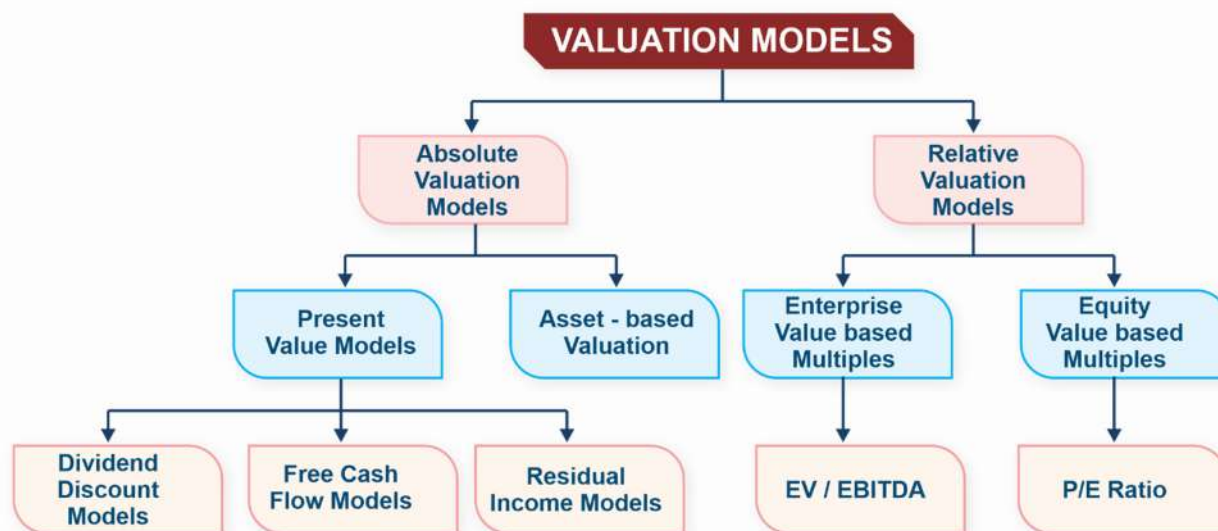


Business Valuation

Study Session 3

LOS 1 : Introduction



LOS 2 : Dividend Yield Valuation Method

$$\text{Dividend Yield} = \frac{\text{DPS}}{\text{MPS}}$$

$$\text{MPS} = \frac{\text{DPS}}{\text{Dividend Yield}}$$

Note:

$$\text{DPS} = \frac{\text{Total dividend paid}}{\text{Total number of equity shares}}$$

$$\text{Total Market Value} = \text{MPS} \times \text{Total Number of Equity share}$$

LOS 3 : Earning Yield Valuation Method

$$\text{Earning Yield} = \frac{\text{EPS}}{\text{MPS}}$$

$$\text{MPS} = \frac{\text{EPS}}{\text{Earning Yield}}$$

$$\text{Therefore, EPS} = \frac{\text{Earning available to Equity Share holders}}{\text{Total number of equity shares}}$$

LOS 4 : P/E Ratio Valuation Model

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

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

QUESTION NO. 2

XY Ltd., a Cement manufacturing Company has hired you as a financial consultant of the company. The Cement Industry has been very stable for some time and the cement companies SK Ltd. & AS Ltd. are similar in size and have similar product market mix characteristic. Use comparable method to value the equity of XY Ltd. In performing analysis, use the following ratios:

- (i) Market to book value
- (ii) Market to replacement cost
- (iii) Market to sales
- (iv) Market to Net Income

The following data are available for your analysis:

(Amount in ₹)

	SK Ltd.	AS Ltd.	XY Ltd.
Market Value	450	400	
Book Value	400	300	250
Replacement Cost	600	550	500
Sales	550	450	500
Net Income	18	16	14

Solution :

0.2
W.No.1 Estimation of Ratio's

(i) Market to Book Value:- $\frac{\text{Market Value}}{\text{Book Value}}$

SK Ltd. $\Rightarrow \frac{450}{400} \Rightarrow 1.125$

AS Ltd. $\Rightarrow \frac{400}{300} \Rightarrow 1.333$

Average $\Rightarrow \frac{1.125 + 1.333}{2} \Rightarrow 1.229$

(ii) Market to Replacement Cost:-

SK Ltd. $\Rightarrow \frac{450}{600} \Rightarrow 0.750$

AS Ltd. $\Rightarrow \frac{400}{550} \Rightarrow 0.727$

$$\text{Average} \Rightarrow \frac{0.750 + 0.727}{2} \Rightarrow 0.7385$$

(iii) Market to Sales :-

$$\text{SIL Ltd.} \Rightarrow \frac{450}{550} \Rightarrow 0.818$$

$$\text{AS Ltd} \Rightarrow \frac{400}{450} \Rightarrow 0.889$$

$$\text{Avg.} \Rightarrow \frac{0.818 + 0.889}{2} \Rightarrow 0.8525$$

(iv) Market to Net Income :-

$$\text{SIL Ltd} \Rightarrow \frac{450}{18} \Rightarrow 25$$

$$\text{AS Ltd} \Rightarrow \frac{400}{16} \Rightarrow 25$$

$$\text{Avg.} \Rightarrow \frac{25 + 25}{2} \Rightarrow 25$$

Application of Ratios on XY Ltd.

(i) Mkt. Value to Book Value

$$\frac{MV}{BV} \Rightarrow \underline{\underline{MVBV}}$$

$$MV \Rightarrow BV \times \underline{\underline{MVBV \text{ Ratio}}}$$

$$= 250 \times 1.2290$$

$$\underline{\underline{MV}} \Rightarrow 307.25$$

(ii) MV to RC :-

$$MV \Rightarrow 500 \times 0.7385 \Rightarrow \underline{\underline{₹ 369.25}}$$

(iii) MV to Sales :-

$$MV \Rightarrow \text{Sales} \times \text{MV to Sales Ratio}$$

$$\Rightarrow 500 \times 0.8535$$

$$\Rightarrow \underline{\underline{\text{₹ } 426.75}}$$

(iv) MV to Income:-

$$MV \Rightarrow \text{Income} \times \text{MV to Income Ratio}$$

$$\Rightarrow 14 \times 25$$

$$\Rightarrow \underline{\underline{\text{₹ } 350}}$$

Average MKT Value:-

$$\Rightarrow \frac{307.25 + 369.25 + 426.75 + 350}{4}$$

$$\Rightarrow \underline{\underline{\text{₹ } 363.31}}$$

Value of XY Ltd. according to the

comparable method is ₹ 363.31 ✓

Concept:- Valuation Based on FMP's :-

(Future Maintainable Profits)
(As per ICAI)

$$V_D \Rightarrow \frac{\text{FMP's}}{\text{DR/CR}}$$

Discount Rate Capitalization rate

$$V_E = V_D - \text{MV of Debt}$$

Calculation of FMP's

last year profits or Avg. profits xxx
(before tax)

LOS 5 : Value Based on Future Maintainable Profits (FMP's)

$$\text{Value of Business} = \frac{\text{Future Maintainable Profit}}{\text{Relevant Capitalisation Rate}}$$

$$\text{Value of Business} - \text{Market Value of Debt} = \text{Value of Equity}$$

Calculation of Future Maintainable Profits:

Average Past Year Profits before tax	xxx
Add : All Profit likely to arise in Future	xxx
All Actual Expenses & Losses not likely to occur in future	xxx
Less : All Profit not likely to occur in Future	xxx
All Actual Expenses & Losses likely to occur in future	xxx
Future Maintainable Profits (FMP's) before tax	xxx
Less : Tax	xxx
FMP's after tax	xxx

Note:**Treatment of Sunk Cost**

Sunk Cost are those cost which are not relevant for decision making. These cost must be totally ignored.
Example: Allocated Fixed Cost, R & D cost already incurred.

QUESTION NO. 3A

In the current year, a corporate firm has reported a profit of ₹ 65 lakh, after paying taxes @ 35 percent Current year's income includes:

- (i) extraordinary income of ₹ 10 lakh and
- (ii) extraordinary loss of ₹ 3 lakh.

Apart from existing operations, which are normal in nature and are likely to continue in the future, the company expects to launch a new product in the coming year. Revenue and cost estimates in respect of the new product are as follows:

	₹ (lakhs)
Sales	60
Material Cost	15
Labour cost (additional)	10
Allocated fixed costs	5
Additional fixed costs	8

- a) From the above information compute the value of the business, given that capitalization rate applicable to such business in the market is 15%.
- b) Determine the Market Price per equity share on the basis of FMP calculated above, with X Ltd. share capital being consists of 1,00,000, 11% preference shares of ₹ 100 each and 40,00,000 equity shares of ₹ 10 each and the P/E Ratio being 8 times.

Solution:

0.3A

W.No.1 Calculation of FMP's

(₹ Lakhs)

Profit after tax 65

Profit before tax $\Rightarrow 100 \text{ Lakhs}$

$\frac{65}{(1-0.35)}$

less: Extra-ordinary income $\Rightarrow 10$

Add: Extra-ordinary losses = 3

Add: Future profits:- $\Rightarrow 27$

Sales 60

(-) Material Cost 15

(-) Labour Cost 10

(-) Additional FC 8

FMP's before tax 120

less Tax @ 35% 42

FMP's after tax ₹ 78 Lakhs

⊕ Allocated fixed Cost is a sunk cost & should be ignored.

(a) $V_B = \frac{\text{FMP's}}{CR}$ Earning Capacity/
Earning Capitalization
Method

$\Rightarrow \frac{78 \text{ Lakhs}}{0.15}$

$V_B \Rightarrow ₹ 520 \text{ Lakhs}$

ⓑ FMP's after tax = 78 Lakhs

$$\begin{aligned}
 \text{less:- Preference Dividend} &= 11 \text{ lakh} \\
 [100,000 \times 11\% \times 100] & \\
 \text{Profits available for EPS} &= 67 \text{ lakh} \\
 \div \text{No. of eq. share} &= 40 \text{ lakh} \\
 \text{EPS} &\Rightarrow 1.675 / \text{share} \\
 \text{P/E Ratio} &\Rightarrow 8 \text{ times} \\
 \text{P/E Valuation} &= \text{EPS} \times \text{P/E Ratio} \\
 &\Rightarrow 1.675 \times 8 \\
 \text{MPS} &\Rightarrow \text{₹ } 13.40 / \text{share}
 \end{aligned}$$

LOS 6 : Net Asset Valuation Method (For Equity)

$$\text{NAV per Share} = \frac{\text{Total Assets} - \text{Total External Liability}}{\text{Total number of equity shares}}$$

Note:

- The following external liabilities should be deducted
 - ❖ All short term (Current Liabilities) and Long Term Liabilities (Debenture, Loans, etc) including outstanding and accrued interest.
 - ❖ Provision for Taxation
 - ❖ Liabilities not provided for in the accounts i.e. Contingent Liabilities which have crystallized now.
 - ❖ Liabilities arising out of prior period adjustment
 - ❖ Preference Share Capital including Arrears of dividend and proposed preferred Dividend
 - ❖ Proposed Equity Dividend (If the objective is to determine ex-dividend value of equity share).
- Total assets doesn't include Miscellaneous Expenditure to the extent not yet written-off, fictitious assets, accumulated losses, profit & Loss (Dr.) Balance.
- NAV may be calculated by using
 - Book Value (BV):** The BV of an asset is an accounting concept based on the historical data given in the balance sheet of the firm.
 - Market Value (MV):** The MV of an asset is defined as the price which is prevailing on the market.
 - Liquidating Value (LV):** The LV refers to the net difference between the realizable value of all assets and the sum total of external liabilities. This net difference belongs to the owners/ shareholders and is known as LV.
- If question is silent always prefer Market Value weights.

LOS 7 : Economic Value Added (EVA)

It is excess return over minimum return which is expected by the company on its Capital employed.

$$EVA = NOPAT - K_0 \times \text{Average Capital Invested}$$

Calculation of NOPAT:

✚ NOPAT means, Net Operating Profit After Tax but before any distribution of Interest, Preference Dividend and Equity Dividend.

i.e. $NOPAT = EBIT (1 - \text{Tax Rate})$

Note: It excludes non-operating income & expenses/losses like

- ✚ Profit/Loss on Sale of Fixed Assets
- ✚ Interest on non-trade investment
- ✚ Profit/Loss on trading in shares & bonds
- ✚ Interest income from Loans & Advances

Calculation of Cost of Overall Capital:

$K_0 = \text{Cost of Overall Capital} = WACC = \text{Weighted Average Cost of Capital}$

$$K_e W_e + K_r W_r + K_D W_D + K_P W_P$$

Note:

1. $K_d = \text{Interest} (1 - \text{Tax Rate})$
2. $K_e = R_f + \beta (R_m - R_f)$ Or $K_e = \frac{D_1}{P_0} + g$
3. $K_p = \text{Preference Dividend} (1 + \text{CDT})$
4. Calculation of Average Capital Invested:

$$\frac{\text{Capital at the beginning} + \text{Capital at the End of Year}}{2}$$

5. Calculation of Capital Invested:

	Equity share capital
Add	Preference share capital
	Reserve & Surplus
	Debenture/Bonds
	Long-Term Loan
Less	P/L (Dr. Balance)
	Preliminary Expenses
	Miscellaneous Expenditure

Note: It excludes:

- ✚ Investment in Equity shares & Bonds
- ✚ Loans & Advances
- ✚ Non-Trade Investment

$$6. \text{ Financial Leverage} = \frac{EBIT}{EBT} \text{ Or } = \frac{EBIT}{EBIT - \text{Interest}}$$

$$7. EBIT = EBT + \text{Interest}$$

$$EBIT = \frac{PAT}{(1 - \text{tax rate})} + \text{Interest}$$

$$EBIT = \frac{\text{Earning for equity} + \text{Pref Div}}{(1 - \text{tax rate})} + \text{Interest}$$

Note :

- Operating profits may have to be adjusted using matching concept.
- There might be some intangible assets such as patents, trademark etc. which is not shown in balance sheet, we need to include that in invested capital.
- The balance sheet figures of assets & liabilities are at book value. If replacement cost is provided, take invested capital at replacement cost instead of Book Value.

QUESTION NO. 5A

Calculate Economic Value Added (EVA) with the help of the following information of A Limited:

Financial leverage	1.4 times
<u>Capital Structure</u>	
Equity Capital	₹ 170 Lakhs
Reserves and Surplus	₹ 130 Lakhs
10% Debentures	₹ 400 Lakhs
Cost of Equity	17.5%
Income Tax Rate	30%

Solution :

Q.5A

Leverage:-

Sales
- V.C. → Contribution
(-) Fixed Cost → EBIT
(-) Int. → EBT
(-) Tax @ 30% → PAT
÷ No. of Shares → EPS

Method 1:- ~~OL / FL~~

$$OL = \frac{C}{EBIT}$$

$$FL = \frac{EBIT}{EBT}$$

$$CL = OL \times FL$$

Method 2:-

$$OL = \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$$

$$FL \Rightarrow \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

$$CL = DL \times FL$$

W.No:1 Q5A

$$FL = 1.4 \text{ times} = \frac{EBIT}{EBT}$$

$$1.4 \Rightarrow \frac{EBIT}{EBIT - \text{Intt.}}$$

$$1.4 = \frac{EBIT}{EBIT - 40 \text{ Lakhs}}$$

$$1.4 EBIT - 56 = EBIT$$

$$EBIT \Rightarrow \frac{56}{.40} \Rightarrow 140 \text{ Lakhs}$$

$$\text{Intt.} = 40 \text{ Lakhs} \times 10\% \Rightarrow 40 \text{ Lakhs}$$

W.No:2 Cal. of K_0 : - W.A.C.C:-

$$K_0 = K_e W_e + K_d W_d$$

$$\Rightarrow 17.5\% \times \frac{300}{700} + 10\% (1 - 30\%) \times \frac{400}{700}$$

$$\Rightarrow \underline{\underline{11.5\%}}$$

W.No:3 Cal. of Capital Invested:-

ESC	170 Lakhs
RIS	130 Lakhs
10% Debentures	400 Lakhs
	<u>700 Lakhs</u>

Final Answer:-

$$EVA \Rightarrow \text{NOPAT} - K_o \times \text{Capital Invested}$$

$$\quad \quad \quad \uparrow$$

$$\quad \quad \quad EBIT(1-\text{tax})$$

$$\Rightarrow 140 \text{ lakhs } (1-.30) - 11.5\% \times 700 \text{ lakhs}$$

$$EVA \Rightarrow 98 \text{ lakhs} - 80.5 \text{ lakhs}$$

$$EVA \Rightarrow ₹ 17.5 \text{ lakhs} \checkmark$$

QUESTION NO. 5C

Associated Advertising Agency (AAA) just announced that the current financial year's income statement reports its net income to be ₹ 12,00,000. AAA's marginal tax rate is 40 percent and its interest expense for the year was ₹ 15,00,000. The company has ₹80,00,000 of invested capital, of which 60 percent is debt. In addition, AAA tries to maintain a weighted average cost of capital (WACC) near 12 percent.

- Compute the operating income, or EBIT, AAA earned in the current year.
- What is AAA's Economic Value Added (EVA) for the current year?
- AAA has 5,00,000 equity share outstanding. According to the EVA value you computed in part b, how much can AAA pay in dividends per share before the value of the firm would start to decrease? If AAA does not pay any dividends, what would you expect to happen to the value of the firm?

Solution :

Q.5C

(a) Cal. of EBIT = ?

$$EBIT \Rightarrow \frac{PAT}{(1-\text{tax})} + \text{Int.}$$

$$\Rightarrow \frac{12,00,000}{(1-.40)} + 15,00,000$$

$$EBIT \Rightarrow ₹ 35,00,000$$

(b) $EVA \Rightarrow EBIT(1-\text{tax}) - K_o \times \text{Capital Invested}$

$$\Rightarrow 35,00,000(1-.40) - 12\% \times 80,00,000$$

$$EVA \Rightarrow 21,00,000 - 9,60,000$$

$$EVA \Rightarrow ₹ 11,40,000$$

$$\textcircled{C} \quad \text{EVA} = 11,40,000$$

$$\text{No. of Shares} = 5,00,000 \text{ shares}$$

$\Rightarrow$ Maximum Dividend per share before the value of the firm would start to decrease based on EVA value computed in part 'b'

$$\Rightarrow \frac{11,40,000}{5,00,000} \Rightarrow 2.28 \text{ / share}$$

$\Rightarrow$ If AAA does not pay dividend, we would expect the value of the firm

will increase, it will achieve higher growth, higher level of EBIT & then the value of the firm will increase.

$\Rightarrow$ We know that if EBIT is higher, than other factors will remain same, the value of the firm will increase.

$$\uparrow g = \uparrow RR \times ROE$$

QUESTION NO. 5E

H Ltd. is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. This is not a high-tech business, but H Ltd.'s earnings have averaged around ₹ 12 lakh after tax, largely on the strength of its patented beauty cream for removing the pimples. The patent has eight years to run, and H Ltd. has been offered ₹ 40 Lakhs for the patent rights. H Ltd's assets include ₹ 20 Lakhs of working capital and ₹ 80 Lakhs of property, plant, and equipment. The patent is not shown on Herbal's books. Suppose H Ltd's cost of capital is 15 percent. What is its Economic Value Added (EVA)?

Solution:

Q.5E

$$\text{PAT} = 12,00,000$$

Since, tax rate & interest amount is not given, we assume PAT as $\frac{\text{NOPAT}}{(1-\text{tax})}$

$$\text{WACC}/K_0 = 15\%$$

Value of Capital Invested:-

PPE 80,00,000

W/L (CA-CL) 20,00,000

② Patent 40,00,000

Total Capital Invested ₹ 140,00,000

$$EVA① = NOPAT - K_0 \times \text{Capital Invested}$$

$$\Rightarrow 12,00,000 - 15\% \times 140,00,000$$

$$\Rightarrow 12,00,000 - 21,00,000$$

$$EVA① \Rightarrow \underline{\underline{(-) 9,00,000}}$$

QUESTION NO. 5F

Constant Engineering Ltd. has developed a high tech product which has reduced the Carbon emission from the burning of the fossil fuel. The product is in high demand. The product has been patented and has a market value of ₹ 100 Crore, which is not recorded in the books. The Net Worth (NW) of Constant Engineering Ltd. is ₹ 200 Crore. Long term debt is ₹ 400 Crore. The product generates a revenue of ₹ 84 Crore. The rate on 365 days Government bond is 10 percent per annum. Bond portfolio generates a return of 12 percent per annum. The stock of the company moves in tandem with the market. Calculate Economic Value added of the company.

Solution :Q.5F

Revenue = 84 crores ✓

Other, no tax rate is given, we assume it as
other data

NOPAT/EBIT

WNo. / Cal. of Capital Invested :-

Net Worth (Equity) → 200 cr

(+) long-term Debt → 400 cr ✓

(+) ② Patents → 100 cr

Capital Invested $\rightarrow$ ₹ 700 cr.

W.No:2 Cal. of WACC:- / K_0 :

$$K_0 = K_e W_e + K_d W_d$$

$$\Rightarrow 12\% \times \frac{300}{700} + 10\% \times \frac{400}{700}$$

$$\Rightarrow \underline{\underline{10.86\%}}$$

$R_m = 12\%$

Since, stock is moving as per market,
then $K_e = 12\%$

Final Answer

$$EVA = \text{NOIAT} - K_0 \times \text{Capital Invested}$$

$$\Rightarrow 84 \text{ cr.} - 10.86\% \times 700 \text{ cr.}$$

$$\Rightarrow 84 \text{ cr.} - 76.02 \text{ cr.}$$

$$\boxed{EVA \Rightarrow \underline{\underline{7.98 \text{ cr.}}}}$$

QUESTION NO. 5G

ABC Ltd. has divisions A, B & C. The division C has recently reported on annual operating profit of ₹ 20,20,00,000. This figure arrived at after charging ₹3 crores full cost of advertisement expenditure for launching a new product. The benefits of this expenditure is expected to be lasted for 3 years.

The cost of capital of division C is 11% and cost of debt is 8%.

The Net Assets (Invested Capital) of Division C as per latest Balance Sheet is ₹60 crore, but replacement cost of these assets is estimated at ₹84 crore.

You are required to compute EVA of the Division C.

Solution :

Q.5G

W.No/ Cal. of EBIT

$$EBIT = 20.20 \text{ cr.} + 2 \text{ cr.}$$

$$\Rightarrow \underline{\underline{22.20 \text{ cr.}}}$$

$$K_0 \Rightarrow \underline{\underline{11\%}}$$

Capital Invested $\Rightarrow$ Replacement Cost
 $\Rightarrow$ 84 cr

$$EVA = \frac{NOPAT}{(1+r)^t} - K_0 \times \text{Capital Invested}$$

$$\Rightarrow 28.20 \text{ cr.} - 11\% \times 84 \text{ cr.}$$

$$\Rightarrow 28.20 \text{ cr.} - 9.24 \text{ cr.}$$

$$\boxed{EVA \Rightarrow 18.96 \text{ cr.}} \quad \checkmark$$

LOS 8 : Value of Business using EVA Method

Valuation of Business using EVA Method (Assume Constant growth after 2 years):

$$MVA = \frac{EVA_1}{(1+K_0)^1} + \frac{EVA_2}{(1+K_0)^2} + \frac{\frac{EVA_2(1+g)}{K_0-g}}{(1+K_0)^2}$$

MVA = Value of Business – Total Capital Employed

Value of Business = Total Capital Employed + MVA

LOS 9 : Discounted Cash Flow approach or Free Cash Flow Approach or Value of Business using FCFE & FCFF

Under this approach, we will calculate value of business by discounting the future cash flows.

Steps Involved:

- Step 1:** Calculation of Free Cash Flow of each Year.
- Step 2:** Calculate Terminal Value at the end of forecast period.
- Step 3:** Compute Discount Rate
- Step 4:** Calculate Present Value of Business/ Equity by discounting the Cash Flows & Terminal Value.

Calculation of Terminal Value / Continuing Value / Salvage Value

Terminal Value is calculated at the end of the Project Life or at the end of the forecasted period.

Note:

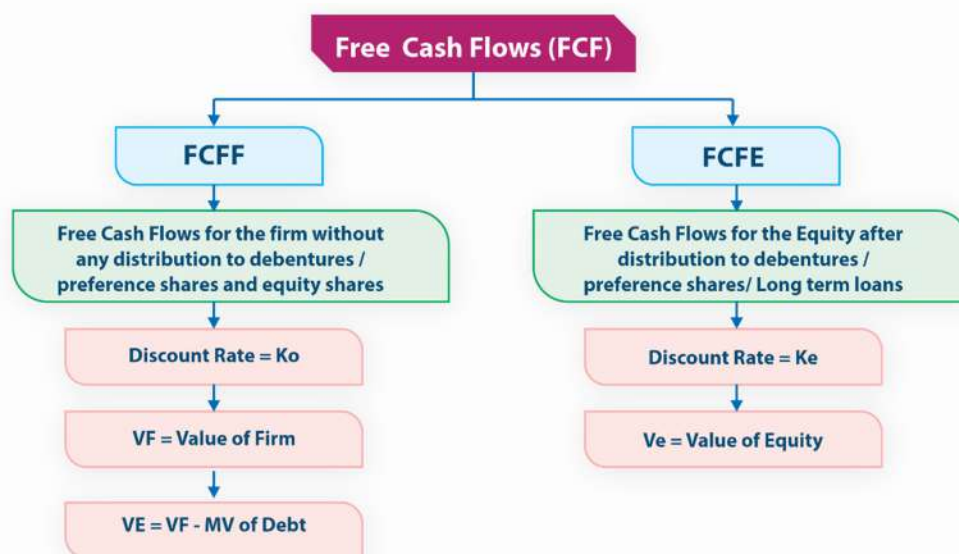
- ✚ Given in the Question.
- ✚ Assumption of Growth Model (Let's assume Growing Cash Flow after 3 Years)

$$P_0 = \frac{CF_1}{(1+K_0)^1} + \frac{CF_2}{(1+K_0)^2} + \frac{CF_3}{(1+K_0)^3} + \frac{\left[\frac{CF_3(1+g)}{K_0-g} \right]}{(1+K_0)^3}$$

- ✚ Assumption of Constant Model/ Perpetuity Approach (Let's assume Constant Cash Flow after 3 Years)

$$P_0 = \frac{CF_1}{(1+K_0)^1} + \frac{CF_2}{(1+K_0)^2} + \frac{CF_3}{(1+K_0)^3} + \frac{\left[\frac{CF_3}{K_0} \right]}{(1+K_0)^3}$$

- ✚ Continuing value/ Terminal Value is calculated because it is not easy to estimate realistic cash flows, so we take uniform assumption of Constant Model or Growth Model.

**Calculation of FCFF**

EBITDA	xxx
Less : Depreciation(NCC)	xxx
EBT	xxx
Less : Tax	xxx
NOPAT	xxx
Add : Depreciation (NCC)	xxx
Less : Increase in Working Capital (WCInv)	xxx
Less : Capital Expenditure (FCInv)	xxx
Free Cash Flow For Firm (FCFF)	xxx

Calculation of FCFE**Method 1 : When Debt-financing ratio is given:**

EBITDA	xxx
Less : Depreciation & Amortisation	xxx
EBIT	xxx
Less : Interest	xxx
EBT	xxx
Less : Tax	xxx
PAT	xxx
Add : Depreciation × % Equity Invested	xxx
Less: Increase in Working Capital × % Equity Invested	xxx
Less: Capital Expenditure × % Equity Invested	xxx
Free Cash Flow for Equity (FCFE)	xxx

Method 2 : When Debt-financing ratio is not given:

EBITDA	xxx
Less : Depreciation & Amortisation	xxx
EBIT	xxx
Less : Interest	xxx
EBT	xxx
Less : Tax	xxx
PAT	xxx

Add : Depreciation (NCC)	xxx
Less: Increase in Working Capital (WCInv)	xxx
Less: Capital Expenditure (FCInv)	xxx
Add : Net Borrowings	xxx
Free Cash Flow for Equity (FCFE)	xxx

QUESTION NO. 7A

Following information's are available in respect of XYZ Ltd. which is expected to grow at a higher rate for 4 years after which growth rate will stabilize at a lower level:

Base year information:

Revenue	₹ 2,000 crores
EBIT	₹ 300 crores
Capital expenditure	₹ 280 crores
Depreciation	₹ 200 crores

Information for high growth and stable growth period are as follows:

	High Growth	Stable Growth
Growth in Revenue & EBIT	20%	10%
Growth in capital expenditure and depreciation	20%	Capital Expenditure are offset by depreciation
Risk Free Rate	10%	9%
Equity Beta	1.15	1
Market Risk Premium	6%	5%
Pre Tax Cost of debt	13%	12.86%
Debt equity ratio	1:1	2:3

For all time, working capital is 25% of revenue and corporate tax rate is 30%. What is the value of the firm?

Solution :

Q.7A V.V. Imp (10 Marks) (3-4 marks)

W.No.1 Cal. of WACC :-

High growth :-

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

$$\Rightarrow 10\% + 1.15 [6\%]$$

$$\Rightarrow 16.9\%$$

$$K_d = 13\% (1 - 30\%) \Rightarrow 9.1\%$$

$$\Rightarrow WACC/K_0 = K_e W_e + K_d W_d$$

$$\Rightarrow 16.9\% \times \frac{1}{2} + 9.1\% \times \frac{1}{2}$$

Hid. $K_0 \Rightarrow 13\%$ $\rightarrow$ High growth ✓

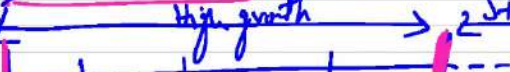
$$\begin{array}{r} \text{D} = 1 \\ \text{E} = 1 \\ \hline 2 \end{array}$$

$$K_e \Rightarrow R_f + \beta [R_M - R_f]$$

$$\Rightarrow 9\% + 1 [5\%]$$

$$K_c \Rightarrow 12.86\% (1 - 0.30) \Rightarrow 9\%$$

$$\Rightarrow 14\% \times \frac{3}{5} + 9\% \times \frac{2}{5}$$

Hint: 

Due to the change in information we need to cal. Pctfy of Stable Remed

(including 10% growth)

W.No.-2 Cal. of FCFF:- (For) ~~Indy 10%~~
1 2 3 4 Stable

Revenue. 2400 2880 3456 4147.20 4561.22

EBIT 360 432 518.40 622.08 684.29

→ Tax @ 30% 108 129.6 155.52 186.62 205.29

NPAT 252 302.40 362.88 435.46 479.00

+ Depⁿ 240 288 345.60 414.72

- Cap Exp. (336) (403.20) (483.84) (580.61)

→ Invⁿ (100) (120) (144) (172.80) (103.68)

FCFF 56 67.20 80.64 96.78 375.32

W.No.-3 Calculation of change in w/c

Year	Revenue	w/c @ 25%	Change in w/c
0	2000	500	-
1	2400	600	100 ✓
2	2880	720	120 ✓
3	3456	864	144 ✓
4	4147.20	1036.80	172.80 ✓
Stable	4561.22	1140.48	103.68

W.No.-4 Cal. of Terminal Value (TV):-
(Continuing Value) (CV)

-----26

$$\frac{\cancel{FCFF_1(1+10)}}{K_0 - g_c} \Rightarrow \frac{FCFF_1}{K_0 - g_c}$$

$$\Rightarrow \frac{375.32}{0.12 - 0.10} = ₹ 18766 \text{ cr.}$$

Final Answer:
Value of firm:-

Timeline diagram showing cash flows:

$$\frac{FCFF_1}{(1+K_0)^1} + \frac{FCFF_2}{(1+K_0)^2} + \frac{FCFF_3}{(1+K_0)^3} + \frac{FCFF_4 + TV}{(1+K_0)^4}$$

$$\frac{56}{1.13^1} + \frac{67.20}{1.13^2} + \frac{80.64}{1.13^3} + \frac{96.78 + 11509.19}{1.13^4}$$

$$\frac{56}{1.13} + \frac{67.20}{1.2769} + \frac{80.64}{1.4429} + \frac{11605.97}{1.6771}$$

$$49.56 + 52.62 + 55.89 + 6911.19 = 11726.62 \text{ cr.}$$

Value of firm ₹ 11726.62 cr.

QUESTION NO. 7C

ABC Co. is considering a new sales strategy that will be valid for the next 4 years. They want to know the value of the strategy. Following information relating to the year which has just ended, is available:

Income Statement:	₹
Sales	20,000
Gross Margin (20%)	4,000
Administration, Selling & Distribution Expense (10%)	2,000
PBT	2,000
Tax @ 30%	600
PAT	1,400
Balance Sheet Information:	
Fixed Assets	8,000
Current Assets	4,000
Equity	12,000

If it adopts the new strategy, sales will grow at the rate of 20% per year for three years. The Gross Margin Ratio, Assets Turnover Ratio, the Capital Structure Ratio and the Income Tax rate will remain unchanged. Depreciation would be at 10% of net fixed assets at the beginning of the year. The company's target rate of return is 15%. Determine the incremental value due to adoption of the strategy. Ignore Depreciation on existing strategy.

Solution :

Q.7C V. Imp (10 Marks)
(3-4) min

W.No.

$$PAT = 1400$$

$$Sales = 20,000$$

$$\frac{PAT}{Sales} \times 100 = \frac{1400}{20,000} \times 100 = 7\%$$

$$\checkmark FA = 8000 \leftrightarrow Sales = 20,000$$

$$\checkmark CA = 4000 \quad (FA) \quad (CA)$$

$$\% \Rightarrow \frac{8000}{20,000} \times 100 = 40\% \quad \left| \frac{4000}{20,000} \times 100 = 20\% \right.$$

$$FA = 40\% \text{ of Sales}$$

$$CA = 20\% \text{ of Sales}$$

① Value of Old/Existing Strategy:-

$$PAT = FCF = 1400 \text{ ----- } \Delta$$

(Depⁿ is ignored)

$$\Rightarrow \frac{1400}{.15} = \underline{\underline{₹ 9333.33}}$$

② Value of New Strategy:-

	1	2	3	(Stable)
<u>Sales</u>	24000	28800	34560	34560

<u>PAT</u> @ 7% of Sales	1680	2016	2419.20	2419.20
-----------------------------	------	------	---------	---------

(+) Dep ⁿ	800	960	1152	
----------------------	-----	-----	------	--

(-) Cap Exp ⁿ	2400	2880	3456	
--------------------------	------	------	------	--

(4) Dep ⁿ /C	800	960	1152	-
-------------------------	-----	-----	------	---

<u>FUFF/FIFE</u>	<u>-720</u>	<u>-864</u>	<u>-1036.80</u>	<u>2419.20</u>
------------------	-------------	-------------	-----------------	----------------

W.No:- Cal. of Depreciation & Capital
Expenditure:-

	<u>FA A/c</u>	<u>(Year 1)</u>
Op Bal.	8000	
		Dep ⁿ @ 10% 800
Cap Expend. (Cl. Bal. fig.)	(2400)	
		Cl. Bal. 9600
		<u>10400</u>

W.No:-

$$\frac{\text{FA \% of Sales}}{\text{FA \% of Sales}} \Rightarrow \frac{\text{FA}}{\text{Sales}} = \frac{8000}{20000} \times 100$$

$$= 40\%$$

Means FA's are always 40% of Sales

	1	2	3	4
Cl. Bal. FA	9600	11520	13824	13824

	<u>Year 2</u>	
Op Bal.	9600	
		Dep @ 10% 960
Cap Expend. (Cl. Bal. fig.)	(2880)	
		Cl. Bal. 11520
	<u>12480</u>	<u>12480</u>

	<u>Year 3</u>	
Op Bal.	11520	
		Dep @ 10% 1152
Cap Expend. (Cl. Bal. fig.)	(3456)	
		Cl. Bal. 13824

	<u>14976</u>		<u>14976</u>
	<u>Yearly (Stable)</u>		
Op. Bal.	13824	Dep @ 10%	1382.40
Cap. Exp. (As % of Dep)	1382.40	Cl. Bal.	13824
	<u>15206.40</u>		<u>15206.40</u>

W.No:- Cal. of Change in W/C

$$\text{CA is } 20\% \text{ of Sales} = \frac{4000}{20,000} \times 100$$

$$\Rightarrow 20\%$$

Year	Sales	W/C @ 20%	Δ in W/C
0	20,000	4000	-
1	24000	4800	800
2	28800	5760	960
3	34560	6912	1152
4	34560	6912	-

Final Answer:- Value of New Strategy:-

①	②	③	④
-720	-864	-1036.80	2419.20
$(1+K_0)^1$	$(1+K_0)^2$	$(1+K_0)^3$	

-720	-864	-1036.80	1612.8
			$\frac{2419.20}{.15}$

$$\frac{(1+15)^1}{(1+15)^2} \quad \frac{(1+15)^2}{(1+15)^3}$$

$$\Rightarrow ₹ 864331$$

⇒ Incremental Value due to adoption of New Sales Strategy:-

Value under new — Value under old
Strategy Strategy

$$\Rightarrow 8643.31 - 9332.33$$

$$\Rightarrow (-) 690.02$$

(Loss due to adoption of New Sales Strategy)-

Extra:

$$\begin{array}{ccccccc} | & | & | & | & | & | & \rightarrow \\ -720 & -864 & -1036.80 & 2419.20 & +TV & & \frac{2419.20}{0.15} \\ \hline (1+0.15)^1 & (1+0.15)^2 & (1+0.15)^3 & (1+0.15)^4 & & & \\ \hline = 8643.31 \end{array}$$

QUESTION NO. 7E

Calculate the value of share from the following information;

Profit of the company or Earning for Equity	₹ 290 crores
Equity capital of company	₹ 1,300 crores
Par value of share	₹ 40 each
Debt ratio of company	27
Long run growth rate of the company	8%
Beta 0.1, risk free interest rate	8.7%
Market return	10.3%
Capital expenditure per share	₹ 47
Depreciation per share	₹ 39
Change in Working capital per share	₹ 3.45 per share

Solution :

W.No.1 Cal. of K_e = ?Very CAPM: -

$$K_e = R_f + D [R_m - R_f]$$

$$\Rightarrow 8.7\% + 0.10 [10.3\% - 8.7\%]$$

$$K_e \Rightarrow 8.86\%$$

W.No.2 Cal. of No. of Shares: -

$$\Rightarrow \frac{1300 \text{ cr.}}{40} \Rightarrow 32.5 \text{ cr. Shares}$$

W.No.3 Cal. of FCFE :-

PAT/CFE

290

$$\begin{aligned} (+) \text{ Dep}^n & [39 \times 32.5 \text{ cr.} \times 73\%] \Rightarrow 925.275 \\ (-) \text{ Cap Exp}^n & [47 \times 32.5 \text{ cr.} \times 73\%] \Rightarrow 1115.075 \\ (-) \uparrow \text{ in W/C} & [3.45 \times 32.5 \text{ cr.} \times 73\%] \Rightarrow 81.851 \end{aligned}$$

$$\text{FCFE} \Rightarrow \underline{\underline{18.35 \text{ cr.}}}$$

Value of Equity: - (Gordon's Model)

$$\frac{\text{FCFE} (1+g)}{K_e - g} \Rightarrow \frac{18.35 \text{ cr.} (1+0.08)}{0.0886 - 0.08}$$

$$\text{Value of Equity} \Rightarrow \underline{\underline{2304.42 \text{ cr.}}}$$

$$\text{Value per share} \Rightarrow \frac{\text{Value of eqy.}}{\text{No. of shares}}$$

$$\Rightarrow \frac{2304.42 \text{ cr.}}{32.5 \text{ cr.}}$$

$$\boxed{\text{Value per share} \Rightarrow ₹ 70.905 / \text{share}}$$

LOS 10 : Calculation of Range of Valuation

The range of valuation means we have to calculate minimum & maximum value of business by using more than one method as indicated in question.

LOS 11 : Basis of Allocation for Fully & Partly paid shareholders

QUESTION NO. 9

AB Ltd. is planning to acquire and absorb the running business of XY Ltd. The valuation is to be based on the recommendation of merchant bankers and the consideration is to be discharged in the form of equity shares to be issued by AB Ltd.

As on 31.3.2006, the paid up capital of AB Ltd. consists of 80 Lakhs shares of ₹ 10 each. The highest and the lowest market quotation during the last 6 months were ₹ 570 and ₹ 430.

For the purpose of the exchange, the price per share is to be calculated as the average of the highest and lowest market price during the last 6 months ended on 31.3.06.

XY Ltd's Balance Sheet as at 31.3.2006 is summarized below:	₹ Lakhs
Sources	
Share Capital	
20 Lakhs equity shares of ₹ 10 each, fully paid	200
10 Lakhs equity shares of ₹ 10 each, ₹ 5 paid	50
Loans	100
Total	350
Uses	
Fixed Assets (Net)	150
Net Current Assets	200
Total	350

An independent firm of merchant bankers engaged for the negotiation, have produced the following estimates of cash flows from the business of XY Ltd.:

Year ended	By way of	₹ Lakhs
31.03.2007	after tax earnings for equity	105
31.03.2008	— do —	120
31.03.2009	— do —	125
31.03.2010	— do —	120
31.03.2011	— do —	100
31.03.2011	Terminal Value Estimate	200

It is the recommendation of the merchant banker that the business of XY Ltd. may be valued on the basis of the average of:

- Aggregate of discounted cash flows at 8% and
- Net Assets Value.

	Year 1	Year 2	Year 3	Year 4	Year 5
PVF at 8%	0.93	0.86	0.79	0.74	0.68

You are required to

- Calculate the total value of the business of XY Ltd.
- The number of shares to be issued by AB Ltd; and
- The basis of allocation of the shares among the shareholders of XY Ltd.

Solution :

Q.9

W.No.1 Value of XY Ltd. based on DCF
Approach:- (₹ Lakhs)

<u>Year</u>	<u>FCF's</u>	<u>PVF @ 8%</u>	<u>PV</u>
2007	105	0.93	97.65
2008	120	0.86	103.20
2009	125	0.79	98.75
2010	120	0.74	88.80
2011	100	0.68	68
2011	200	0.68	136
			<u>₹ 592.40 Lakhs ✓</u>

W.No.2 Value of XY Ltd. based on NAV
Approach:- (₹ Lakhs)

Fixed Assets (Net)	150
Current Assets (Net)	200
<u>less:</u> loans	100
	<u>₹ 250 Lakhs</u>

(a) Value of Business of XY Ltd:-

$$\Rightarrow \frac{592.40 + 250}{2}$$

$$\Rightarrow \underline{\underline{₹ 421.20 \text{ Lakhs} \checkmark}}$$

(b) No. of equity shares to be issued by ABC Ltd:-

$$\Rightarrow \frac{421.20 \text{ Lakhs}}{500/\text{Share}} \Rightarrow 84240 \text{ Shares}$$

W.No:- Issue Price $\Rightarrow \frac{570 + 430}{2}$
 $\Rightarrow 500/\text{Share}$

(c) Basis of Allocation of the shares among the shareholders of XYZ Ltd:-

Fully paid-up:- $84240 \times \frac{200}{200+50}$
 $\Rightarrow 67392 \text{ Shares} \checkmark$

Partly paid-up:-
 $\Rightarrow 84240 \times \frac{50}{250}$
 $\Rightarrow 16848 \text{ Shares} \checkmark$

LOS 12 : Valuation with NPV decision

$$\text{Revised MPS} = \text{Existing MPS} \pm \frac{\text{Total NPV}}{\text{Total number of Equity Shares}}$$

QUESTION NO. 10A

DEF Ltd has been regularly paying a dividend of ₹ 19,20,000 per annum for several years and it is expected that same dividend would continue at this level in near future. There was 12,00,000 equity shares of ₹ 10 each and the share is traded at par.

The company has an opportunity to invest ₹ 8,00,000 in one year's time as well as further ₹ 8,00,000 in two years' time in a project as it is estimated that the project will generate cash inflow of ₹ 3,60,000 per annum in three years' time which will continue forever. This investment is possible if dividend is reduced for next two years

Whether the company should accept the project? Also analyse the effect on the market price of the share, if the company decides to accept the project.

Solution:

$$MPS \Rightarrow \frac{\text{Dividend}}{\text{No of Shares}} \quad \text{D/S} \Rightarrow \frac{\text{Dividend}}{\text{No of Shares}}$$

$$\Rightarrow \frac{19,20,000}{18,00,000}$$

$$D/S \Rightarrow \underline{\underline{1.6/\text{Share}}}$$

DY = Dividend Yield

$$DY = \frac{D/S}{MPS} \Rightarrow \frac{1.60}{10}$$

$$DY \Rightarrow \underline{\underline{16\% \text{ p.a.}}}$$

$$DR = DY = 16\%$$

(i) Cal. of NPV:-

$$\begin{array}{ccc} \text{①} & \text{②} & \text{③} \\ | & | & | \\ -8,00,000 & -8,00,000 & 3,60,000 + TV \\ \frac{(1+16)^1}{(1+16)^1} & \frac{(1+16)^2}{(1+16)^2} & \frac{(1+16)^3}{(1+16)^3} \end{array}$$

$$TV \Rightarrow \frac{CF}{DR} \Rightarrow \frac{3,60,000}{.16}$$

$$\Rightarrow \underline{\underline{22,50,000 \checkmark}}$$

Year	CF	PV @ 16%	PV
1	-8,00,000	0.862 ✓	(6,89,600)
2	-8,00,000	0.743 ✓	(5,94,400)
3	+3,60,000	0.641 ✓	2,30,760
3	+22,50,000	0.641	14,42,250

$$NPV \quad (+) \quad \underline{3,89,010}$$

Since, NPV is +ve, the co. should accept the project.

(ii) Effect on MPS:-

Att-1

$$\text{₹ } 10/\text{Sh} \pm NPV/\text{Share} = \text{Revised MPS}$$

$$\text{Revised MPS} = \text{Existing MPS} \pm NPV/\text{Share}$$

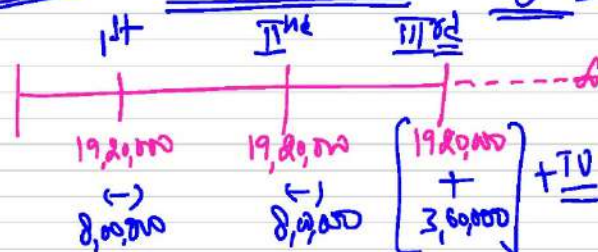
$$\Rightarrow 10/\text{Sh} + \frac{389010}{12,00,000}$$

$$\Rightarrow 10/\text{Sh} + 0.324/\text{Sh}$$

$$\text{Revised MPS} \Rightarrow 10.324/\text{Share}$$

If the co. accepts the project, the MPS of the co. will increase from ₹ 10 to ₹ 10.324/Share.

Att-2:- (As per ICAI) (must follow)



$$TV \Rightarrow 19,80,000 + 3,60,000$$

·16

$$\Rightarrow \underline{\underline{142,50,000}}$$

Year CF's

$$1 \quad 19,20,000 - 8,00,000 = 11,20,000$$

$$2 \quad 19,20,000 - 8,00,000 = 11,20,000$$

$$3 \quad 19,20,000 + 3,60,000 = 22,80,000$$

$$3 \quad TV \quad 142,50,000$$

<u>Year</u>	<u>PV@16%</u>	<u>PV</u>
1	0.862	965440
2	0.743	8,32,160
3	0.641	14,61,480
3	0.641	91,34,250

Revised Value $\underline{\underline{₹ 123,93,330}}$

Value/Share or Revised MPS:-

$$\Rightarrow \frac{123,93,330}{\text{No. of Shares}}$$

$$\text{Revised MPS} \Rightarrow \frac{123,93,330}{12,00,000} \Rightarrow \underline{\underline{₹ 10.328/\text{Share}}}$$

If the co. accepts the project, MPS of the co. will increase from ₹10 to $\underline{\underline{₹ 10.328/\text{Share}}}$.

LOS 13 : Market Value Added (MVA)From Equity Point of View

$$\text{MVA} = \left[\begin{array}{l} \text{Value of Equity} - \text{Value of the Equity} \\ \text{as per market as per Books of A/c's} \end{array} \right] \text{ for equity shareholders}$$

$$= \text{MPS} \times \text{No. of Equity share} - \text{Equity Shareholder's Fund.}$$

Note:

	Equity share capital
Add	Reserve & Surplus
Less	P/L (Dr. Balance)
	Preliminary Expenses
	Miscellaneous Expenditure

From Overall company's Point of View

$$\text{MVA} = \text{Value of the company based on Free Cash Flows} - \text{Total Capital Employed}$$

Note: Total Capital Employed

	Equity share capital
Add	Preference share capital
	Reserve & Surplus
	Debenture/Bonds
	Long-Term Loan
Less	P/L (Dr. Balance)
	Preliminary Expenses
	Miscellaneous Expenditure

QUESTION NO. 11C

Following is the information of M/s. DY Ltd. for the year ending 31/03/2021:

Particulars	
Sales	₹ 1000 Lakh
Operating Expenses Including Interest	₹ 620 Lakh
8% Debentures	₹ 250 Lakh
Equity Share Capital (Face value of ₹ 10 each)	₹ 250 Lakh
Reserves and Surplus	₹ 250 Lakh
Market Value of DY Ltd	₹ 900 Lakh
Corporate Tax Rate	30%
Risk free Rate of Return	7%
Market Rate of Return	12%
Equity Beta	1.4

You are required to-

- Calculate Weighted Average Cost of Capital of DY Ltd.
- Calculate Economic Value Added
- Calculate Market Value Added

Solution :

0.11 C (8 marks)

(i) Cal. of WACC:-

W.No:- Cal. of K_e :-

$$K_e = K_f + d [K_m - K_f]$$

$$\Rightarrow 7\% + 1.40 [12\% - 7\%]$$

$$\Rightarrow \underline{14\%}$$

(ii) $K_d = \text{Interest} (1 - \text{tax})$

$$\Rightarrow 8\% (1 - .30) \Rightarrow \underline{5.6\%}$$

(iii) Value of Eq. $\Rightarrow \text{ESC} + \text{L48}$
 $= 250 + 250$
 $\Rightarrow 500 \text{ Lakhs}$

Value of Debt $\Rightarrow \underline{250 \text{ Lakhs}}$
 $\underline{750 \text{ Debt}}$

(i) $\text{WACC} \Rightarrow K_e W_e + K_d W_d$

$$\Rightarrow 14\% \times \frac{500}{750} + 5.6\% \times \frac{250}{750}$$

$$\Rightarrow \underline{11.2\%}$$

(ii) EVA:- $\text{NOFAT} - K_o \times \text{Capital Invested}$

$$\Rightarrow 280 \text{ Lakhs} - 11.2\% \times 750 \text{ Lakhs}$$

$$\Rightarrow 280 - 84 \Rightarrow \underline{\underline{196 \text{ Lakhs}}}$$

W.No:- Cal. of NOFAT
 $\underline{\underline{196 \text{ Lakhs}}}$

Sales	1000
(-) Operating Expenses Excluding Int'l.	600
(600 - 8% of 200)	
(600 - 20)	

EBIT	400
(-) Tax @ 30%	120
NPAT	<u>280 Lakhs</u>

(iii) MVA [From over-all Co. point of view] :-

MV of DY L/E	900 Lakhs
(-) Capital Employed	750 Lakhs
MVA	<u>₹ 150 Lakhs</u>

LOS 14 : Determination of Correct Value of the Firm

QUESTION NO. 12A

Suppose you are verifying a valuation done on an established company by a well-known analyst has estimated a value of ₹ 750 Lakhs, based upon the expected free cash flow next year, of ₹ 30 Lakhs, and with an expected growth rate of 5%. You found that, he has made the mistake of using the book values of debt and equity in his calculation. While you do not know the book value weights he used, you have been provided following information:

- Company has a cost of equity of 12%.
- After-tax cost of debt of 6%.
- The market value of equity is three times the book value of equity, while the market value of debt is equal to the book value of debt. You are required to estimate the correct value of company.

Solution:

$$D.R. \Rightarrow K_0 \Rightarrow \frac{0.12A}{K_e w_e + K_d w_d}$$

W.No.1 Cal. of Wrong K_0 :-

$$V_F \Rightarrow CF_1$$

$$K_0 - 8$$

$$75 \text{ lakhs} \Rightarrow 30 \text{ lakhs}$$

$$K_0 - 0.5$$

$$K_0 \Rightarrow 9\% \text{ p.a.}$$

W.No.2 Cal. of Wrong Weights:-

$$K_0 \Rightarrow K_e w_e + K_d w_d$$

$$9\% \Rightarrow 12\% \times x + 6\% \times (1-x)$$

$$0.09 \Rightarrow 0.12x + 0.06 - 0.06x$$

$$0.03 \Rightarrow 0.06x$$

$$x \Rightarrow \frac{0.03}{0.06} \Rightarrow 0.50$$

$$w_e \Rightarrow x \Rightarrow 0.50$$

$$W_D \Rightarrow 1 - W_E \Rightarrow 1 - 0.50 \Rightarrow \underline{\underline{0.50}}$$

Wrong weights $\left[\begin{array}{l} W_E = 0.50 \\ W_D = \frac{0.50}{1} \end{array} \right]$ Book Value weights

W.No: 3 Cal. of Correct weights:-

$$\text{Book Value of Equity} = 0.50$$

$$\text{MV weights of Equity} = 3 \times 0.50 \\ \Rightarrow 1.50$$

$$\text{Book Value of Debt} = \text{MV of Debt} \\ = \underline{\underline{0.50}}$$

$$\text{MV weights of Eq.} = 1.50 \checkmark \\ \text{MV weights of Debt} = \underline{\underline{0.50}}$$

$$\text{Weight of eq.} \Rightarrow \frac{1.50}{2} \Rightarrow \underline{\underline{0.75}} \checkmark \\ \text{Weight of Debt} = \frac{0.50}{2} = \underline{\underline{0.25}}$$

W.No: 4:- Cal. of Correct K_0 :-

$$K_0 = K_E W_E + K_D W_D$$

$$\Rightarrow 12\% \times 0.75 + 6\% \times 0.25$$

$$\Rightarrow \underline{\underline{10.5\%}}$$

Final Answer:-

Correct Value of the firm:-

$$V_F = \frac{CF_1}{K_D - g_c}$$

$$\Rightarrow \frac{30 \text{ lakhs}}{.105 - .05}$$

$$V_F \Rightarrow \text{₹ } 545.45 \text{ lakhs}$$

LOS 15 : Calculation of Value of Equity**QUESTION NO. 13A**

Capital structure of Sun Ltd., as at 31.3.2003 was as under: (₹ in Lacs)

Equity share capital	80
8% Preference share capital	40
12% Debentures	64
Reserves	32

Sun Ltd., earns a profit of ₹ 32 Lacs annually on an average before deduction of income-tax, which works out to 35%, and interest on debentures.

Normal return on equity shares of companies similarly placed is 9.6% provided:

- Profit after tax covers fixed interest and fixed dividends at least 3 times.
- Capital gearing ratio is 0.75.
- Yield on share is calculated at 50% of profits distributed and at 5% on undistributed profits.

Sun Ltd., has been regularly paying equity dividend of 8%.

Compute the value per equity share of the company, taken

- 1% for every one time of difference for Interest and Fixed Dividend Coverage Ratio,
- 2% for every one time of difference for Capital Gearing Ratio.

Solution :

Q.13A

W.No.1 Calculation of Distributed & Un-distributed profits:-

EBIT	32,00,000
less: Interest on Deb. (12% x 64,00,000)	7,68,000
EBT	24,32,000
less: Tax @ 25%	6,08,000
PAT	18,24,000
less: Pref. Dividend (40,00,000 x 8%)	3,20,000
EFPE	15,04,000

less: Equity Dividend
 $(80,00,000 \times 8\%)$ 6,40,000 50%

Retained Earnings 6,80,800 25%

W.No:-2 Cal. of Yield per Share:-

Assume FV of share = ₹100

No of Shares $\Rightarrow \frac{80,00,000}{100}$
 $\Rightarrow 80,000$ Shares

Yield $\Rightarrow$ 50% of Distributed profits

+
 5% of Undistributed profits
 $\Rightarrow 6,40,000 \times 50\%$

+
 $6,80,800 \times 5\%$

Yield $\Rightarrow 3,20,000 + 31040$
 $\Rightarrow$ 3,51,040

Yield per share $\Rightarrow \frac{3,51,040}{80,000} \Rightarrow$ 4.39/Share

W.No:-3:- Cal. of Preference Dividend & Interest Coverage ratio:-

ICR $\Rightarrow \frac{EBIT}{\text{Interest}}$

Pref. Div. Coverage Ratio $\Rightarrow \frac{PAT}{\text{Pref. Dividend}}$

Prof. Div. + Int. Coverage Ratio:-

$$\Rightarrow \frac{\text{PAT} + \text{Interest}}{\text{Prof. Dividend} + \text{Interest}}$$

$$\Rightarrow \frac{15,80,800 + 7,68,000}{3,20,000 + 7,68,000}$$

$$\Rightarrow \frac{23,48,800}{10,88,000} \Rightarrow \underline{\underline{2.16 \text{ times}}}$$

W.No. 4:- Cal. of Capital Gearing Ratio:-

$$\Rightarrow \frac{\text{Fixed bearing funds}}{\text{Variable Income funds}}$$

$$\Rightarrow \frac{\text{Prof. Share Capital} + \text{Debentures}}{\text{Equity Share Capital} + \text{R.F.S}}$$

$$\Rightarrow \frac{40 \text{ lakhs} + 64 \text{ lakhs}}{80 \text{ lakhs} + 32 \text{ lakhs}}$$

$$\Rightarrow \underline{\underline{0.93 \text{ times}}}$$

Calculation of Discount Rate / K_e :-

$$\text{Normal rate of return} = 9.6\%$$

(+) Risk Premium:-(i) For low Prof. + Int. Coverage $\Rightarrow 0.84\%$

$$\text{Ratio:- } [3 - 2.16] \times 1\%$$

(ii) For high C.G.R.:- $\Rightarrow 0.36\%$

$$[0.93 - 0.75] \times 2\%$$

$$\begin{array}{l}
 \text{Ke/DR} \quad \underline{\underline{10.80\%}} \\
 \text{Final Answer:-} \\
 \underline{\underline{\text{Value of Equity per Share:-}}} \\
 \Rightarrow \frac{4.39}{.1080} \text{ -----} \\
 \Rightarrow \underline{\underline{\text{₹ 40.65/Share}}} \checkmark
 \end{array}$$

QUESTION NO. 13C

The directors of Implant Inc. wishes to make an equity issue to finance a \$10 m (million) expansion scheme which has an expected Net Present Value of \$2.2m and to re-finance an existing \$6 m 15% Bonds due for maturity in 5 years' time. For early redemption of these bonds there is a \$3,50,000 penalty charges. The Co. has also obtained approval to suspend these pre-emptive rights and make a \$15 m placement of shares which will be at a price of \$0.5 per share. The floatation cost of issue will be 4% of Gross proceeds. Any surplus funds from issue will be invested in IDRs which is currently yielding 10% per year.

The Present capital structure of Co. is as under:

	'000
Ordinary Share (\$1 per share)	7,000
Share Premium	10,500
Free Reserves	25,500
	43,000
15% Term Bonds	6,000
11% Debenture (2012-2020)	8,000
	57,000

Current share price is \$2 per share and debenture price is \$ 103 per debenture. Cost of capital of Co. is 10%. It may be further presumed that stock market is semi-strong form efficient and no information about the proposed use of funds from the issue has been made available to the public. You are required to calculate expected share price of company once full details of the placement and to which the finance is to be put, are announced.

Solution:

Q.13c

In Semi-strong form of stock market, the share price should accurately reflect new relevant information when it is made publicly available including Implant Inc. expansion scheme & redemption of bonds.

W.No.1 Cal. of Net Savings due to early redemption of bonds:-

1) Total Outflow due to redemption of bonds:-

$$\$60,00,000 + \$3,50,000$$

$$\Rightarrow \$63,50,000$$

2) Savings due to Early redemption:-

$$\begin{array}{c} | \quad | \quad | \quad | \quad | \\ 9 \quad 9 \quad 9 \quad 9 \quad 9+60 \\ \frac{1}{(1+10)^1} + \frac{1}{(1+10)^2} + \frac{1}{(1+10)^3} + \frac{1}{(1+10)^4} + \frac{1}{(1+10)^5} \end{array}$$

$$\Rightarrow \$9,00,000 \text{ [PVAF @ 10%, 5 years]} \\ + \quad 3.791$$

$$\$60,00,000 \text{ [PV @ 10%, 5th year]} \\ 0.681$$

$$\Rightarrow \$71,37,900$$

$$\text{Net Savings} \Rightarrow \$71,37,900 - \$63,50,000 \\ \Rightarrow \$7,87,900$$

Final Answer:-

1) Value of Existing Equity \$140,00,000

$$\left[\frac{70,00,000}{\$1} \right] \times \$2$$

$$2) \text{ Value of New Equity:- } \$144,00,000$$

$$\left[\$150,00,000 - 4\% \right]$$

$$3) \text{ Expected NPV from New Project } \$28,00,000$$

$$4) \text{ Net Savings due to early redemption (Cw.No-1) } \$787,900$$

$$\text{Value of Expected Eq. } \$313,87,900$$

$$\div \frac{\text{No. of eq. shares:-}}{\text{Entity } 70,00,000 \text{ shares}} = \frac{313,87,900}{70,00,000 \text{ shares}}$$

$$\text{New } \left[\frac{150,00,000}{.50} \right]$$

$$= 300,00,000 \text{ shares}$$

$$\text{Expected share price/share } \$0.848 / \text{share}$$

Los 16: Chop-Shop Method

✚ This approach attempts to identify multi-industry companies that are undervalued and would have more value if separated from each other. In other words as per this approach an attempt is made to buy assets below their replacement value.

This approach involves following three steps:

- Step 1:** Identify the firm's various business segments and calculate the average capitalization ratios for firms in those industries.
- Step 2:** Calculate a "theoretical" market value based upon each of the average capitalization ratios.
- Step 3:** Average the "theoretical" market values to determine the "chop-shop" value of the firm.

Example:

Capital/ Sales Ratio = 0.75
 Sales = 15,00,000
 Calculate Capitalized Value?

Solution:

$$\frac{\text{Capital}}{\text{Sales}} = 0.75$$

$$\text{Capitalized Value} = \text{Sales} \times 0.75$$

$$= 15,00,000 \times 0.75 \Rightarrow 11,25,000$$

QUESTION NO. 14

Using the chop-shop approach (or Break-up value approach), assign a value for Cornett GMBH. Whose stock is currently trading at a total market price of €4 million. For Cornett, the accounting data set forth three business segments: consumer wholesaling, specialty services, and assorted centres Data for the firm's three segments are as follows:

BUSINESS SEGMENT	Segment Sales	Segment Assets	Segment Income
Consumer Wholesaling	€ 1,500,000	€ 750,000	€ 100,000
Specialty services	€ 800,000	€ 700,000	€ 150,000
Assorted centres	€ 2,000,000	€ 3,000,000	€ 600,000

Industry data for "pure-play" firms have been compiled and are summarized as follows:

BUSINESS SEGMENT	Capitalization/Sales	Capitalization/Assets	Capitalization/Operating Income
Consumer wholesaling	0.75	0.60	10
Specialty services	1.10	0.90	7
Assorted centres	1.00	0.60	6

Solution :

Business Seg.	C/Sales	Sales	Capitalized Value
Consumer Wholesaling	0.75	€15,00,000	€11,25,000
Specialty Services	1.10	€8,00,000	€8,80,000
Assorted Centres	1.00	€20,00,000	€20,00,000
			<u>VA = €40,05,000</u>

Business Seg.	C/Asset	Assets	Capitalized Value
Consumer Whol.	0.60	€7,50,000	€4,50,000
Specialty Ser.	0.90	€7,00,000	€6,30,000
Assorted Centres	0.60	€30,00,000	€18,00,000
			<u>VA = €28,80,000</u>

<u>Business by.</u>	<u>40%</u>	<u>0%</u>	<u>Capitalized Val.</u>
Customer Whol.	10	€1,00,000	€10,00,000
Specialty Serv.	7	€1,50,000	€10,50,000
Assorted Comd.	6	€6,00,000	€36,00,000
			<u>VA</u> €56,50,000

Chop-shop Value / Break-up Value:-

⇒ Average Value

⇒ €40,05,000 + €28,80,000
+ €56,50,000

3

⇒ €41,78,333