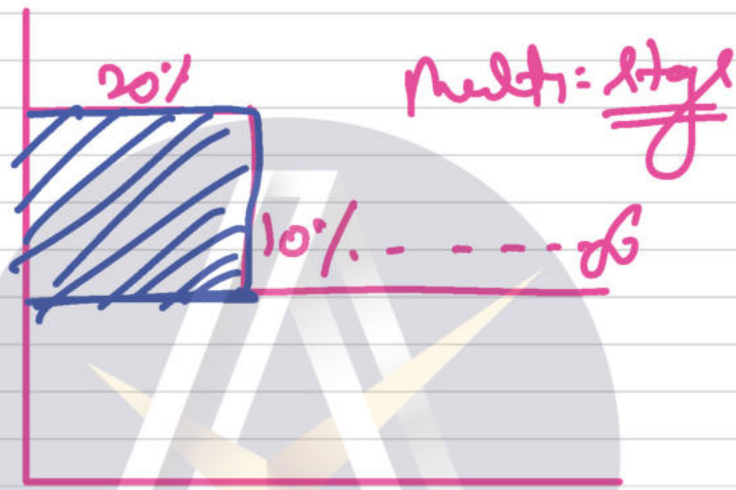
$P_0 \Rightarrow 51/sh \rightarrow CMP = 40/sh$

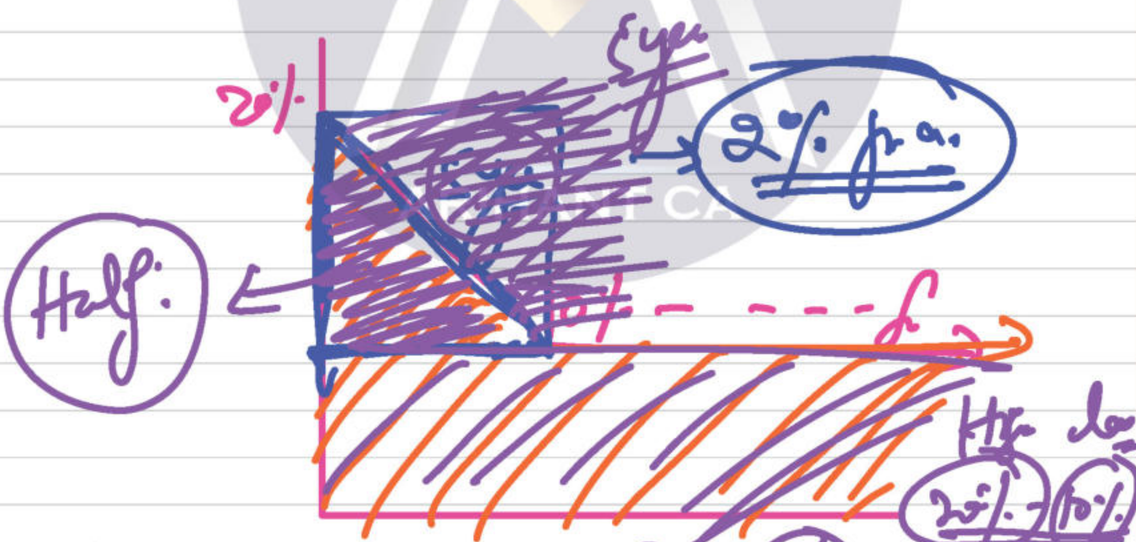
U/V

The stock is under-priced as per Earnings growth model.

Concept: H-Model (Half-Model)

[Short-Cut:-]





$$P_0 = \frac{D_0(1+g_L)}{K_e - g_L} + D_0 \times \frac{t}{2} \times [g_L - g_S]$$

H-Model $\qquad$ $K_e - g_c$

$$\boxed{P_0 = \frac{D_0(1+g_c)}{K_e - g_c} + \frac{D_0 \times \frac{t}{2} \times [g_H - g_c]}{K_e - g_c}}$$

$$= \frac{2(1+.05)}{.12-.05} + \frac{2 \times \frac{10}{2} \times [20\% - 5\%]}{.12 - .05}$$

Ambiguous

Q.12B

(a) $D_0 = 5$ $g = 2\%$ $K_e = 10\%$

$$P_0 = \frac{D_0(1+g)}{K_e - g_c} \Rightarrow \frac{5(1+.02)}{.10 - .02}$$

$\Rightarrow$ ₹ 63.75/Share

(b) P/E Valuation:-

MPS = EPS × P/E Ratio

$$\Rightarrow 3 \times \frac{1}{8}$$

$$\boxed{K_e = \frac{1}{P/E}}$$

$$\Rightarrow 3 \times \frac{1}{0.08}$$

$= 3 \times 12.5$ times

MPS ⇒ 37.5/Share

$P_0 = 37.5$/Sh ⟶ CMP = 40/Share

Over-valued

The stock is O/V

(ii) Earning growth Model:-

$$\frac{EPS_0 (1+g)}{K_e / r - g} \Rightarrow \frac{3(1+.02)}{.08 - .02}$$

⇒ 51/Share

$P_0 = 51$/Share ⟶ CMP = 40/Share

The stock is Under-Valued.