CHAPTER 7

DIVIDEND DECISION

Concept #1 Walter's Model

(a) formula: $P = \frac{D + \frac{r}{Ke}(E-D)}{Ke}$

Here, P = Price per eq. share (at t=0) = EPS x P/E.

D = Dividend per share (DPS).
= EPS x Payout ratio (%)
= face value per share x Dividend %.

E = Earnings per share (EPS).
= $\frac{PAT - PD}{No. of shares}$.

r = Returns p.a. / ROI / ROE / ROA / ROCE / IRR.
= $\frac{Net\ Income}{Shareholders\ fund} \times 100$.

Ke = Cost of Equity
= $Rf + (Rm - Rf)\beta$. → CAPM
= $\frac{D_1}{P_0} + g$
= $\frac{1}{P/E\ ratio}$

(b) Conclusions:
→ If r > Ke : Optimum payout = 0% of EPS
→ If r < Ke : " " = 100% of EPS
→ If r = Ke : Dividend decision is irrelevant.

Concept #2 Gordon's Model (aka Constant Growth Rate Model)

(a) formula: $P_0 = \frac{D_1}{Ke - g}$

Here, P_0 = Current mkt price per share
D_1 = Expected dividend per share *
= $D_0(1+g)$.
= $E_0(1+g)(1-b)$ = E_1 x Payout ratio
(payout)
g = growth rate
= $b \times r$ = Retention ratio x ROE
= $\left(\frac{D_n}{D_0}\right)^{1/n} - 1$

(b) Note:
In most cases, "$D_1 = E_0 \times \text{Payout} \times (1+g)$". However, in a few questions where payout ratio is not fixed, we may apply the following formula:
D_1 = EPS x Payout Ratio.

Concept #3 Multi Stage Dividend Approach

Step 1: Calculate $D_1, D_2 \ldots D_{n+1}$
Here, n = No. of years aftn which the constant growth rate is applicable.

Step 2: Calculate "terminal value" i.e. "P_n".
Using Gordon's Model:

$$P_0 = \frac{D_1}{k_e - g}$$
$$\vdots \quad + \quad \vdots$$
$$n \qquad n$$
$$P_n = \frac{D_{n+1}}{k_e - g}$$

Step 3: Calculate P_0:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \ldots + \frac{D_n + P_n}{(1+k_e)^n}$$

Concept #4 MM Approach

MM Approach is a dividend irrelevance theory. ie. It proves that the value of a company remains unchanged whether dividend is paid or not paid.

Step 1: Calculate P_1 : $P_1 = P_0(1+Ke) - D_1$

Step 2: Calculate new no of shares to be issued.

$$n = \frac{I-(E-D)}{P_1}$$

Step 3: Calculate value of the company.

$$V_1 = (m+n)P_1$$

Here, m = Existing no. of shares

$$V_0 = \frac{(m+n)P_1 + E - I}{(1+Ke)^1}$$

Here, $D_1 = 0$ (in case when dividend is not paid).
E = Total Earnings of the company.
D = Total Dividend paid by the company.

Concept #5 Traditional Model (Graham & Dodd)

$$P = \left(D + \frac{E}{3}\right)m$$

Here, P = Price per share
D = Dividend per share
E = Earnings per share
m = multiplier.

Concept #6 Linter's Model

Linter's model is a conservative approach to decide the expected dividend (D_1).

$$D_1 = D_0 + [(EPS \times Payout) - D_0]\ Adj\ factor$$

Question #1 **PTP D24** *Ans:* *₹ 112; ₹ 102; 5,882 shares*

Jai & Karti Ltd. has a capital of ₹ 10 lakhs in equity shares of ₹ 100 each. The shares are currently quoted at par. The company proposes declaration of a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk class to which the company belongs is 12%. What will be the market price of the share at the end of the year, if

(i) a dividend is not declared?
(ii) a dividend is declared?

Assuming that the company pays the dividend and has net profits of ₹ 5,00,000 and makes new investments of ₹ 10 lakhs during the period, how many new shares must be issued?

Question #2 **PTP J24; MQP J23** *Ans:* *- ₹ 6.67; ₹ 13.85*

Excel Ltd. has 1,00,000 outstanding shares of ₹ 10 each. The company earns a rate of 24% on its investments and retains 50% of earnings as a policy. If Cost of Capital is 18%, calculate price of the share according to Gordon's Model. The company has total investment of around ₹ 10,00,000 in assets. If payout ratio changes to 10%, 90%, analyze how will the share price change? Infer the optimal dividend policy for Excel Ltd. as per Gordon's Model.

Question #3 **PTP J23/D22** *Ans:* *₹ 140*

SL Ltd. provides you with the following information

Equity Share Capital (₹ 50 each)	₹ 100 lakhs
12% Preference Share Capital	₹ 50 lakhs
10% Debentures	₹ 50 lakhs
Return on Capital Employed	18.75%
Total Dividend (including dividend on Preference Shares) paid	₹ 18 lakhs
Theoretical Market Price of an equity shares under Gordon's Model	₹ 300
Tax Rate	20%
Market Price of an equity share in the beginning of the year was	₹ 100

Required:
Determine the theoretical market price of an equity share under Walter's Model. Are you satisfied with the current dividend policy of the company? If not, what should be the optimum payout ratio?

Question #4 **PTP J19** *Ans:* *₹ 131.25; ₹ 156.25*

HILSON LTD. was started a year back with equity capital of ₹ 40 lakhs. The other details are as under:

Earnings of the company	₹ 4,00,000
Price Earnings ratio	12.5

Dividend paid	₹ 3,20,000
Number of Shares	40,000

Required:

(i) Find the Current Market price of the share, and

(ii) Find whether the Company's D/P ratio is optimal —using Walter's model.

Question #5 | PTP J18; MQP J23 | Ans: 31%

The following information is available for AVANTI CORPORATION:

Earning per share	₹ 6
Rate of Return on Investment	20%
Rate of return required by shareholders	16%

Required:

What should be the approximate dividend pay-out ratio so as to keep the share price at ₹ 44 by using Walter Model?

Question #6 | MQP D24 | Ans: ₹ 110, 36.36 Shares, ₹ 2L; ₹ 102, 196.08 Shares, ₹ 2L

Bangabasi Ltd. belongs to a risk-class for which the appropriate capitalisation rate is 10%. It currently has outstanding 2000 equity shares of ₹ 100 each. The firm is contemplating the declaration of dividend of ₹ 8 per share at the end of the current financial year. It expects to have net earnings of ₹ 20,000 and has a proposal for making new investment of ₹ 24,000. Examine and show that under the Modigliani–Miller assumption, the payment of dividend does not affect the value of the firm.

Question #7 | MQP D23 | Ans: ₹ 26.75; ₹ 23.78

A Company pays a dividend of ₹ 2.00 per share with a growth rate of 7%. The risk-free rate is 9% and the market rate of return is 13%. The Company has a beta factor of 1.50. However, due to a decision of the Finance Manager, beta is likely to increase to 1.75.

Determine the present as well as the likely value of the share after the decision.

DIVIDEND DECISION

Q1

(i) If dividend is not declared

$P_0 = \frac{P_1 + D_1}{1+k}$

Or, $100 = \frac{P_1 + 0}{1+0.12}$

Or, P_1 = ₹ 112

(ii) If dividend is declared

$P_0 = \frac{P_1 + D_1}{1+k}$

Or, $100 = \frac{P_1 + 10}{1+0.12}$

Or, P_1 = ₹ 102

Let, the no. of new shares to be issued be 'm'

Conditionally, $I = (E - nD_1) + mP_1$

Where, I = Retained earnings; E = total earnings; n = existing no. of shares

Or, 10,00,000 = (5,00,000 – 10000 x 10) + m x 102

Or, 102m = 600000

Or, m = 5882

So, 5882 new shares should be issued.

Q2

As per Gordon's Model, value per share = ₹ 20.00
If pay-out ratio = 10% i.e. 0.10, then, retention ratio = 90% = 0.90
Value per share = (-) ₹ 6.67
Now, if pay-out ratio = 90% i.e. 0.90, then, retention ratio = 10% = 0.10
Value per share = ₹ 13.85
In this case r > k, so the firm is a growth firm. Hence, according to Gordon Model as the retention ratio increases the value per share also increases. Therefore, the optimal policy for the firm is to retain as much as possible. However, according to Gordon, maximum retention ratio should be lower than 0.75.

Q3

Working Notes:

1. No. of Equity shares = (₹ 100 lakhs / ₹ 50 per unit) = 2 lakhs shares
2. EBIT = Capital Employed * R O C E
   = 200 lakhs * 18.75% = ₹ 37.5 lakhs
3. Income Statement:

Particulars	Total (₹ lakhs)	Per Unit (₹ lakhs)
EBIT	37.5	-
Interest (50 * 10%)	5.0	-
EBT	32.5	-
Tax @ 20%	6.5	-
PAT	26.0	-
PD (50 * 12%)	6.0	-
PAFESM	20.0	10
Dividend	12.0	6
Retained Earnings	8.0	4

4. 'r' i.e., Return of Equity = (PAFESM/Equity) *100
   = (20 lakhs/100 lakhs) *100
   = 20%

5. Payout Ratio = D/E
   = 6/10
   = 60%

   g = b * r = 0.40 * 20%
   = 8%

6. As per Gordon's Model:-

   K_e = $(D_1 / P_0) + g$
   = (6 / 300) + 0.08
   = 10%

Theoretical Price as per Walter's Model

P = $[D + (r / K_e (E - D)) / K_e]$
= $[6 + (0.20 / 0.10 (10 - 6)) / 0.10]$
= ₹ 140

Comment: Since r > K; Optimum payout = 0 %
Current payout ratio of 60% is not optimum.

Q4

(i) Walter's model is given by

P = $[D + (E - D) r/K_e]/K_e$

Where,

P = Market price per share.
E = Earnings per share = ₹ 10
D = Dividend per share = ₹ 8
r = Return earned on investment = 10%
K_e = Cost of equity capital = 1/12.5 = 8%
P = [8 + (10 - 8)0.10/0.08]/0.08
= ₹ 131.25

(ii) According to Walter's model when the return on investment is more than the cost of equity capital, the price per share increases as the dividend pay-out ratio decreases. Hence, the optimum dividend pay-out ratio in this case is nil. So, at a pay-out ratio of zero, the market value of the company's share will be:

P = [0 + (10 – 0)0.10/0.08]/0.08 = ₹ 156.25

Q5 Let, the dividend pay-out ratio be X and so the share price will be:

$P = [D/K_e + (r\ (E - D)/K_e)/K_e]$

Here D = 6x; E = ₹ 6; r = 0.20 and K_e = 0.16 and P = ₹ 44

Hence ₹ 44 = [6x/0.16 + (0.2 (6 – 6x)/0.16)/0.16]

Or, ₹ 44 = 37.50x + 46.875 (1 – x)

Or, 9.375x = 2.875

X = 0.3066 i.e., 0.31

So, the required dividend payout ratio will be = 31%.

Q6

When Dividend is not paid:

Step 1:

$$P_1 = P_0(1+K_e)$$
$$= 100(1.10)$$
$$= ₹\ 110.$$

Step 2: No. of shares to be issued

$$= \frac{I - (E - D)}{P_1}$$
$$= \frac{24,000 - (20,000 - 0)}{110}$$
$$= 36.36 \text{ shares}$$

Step 3:

$$V_0 = \frac{(m+n)P_1 - I + E}{(1+K_e)}$$
$$= \frac{(2,000 + 36.36)110 - 24,000 + 20,000}{(1.10)^1}$$
$$= ₹\ 2,00,000.$$

When Dividend is Paid:

Step 1:

$$P_1 = P_0(1+K_e) - D_1$$
$$= 100(1.10) - 8$$
$$= ₹\ 102$$

Step 2: No. of shares to be issued

$$= \frac{I - (E - D)}{P_1}$$

$$= \frac{24,000 - (20,000 - 16,000)}{102}$$

$$= 196.08 \text{ shares}$$

Step 3: $V_0 = \frac{(m+n)P_1 - I + E}{(1+Ke)}$

$$= \frac{(2000 + 196.08)102 - 24,000 + 20,000}{1.10}$$

$$= ₹\ 200,000.$$

Q7

Before Decision:

$Ke = Rf + (Rm - Rf)\beta$

$= 9\% + (13\% - 9\%)\ 1.50$

$= 15\%$

Now, $P_0 = \frac{D_1}{Ke - g} = \frac{D_0(1+g)}{Ke - g}$

$= \frac{2(1.07)}{0.15 - 0.07} = ₹\ 26.75$

After Decision:

$Ke = Rf + (Rm - Rf)\beta$

$= 9\% + (13\% - 9\%)\ 1.75$

$= 16\%$

$P_0 = \frac{2(1.07)}{0.16 - 0.07} = ₹\ 23.78$