Business Valuation [8 Marks]

PART I EVA & MVA

PART II Valuation of Business

PART III Gearing of Beta

PART I Economic Value added

EVA means Surplus after providing Cost to Capital providers

Step 1 Calculate Net operating profit after tax (NOPAT)

EBIT	xx
(-) Tax	xx
NOPAT	xxx

Or NOPAT = EBIT(1-t)

Step 2 Calculate EVA

EVA = NOPAT - Invested Capital x WACC

Example – 01

ESC (50,000 share @ 10) = ₹ 5,00,000

12 % PSC = ₹ 3,00,000

10% debentures = ₹ 2,00,000

EBIT = ₹ 2,40,000

Tax = 30%

R_f = 6%

R_m = 11%

Beta = 1.25

Calculate Economic Value Added.

(Page No. 01)

1 Calculate NOPAT

$$NOPAT = EBIT(1-t)$$
$$= 240000(1-0.30)$$
$$= ₹\ 168000$$

2. WACC

$$Ke = Rf + \beta(Rm-Rf)$$
$$= 6 + 1.25(11-6) = 12.25\%$$

$$Kd = I(1-t) = 10(1-0.3) = 7\%$$

$$WACC = \frac{(500000 \times 12.25) + (300000 \times 12) + (200000 \times 7)}{1000000}$$

$$= 11.125\%$$

3 EVA

EVA = NOPAT − Invested Capital × WACC

= ₹ 168000 − (1000000 × 11.125%)

= ₹ 56750

QUESTION – 01

Delta Ltd.'s current financial year's income statement reports its net income as ₹ 15,00,000. Delta's marginal tax rate is 40% and its interest expense for the year was ₹ 15,00,000. The company has ₹ 1,00,00,000 of invested capital, of which 60% is debt. In addition, Delta Ltd. tries to maintain a Weighted Average Cost of Capital (WACC) of 12.6%.

(i) Compute the operating income or EBIT earned by Delta Ltd. in the current year.

(ii) What is Delta Ltd.'s Economic Value Added (EVA) for the current year?

(iii) Delta Ltd. has 2,50,000 equity shares outstanding. According to the EVA you computed in (ii), how much can Delta pay in dividend per share before the value of the company would start to decrease? If Delta does not pay any dividends, what would you expect to happen to the value of the company?

(Study Material & PM)

(Page No. 01)

① EBIT

$$(EBIT - Int)(1-t) = PAT$$

$$(x - 1500000)(1-0.40) = 1500000$$

$$x = \frac{1500000}{0.60} + 1500000$$

$$= ₹ 4000000$$

② EVA

$$EVA = EBIT(1-t) - Invested\ Capital \times WACC$$

$$= 4000000(1-0.40) - (10000000 \times 12.6\%)$$

$$= 2400000 - 1260000 = ₹ 1140000$$

24%

(iii) EVA Dividend

$$\text{EVA dividend} = \frac{₹1140000}{250000} = ₹4.56$$

Since Expected Return (24%) is more than WACC (12.6%), then Company should not pay divident. If delta does not pay dividend Value of firm will increase

QUESTION – 02

The following data pertains to XYZ Inc. engaged in software consultancy business as on 31 December 2010.

($ Million)

Income from consultancy	935.00
EBIT	180.00
Less: Interest on Loan	18.00
EBT	162.00
Tax @ 35%	56.70
	105.30

Balance Sheet

($ Million)

Liabilities	Amount	Assets		Amount
Equity Stock (10 million share @ $ 10 each)	100	Land and Building		200
		Computers &Software's		295
Reserves & Surplus	325			
Loans	180	Current Assets:		
Current Liabilities	180	Debtors	150	
		Bank	100	
		Cash	40	290
	785			785

With the above information and following assumption you are required to compute

1 EVA

NOPAT = EBIT(1-t)

= $180(1-0.35) = $117

C|E = $100 + $325 + $180

= $605

EVA = NOPAT - C|E x WACC

= $117 - $605 x 12%

= $44.40 Millions

(a) Economic Value Added

(b) Market Value Added.

Assuming that:

(i) WACC is 12%.

(ii) The share of company currently quoted at $ 50 each

(Study Material & PM)

(Page No. 02)

MVA = M.V. of c/E - B.V. of c/E

= $680 - $605

= $75 m

(ii) MVA

Method I

$$MVA = \frac{EVA}{WACC} = \frac{\$44.40}{12\%} = \$370M$$

Method II (ICAI)

	B.V.	M.V.
ESC	$100	$500 (10m × $50)
RFS	$325	–
Loan	$180	$180
	$605	$680

QUESTION – 03

Herbal Gyan is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. This is not a high-tech business, but Herbal'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 Herbal has been offered ₹ 40 lakhs for the patent rights. Herbal'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 Herbal's cost of capital is 15 percent. What is its Economic Value Added (EVA)?

(Study Material & PM)

(Page No. 04)

EVA

Invested Capital

$(80 + 20 + 40) = 140$ lakh

$EVA = 12 - (140 \times 15\%)$

$= 9$ L

QUESTION – 04

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. Market 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.

(SM, PM & Exam May – 2018)

(Page No. 05)

EVA

NOPAT = ₹ 84 Cr.

Invested Capital

NW = 200 + 100 = 300

Loan = 400

700

K_e = 12% K_d = 10%

$$WACC = \frac{(300 \times 12) + (400 \times 10)}{700} = 10.85\%$$

EVA = 84 − 700 × 10.85%

= 8.05 Cr.

QUESTION – 05

The following information is given for 3 companies that are identical except for their capital structure:

	Orange	Grape	Apple
Total invested capital	1,00,000	1,00,000	1,00,000
Debt/assets ratio	0.8	0.5	0.2
Shares outstanding	6,100	8,300	10,000
Pre tax cost of debt	16%	13%	15%
Cost of equity	26%	22%	20%
Operating Income (EBIT)	25,000	25,000	25,000

The tax rate is uniform 35% in all cases.

(i) Compute the Weighted average cost of capital for each company.

(ii) Compute the Economic Valued Added (EVA) for each company.

(iii) Based on the EVA, which company would be considered for best investment? Give reasons.

(iv) If the industry PE ratio is 11x, estimate the price for the share of each company.

(v) Calculate the estimated market capitalization for each of the Companies.

(SM, PM & MTP April - 2022) (Page No. 06)

① WACC

	O	G	A
Invested Capital	100000	100000	100000
Debt	80000	50000	20000
$K_d = I(1-t)$	10.4%	8.45%	9.75%
Equity	20000	50000	80000
K_e	26%	22%	20%
WACC	13.52%	15.225%	17.95%

② EVA

EVA = EBIT(1-t) - Invested Cap. x WACC

Orange = 25000(1-0.35) - 100000 x 13.52% = 2730

Grape = 25000(1-0.35) - 100000 x 15.225% = 1025

Apple = 25000(1-0.35) - 100000 x 17.95% = -1700

③ On the basis of EVA, Company orange will be considered for best Investment due to the highest EVA & lowest WACC .

④ Estimated MPS

	O	G	A
EBIT	25000	25000	25000
(-) Int	12800	6500	3000
EBT	12200	18500	22000
(-) Tax @ 35%	4270	6475	7700
EAT	7930	12025	14300
÷ No. of shares	6100	8300	10000
EPS	1.30	1.45	1.43
(x) P/E	11	11	11
MPS	14.30	15.95	15.73

(v) Market Cap

O = 6100 × 14.30
= ₹ 87230

G = 8300 × 15.95
= ₹ 132385

A = 10000 × 15.73
= ₹ 157300

QUESTION – 06

Tender Ltd has earned a net profit of ₹ 15 lacs after tax at 30%. Interest cost charged by financial institutions was ₹ 10 lacs. The invested capital is ₹ 95 lacs of which 55% is debt. The company maintains a weighted average cost of capital of 13%.

Required:

(a) Compute the operating income.

(b) Compute the Economic Value Added (EVA).

(c) Tender Ltd. has 6 lac equity shares outstanding. How much dividend can the company pay before the value of the entity starts declining?

(Study Material & PM)

(Page No. 07)

QUESTION – 07

With the help of the following information of Jatayu Limited compute the Economic Value Added:

Capital Structure	Equity capital	₹ 160 Lakhs
	Reserves and Surplus	₹140lakhs
	10% Debentures	₹ 400 lakhs
Cost of equity	14%	
Financial Leverage	1.5 times	
Income Tax Rate	30%	

(Study Material & PM)

(Page No. 08)

NOPAT

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

$$1.5 = \frac{EBIT}{EBIT - 40}$$

$$1.5\,EBIT - 60 = EBIT$$

$$0.5\,EBIT = 60$$

$$EBIT = \frac{60}{0.5} = 120$$

WACC

$K_d = I(1-t)$

$= 10(1-0.30) = 7\%$

$$WACC = \frac{(300 \times 14) + (400 \times 7)}{700}$$

$= 10\%$

EVA = EBIT(1-t) - CE x WACC

$= 120(1-0.30) - 700 \times 10\%$

$= ₹\ 14$ lakhs

QUESTION – 08

Compute Economic Value Added (EVA) of Good luck Ltd. from the following information:

Profit & Loss Statement

Particulars	(₹ in Lakh)
(a) Income –	
Revenue from Operations	2000
(b)Expenses –	
Direct Expenses	800
Indirect Expenses	400
(c) Profit before interest & tax (a – b)	800
(d) Interest	30
(e) Profit before tax (c – d)	770
(f) Tax	231
(g) Profit after tax (e – f)	539

Balance Sheet

Particulars	(₹ in Lakh)
Equity and Liabilities :	
(a) Shareholder's Fund –	
Equity Share Capital	1000
Reserve and Surplus	600

WACC

$K_d = I(1-t)$

$= 15(1-0.30) = 10.5\%$

$$WACC = \frac{(1600 \times 12) + (200 \times 10.5)}{1800}$$

$= 11.83\%$

NOPAT

EBIT	800
(–) Tax	231
(+) provision	40
NOPAT =	₹609 L

(b) Non- Current Liabilities –	
Long Term Borrowings	200
(c) Current Liabilities	800
Total	**2600**
Assets :	
(a) Non - Current Assets	2000
(b) Current Assets	600
Total	**2600**

Other Information:

(1) Cost of Debts is 15%.

(2) Cost of Equity (i.e. shareholders' expected return) is 12%.

(3) Tax Rate is 30%.

(4) Bad Debts Provision of ₹ 40 lakhs is included in indirect expenses and ₹ 40 lakhs reduced from receivables in current assets.

(Exam May – 2019)

(Page No. 09)

EVA = NOPAT - Invested Capital × WACC

= ₹609 - (1840 × 11.83%)

= ₹391.33 Lakhs

Invested Capital

Equity	1600 + provision 40
Debt	200
	1840

QUESTION – 09

Herbal Box is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. Though it is not a high-tech business, yet Herbal's earnings have averaged around ₹ 18.50 lakhs after tax, mainly on the strength of its patented beauty cream to remove the pimples.

The patent has nine years to run, and Herbal Box has been offered ₹ 50 lakhs for the patent rights. Herbal's assets include ₹ 50 lakhs of property, plant and equipment, and ₹ 25 lakhs of working capital. However, the patent is not shown on the books of Herbal Box. Assuming Herbal's cost of capital being 14 percent, calculate its Economic Value Added (EVA).

(Exam November - 2018, 2020 & RTP May-2022)

(Page No. 11)

QUESTION – 11

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

i. Calculate Weighted Average Cost of Capital of DY Ltd.

ii. Calculate Economic Value Added

iii. Calculate Market Value Added

(Exam December – 2021) (Page No. 13)

1 WACC

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

$$= 7 + (12-7)1.4 = 14\%$$

$$Kd = I(1-t)$$

$$= 8(1-0.30) = 5.6\%$$

$$WACC = \frac{(500 \times 14) + (250 \times 5.6)}{750}$$

$$= 11.2\%$$

(ii) EVA

Sales =	₹ 1000 L
(-) operating Exp = [620 - 20]	₹ 600 L
EBIT	400
(-) Tax @ 30%	120
NOPAT	280

EVA = NOPAT - C/E x WACC
= 280 - 750 x 11.2%
= 196 Lakhs

(iii) MVA

MVA = M.V. of E - B.V. of E
= 900 - 750
= ₹ 150 L

PART II Valuation of firm

(I) Asset Based Valuation

1. Net Asset Method (Book Value Method)
   V_B = Asset - liabilities [B.V.]
2. Realisable Value Method
   V_f = Asset - liab. [M.V.]
3. Replacement Method
   V_R = A - L (Replacement Value)

(II) Earnings Based Valuation

(1.) price Earning Model

V_B = Earnings × P/E Ratio

(2.) Earning Capitalization Method

$$V_B = \frac{\text{Earnings}}{K_o}$$

(III) Cash Flows Based Valuation

- FCFF Model

3 Most Imp

Free Cash flows for Firm

- In Capital Budgeting Cash flows are Calculated as under

Sales	xxx
(-) operating Exp Excluding Dep	xxx
EBITDA	xxx
(-) Dep	xx
EBIT	xxx
(-) Tax	xxx
NOPAT	xxx
(+) Dep	xxy
CFAT	xxx

CFF

FCFF

CFAT	xxx
(-) Capital Expenditure	xxx
(-) Change in Working Capital	xxx
FCFF	xxx

Discounting with WACC = Vf

$V_E = V_f - V_D$

FCFE

(Free Cash flows for Equity)

EBIT	xxx
(-) Int	xxx
EBT	xxx
(-) Tax	xxx
PAT	xxx
(+) Dep	xxy
CFAT	xxy
(-) CE	(only Equity portion)
(-) ΔWC	
FCFE	xxx

Disc. with K_e = V_E

Example – 02

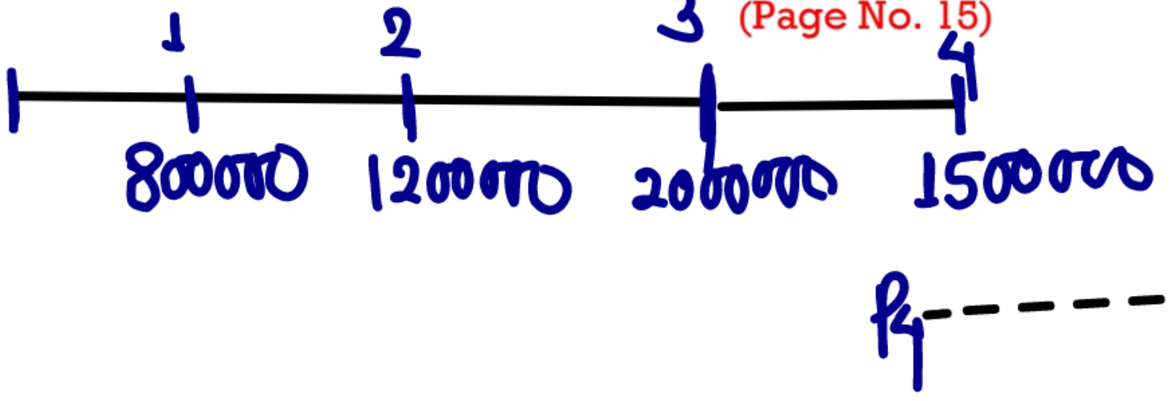
Calculate Value of Business

Free Cash For Firm (FCFF)

Year 1	8,00,000
Year 2	12,00,000
Year 3	20,00,000

FCFF at the end of 4th years = 15,00,000 P.9

Ko = 12% g = 4% p.a. after 4 years.



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Terminal Value

$$TV_4 = \frac{FCFF_5}{Ko - g}$$

$$= \frac{1500000(1.04)}{0.12 - 0.04}$$

$$= ₹\ 1950000$$

$$V_F = \frac{800000}{(1.12)^1} + \frac{1200000}{(1.12)^2} + \frac{2000000}{(1.12)^3} + \frac{1500000}{(1.12)^4} + \frac{19500000}{(1.12)^4}$$

$$= 12797381$$

Example – 03

Sales 25,00,000 p.a.

VC @ 30%

Fixed Cost = 2,00,000 p.a.

(Excluding depreciation)

Depreciation = ₹ 1,25,000 p.a.

Interest = 1,12,000

Tax = 30%

Calculate FCFF.

Capital Exp = 180000

ΔWC = 32000

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FCFF

NOPAT	99750
(-) [C.E - Dep]	55000
[180000 - 125000]	
(-) ΔWC	32000
fcff	910500

FCFF

Sales =	2500000
(-) operating Cost (750000 + 200000)	950000
EBITDA	1550000
(-) Dep	125000
EBIT	1425000
(-) Tax @ 30%	427500
NOPAT	997500
(+) Dep	125000
CFAT	1122500
(-) CE	180000
(-) ΔWC	32000
fcff	910500

Example – 04

EBIT = ₹ 3,00,000

Tax = 40%

Capital Expenditure = 75,000

Depreciation = 75,000

Change in working capital = 0

Calculate FCFF.

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If C.E = Dep means C.E. offsets Dep.

FCFF

EBIT	300000
(-) Tax @ 40%	120000
NOPAT / FCFF	180000

Example – 05

Base Year

Sales = ₹ 5,00,000

Operating Expenditure = ₹ 1,25,000 (Including Depreciation)

Tax = 30%

Capital Expenditure = 1,45,000

Depreciation = 30,000

Sales & operating expenditure will grow by 15% in next 3 years & there after 10% p.a. perpetual.

Capital Expenditure net of depreciation will grow by 15% in next 3 years & from 4th year capital expenditure is equal to depreciation.

Working Capital should be 10% of sales

Ko = 15%

Calculated (1) Value of Firm

(2) [redacted]

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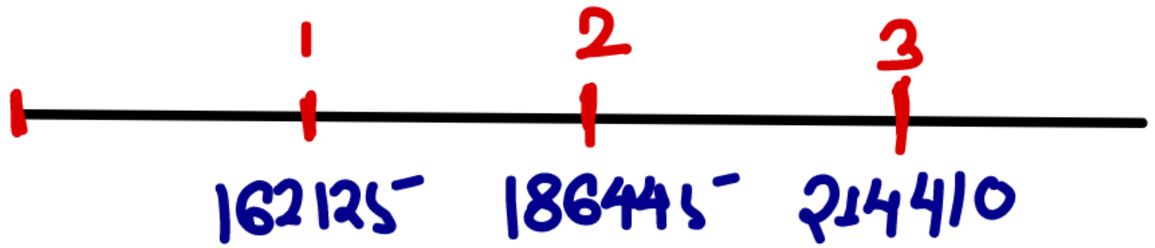
Calculation of FCFF

	1	2	3	4
Sale (500000)	575000	661250	760438	836481
(-) operating Cost (125000)	143750	165312	190109	209120
EBIT (37500)	431250	495938	570329	627361
(-) Tax @ 30%	131175	148781	171099	188208
NOPAT	301875	347157	399230	439153
(-) [C.E - Dep] (15000)	132250	152087	174901	–
(-) ΔWC (W.N.1)	7500	8625	9919	7604
FCFF	162125	186445	214410	431549

W.N.1 change in Working Capital

	0	1	2	3	4
Sales	500000	575000	661250	760438	836481
WC maintain @ 10%	50000	57500	66125	76044	83648
Δ in WC	–	7500	8625	9919	7604



$$V_f = \frac{162125}{(1.15)^1} + \frac{186445}{(1.15)^2} + \frac{214410}{(1.15)^3} + \frac{8630820}{(1.15)^3}$$

$$= ₹60977840$$

$$TV_3 = \frac{FCFF_4}{k_o - g}$$

$$TV_3 = \frac{431541}{0.15 - 0.10} = 8630820$$

QUESTION – 15

Following information 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

W.N. 1 WACC (Ko)

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

$Kd = I(1-t)$

High Growth

$Ke = 10 + 6 \times 1.15 = 16.9\%$

$Kd = 13(1-0.30) = 9.1\%$

$WACC = (16.9 \times 0.5) + (9.1 \times 0.5) = 13\%$

Stable Growth

$Ke = 9 + 5 \times 1 = 14\%$

$Kd = 12.86(1-0.30) = 9\%$

$WACC = (14 \times 0.6) + (9 \times 0.4) = 12\%$

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?

(SM & MTP March – 2022)

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FCFF (Cr.)

	1	2	3	4	Terminal YEAR
EBIT (300)	360	432	518.40	622.08	684.29
(-) Tax @ 30%	108	129.60	155.52	186.62	205.29
NOPAT	252	302.40	362.88	435.46	479.00
(-) [C.E - Dep] (80)	96	115.20	138.24	165.89	—
(-) Δ WC (W.N.2)	100	120	144	172.80	103.68
FCFF	56	67.20	80.64	96.77	375.32

10%

$$T.V_4 = \frac{FCFF_5}{K_0 - g}$$

$$= \frac{375.32}{0.12 - 0.10} = ₹\ 18766\ Cr.$$

W.N.2 Δ WC

	0	1	2	3	4	T. YEAR
Revenue	2000	2400	2880	3456	4147.20	4561.92
WC @ 25%	500	600	720	864	1036.80	1140.48
Δ WC	–	100	120	144	172.80	103.68

Value of Firm (Cr.)

YEAR	CF	PVF(13%)	PV.
1	56.00	0.885	49.56
2	67.20	0.783	52.62
3	80.64	0.693	55.88
4	96.77	0.613	59.32
4	18761	0.613	11503.56
		Vf	₹ 11720.94 Cr.

QUESTION – 16

Following information is available pertaining to ABC Ltd. which is expected to grow at a higher rate for 3 years after which growth rate will stabilize at a lower level.

Base year information is –

Revenues	EBIT (After Depreciation)	Capital Expenditure	Depreciation
₹ 1,000 Cr.	₹ 150 Cr.	₹ 140 Cr.	₹ 100 Cr.

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

Stable Growth

Particulars	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	1.00
Market Risk Premium	6%	5%
Pre Tax cost of Debt	13%	12.86%0
Debt Equity Ratio	1:1	2:3

Working capital is 25% of Revenue for all time.

Corporate Tax Rate is 30%.

You are requested to find out the value of ABC Ltd.

(Exam May-2022)

(Page No. 23)

QUESTION – 17

Following information is given in respect of WXY Ltd., which is expected to grow at a rate of 20% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, in perpetuity.

	For the year ended March 31, 2014
Revenues	₹ 7,500 Crores
Cost of Goods Sold (COGS)	₹ 3,000 Crores
Operating Expenses	₹ 2,250 Crores
Capital Expenditure	₹ 750 Crores
Depreciation (included in Operating Expenses)	₹ 600 Crores

During high growth period, revenues & Earnings before Interest & Tax (EBIT) will grow at 20% p.a. and capital expenditure net of depreciation will grow at 15% p.a. From year 4 onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth & normal growth period, net working capital requirement will be 25% of revenues.

The Weighted Average Cost of Capital (WACC) of WXY Ltd. is 15%.

Corporate Income Tax rate will be 30%.

Required:

Estimate the value of WXY Ltd. using Free Cash Flows to Firm (FCFF) &WACC methodology.

The PVIF @ 15 % for the three years are as below:

Year	t_1	t_2	t_3
PVIF	0.8696	0.7561	0.6575

(Study Material & PM)

(Page No. 25)

QUESTION – 18

Mantra Ltd. is planning to buy Alay Ltd. Following information is given is respect of Alay Ltd. which is expected to grow at a rate of 18% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, in perpetuity:

Particulars	For the year ended March 31, 2022
Revenues	₹ 6,800 Crores
Cost of Goods Sold (COGS)	₹ 2,800 Crores
Operating Expenses	₹ 2,100 Crores
Capital Expenditure	₹ 750 Crores
Depreciation (included in Operating Exp.)	₹ 600 Crores

During high growth period, Revenues & Earnings Before Interest & Tax (EBIT) will grow at 18% p.a. and capital expenditure net of depreciation will grow at 12% p.a. From 4th year onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth

& normal growth period, net working capital requirement will be 25% of revenues.

Corporate Income Tax rate is 30%.

The Weighted Average Cost of Capital (WACC) for both the companies is 15%.

You are required to estimate the value of Alay Ltd. using Free Cash Flows to Firm (FCFF) & WACC methodology.

The PVIF for the three years are as below:

Year	t1	t2	t3
PVIF @ 15%	0.870	0.756	0.658

(Exam Nov-2022)

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QUESTION – 32

ABC (India) Ltd., a market leader in printing industry, is planning to diversify into defense equipment businesses that have recently been partially opened up by the GOI for private sector. In the meanwhile, the CEO of the company wants to get his company valued by a leading consultants, as he is not satisfied with the current market price of his scrip.

He approached consultant with a request to take up valuation of his company with the following data for the year ended 2009:

Share Price	₹ 66 per share
Outstanding debt	1934 lakh
Number of outstanding shares	75 lakh
Net income (PAT)	17.2 lakh
EBIT	245 lakh
Interest expenses	218.125 lakh
Capital expenditure	234.4 lakh

1 WACC

$K_e = 16\%$

$K_d = I(1-t)$

$I = \frac{218.125}{1934} \times 100 = 11.28\%$

Tax Rate

EBIT	= 245
(-) Int	= 218.125
EBT	26.875

$Tax = \frac{26.875 - 17.20}{26.875} \times 100 = 36\%$

$K_d = 11.28(1-0.36) = 7.22\%$

Depreciation	234.4 lakh
Working capital	44 lakh
Growth rate 8% (from 2010 to 2014)	
Growth rate 6% (beyond 2014)	
Free cash flow	240.336 lakh (year 2014 onwards)

The capital expenditure is expected to be equally offset by depreciation in future and the debt is expected to decline by 30% in 2014.

Required:

Estimate the value of the company and ascertain whether the ruling market price is undervalued as felt by the CEO based on the foregoing data. Assume that the cost of equity is 16%, and 30% of debt repayment is made in the year 2014.

(Practice Manual)

(Page No. 50)

Equity ($₹66 \times 75L$) = ₹4950 Lakhs

Debt = ₹1934 Lakh

6884 Lakh

$$Ko = \frac{(16 \times 4950) + (7.22 \times 1934)}{6884}$$

$= 13.53\%$

FCFF

(₹ in Lakhs)

	2010	2011	2012	2013	2014
EBIT(1-t)(156.80)	169.344	182.892	197.523	213.325	230.391
(-) Change in WC (W.N.2)	3.52	3.802	4.106	4.434	4.788
(-) Repayment of debt (1934×30%)	-	-	-	-	580.20
FCFF	165.824	179.09	193.417	208.891	-354.597
PVf (13.53%)	0.881	0.776	0.683	0.602	0.530

PVCI = ₹354.99 Lakh

W.N.2 Working Capital

	2009	2010	2011	2012	2013	2014
WC	44	47.52	51.322	55.427	59.862	64.650
ΔWC	–	3.52	3.802	4.106	4.434	4.788

WACC after 2014

E = (66 × 75) = 4950

D = (1934 × 70%) = 1353.80

6303.80

$$K_0 = \frac{(16 \times 4950) + (7.22 \times 1353.80)}{6303.80}$$

= 14.11%

$$TV_5 = \frac{FCFF_6}{K_0 - g} = \frac{240.336}{0.1411 - 0.06}$$

= ₹2963.452

V_f = ₹354.99 + (2963.452 × 0.530)

= ₹1925.620 lakhs

$V_E = V_f - V_D$

= ₹1925.620 − (1934 × 70%)

= ₹571.82

Value per share : $\frac{₹571.82}{₹5}$

= ₹7.624 overpriced

QUESTION – 34

Calculate the value of share from the following information:

Profit after tax of the company	₹ 290 crores
Equity capital of company	₹ 1,300 crores
Par value of share	₹ 40 each
Debt ratio of company (Debt/ Debt + Equity)	27%
Long run growth rate of the company	8%
Beta 0.1; risk free interest rate	8.7%
Market returns	10.3%
Capital expenditure per share	₹ 47
Depreciation per share	₹ 39
Change in Working capital	₹ 3.45 per share

(RTP May – 2020)

(Page No. 57)

Value per Share

$$\text{No. of Shares} = \frac{1300 \text{ cr.}}{40} = 32.50 \text{ cr.}$$

$$\text{EPS} = \frac{290 \text{ cr.}}{32.50 \text{ cr.}} = ₹ 8.923$$

FCFE per share

EPS	₹ 8.923
(-) Net Capex $[47-39](1-0.27)$	₹ 5.84
(-) Δ WC $3.45(1-0.27)$	₹ 2.5185
FCFE per share	₹ 0.5695

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

$$= 8.70 + (10.3 - 8.70)\,0.1$$

$$= 8.86\%$$

$$P_0 = \frac{FCFE_1}{Ke - g}$$

$$= \frac{0.5645(1.08)}{0.0886 - 0.08}$$

$$= 270.89$$

QUESTION – 35

Calculate the value of share from the following information:

Profit of the Company (After Tax)	₹ 560 crores
Equity share capital of the Company	₹ 1,900 crores
Par value of share	₹ 50 each
Debt ratio (Debt/Debt + Equity)	43%
Long run growth rate of the Company	7%
Beta 0.1 (Risk free Interest rate)	9.5%
Market return	12.6%
Capital expenditure per share	₹ 53
Depreciation per share	₹ 45
Increase in working capital	₹ 4.62 per share

(Exam May-2022)

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QUESTION – 12

The valuation of Hansel Limited has been done by an investment analyst. Based on an expected free cash flow of ₹ 54 lakhs for the following year and an expected growth rate of 9 percent, the analyst has estimated the value of Hansel Limited to be ₹ 1800 lakhs. However, he committed a mistake of using the book values of debt and equity.

The book value weights employed by the analyst are not known, but you know that Hansel Limited has a cost of equity of 20 percent and post tax cost of debt of 10 percent. The value of equity is thrice its book value, whereas the market value of its debt is nine-tenths of its book value. What is the correct value of Hansel Ltd ?

(Study Material & PM)

(Page No. 17)

- Existing Cost of Capital (K_o)

$$V_f = \frac{FCFF_1}{K_o - g}$$

$$1800 = \frac{54}{K_o - 0.09}$$

$$K_o - 0.09 = \frac{54}{1800}$$

$K_o = 0.03 + 0.09 = 0.12$ i.e 12%

$(20 \times WA) + 10(1 - WA) = 12$

$20WA + 10 - 10WA = 12$

$10WA = 2$

$WA = 2/10 = 0.2$ $W_B = 0.8$

B.V. Weights : $W_E = 0.2$ $W_D = 0.8$

Market Value Weights

Market Value of Equity $(0.2 \times 3 \text{ times}) = 0.60$

Market Value of debt $(0.8 \times \frac{9}{10}) = 0.72$

$$K_o = \frac{(20 \times 0.60) + (10 \times 0.72)}{1.32} = 14.545\%$$

$$\frac{1.32}{}$$

or

$$W_E = \frac{0.60}{1.32} = 0.454 \quad W_D = \frac{0.72}{1.32} = 0.545$$

$$K_o = (20 \times 0.454) + (10 \times 0.545) = 14.54\%$$

Correct Value of firm

$$V_f = \frac{54}{0.1454 - 0.09}$$

$$= ₹\ 974.73 \text{ lakhs}$$

QUESTION – 13

An established company is going to be de merged in two separate entities. The valuation of the company is done by a well-known analyst. He has estimated a value of ₹ 5,000 lakhs, based on the expected free cash flow for next year of ₹ 200 lakhs and an expected growth rate of 5%. While going through the valuation procedure, it was found that the analyst 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 with the following information:

(i) The market value of equity is 4 times the book value of equity, while the market value of debt is equal to the book value of debt,

(ii) Company has a cost of equity of 12%,

(iii) After tax cost of debt is 6%.

You are required to advise the correct value of the company.

(Exam May – 2018) (Page No. 18)

QUESTION – 14

A valuation done of an established company by a well-known analyst has estimated a value of ₹ 500 lakhs, based on the expected free cash flow for next year of ₹ 20 lakhs and an expected growth rate of 5%.

While going through the valuation procedure, you found that the analyst 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 with the following information:

(i) Company has a cost of equity of 12%,

(ii) After tax cost of debt is 6%,

(iii) 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 the company.

(RTP May – 2020)

(Page No. 19)

QUESTION – 25

T Ltd. Recently made a profit of ₹ 50 crore and paid out ₹ 40 crore (slightly higher than the average paid in the industry to which it pertains). The average PE ratio of this industry is 9. As per Balance Sheet of T Ltd., the shareholder's fund is ₹ 225 crore and number of shares is 10 crore. In case company is liquidated, building would fetch ₹ 100 crore more than book value and stock would realize ₹ 25 crore less.

The other data for the industry is as follows:

Projected Dividend Growth	4%
Risk Free Rate of Return	6%
Market Rate of Return	11%
Average Dividend Yield	6%

The estimated beta of T Ltd. is 1.2. You are required to calculate value of T Ltd. using

PAT 50cr. Dividend 40cr.

P/E = 9

NW = 225cr. (BV)

Real 225
+100
−25
300 cr

(i) P/E Ratio 50×9 = 450 Cr.

(ii) Dividend Yield 40/6% = 666.667

(iii) Valuation as per:

(a) Dividend Growth Model 520 Cr.

(b) Book Value 225 Cr.

(c) Net Realizable Value 300 Cr.

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$\frac{40(1.04)}{0.12-0.04}$

H-W

[C.W COPY]

QUESTION – 22

Sun Ltd. recently made a profit of ₹ 200 crore and paid out ₹ 80 crore (slightly higher than the average paid in the industry to which it pertains). The average PE ratio of this industry is 9. The estimated beta of Sun Ltd. is 1.2. As per Balance Sheet of Sun Ltd., the shareholder's fund is ₹ 450 crore and number of shares is 10 crore. In case the company is liquidated, building would fetch ₹ 200 crore more than book value and stock would realize ₹ 50 crore less.

The other data for the industry is as follows:

Projected Dividend Growth	4%
Risk Free Rate of Return	6%
Market Rate of Return	11%

Calculate the valuation of Sun Ltd. using

(a) P/E Ratio

(b) Dividend Growth Model

(c) Book Value

(d) Net Realizable Value

(RTP May – 2021)

(Page No. 32)

QUESTION – 23

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 new 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

EBIT

NOPAT

Equity	12,000

If it adopts the new strategy, sales will grow at the rate of 20% per year for three years. From 4th year onward Cash Flow will be stabilized. The gross margin ratio, Assets turnover ratio, the Capital structure 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.

(Study Material, PM & RTP May - 2020)

(Page No. 33)

QUESTION – 23

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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

EBIT

PAT

1 Pre strategy Value of Business

$$V_B = \frac{PAT}{K_o} \quad \frac{1400}{15\%} = ₹9333$$

2. Post strategy Value of Business

	1	2	3	4
Fixed Asset (8000)	9600	11520	13824	13824
CA (4000)	4800	5760	6912	6912
	14400	17280	20736	20736
Equity (12000)	14400	17280	20736	20736

Calculation of FCFF

	1	2	3	4
NOPAT (1400)	1680	2016	2419.20	2419.20
(+) Dep.	800	960	1152	1382.40
(-) FA	2400	2880	3456	1382.40
(-) CA	800	960	1152	—
FCFF	-720	-864	-1036.80	2419.20

$$TV_3 = \frac{FCFF_4}{K_o} = \frac{2419.20}{15\%} = ₹\,16128$$

boost Strategy) $= (-720 \times 0.870) + (-864 \times 0.756)$

$+ (-1036.80 \times 0.658) + (16128 \times 0.658)$

$= ₹8650.42$

Value of strategy $= 8650.42 - 9333.33$

$(₹682.91)$

QUESTION – 24

(a) Following details are available for X Ltd.

Income Statement for the year ended 31st March, 2018

Particulars	Amount
Sales	40,000
Gross Profit	12,000
Administrative Expenses	6,000
Profit Before tax	6,000
Tax @ 30%	1,800
Profit After Tax	4,200

H·W
C·W

Balance sheet as on 31st March, 2018

Particulars	Amount
Fixed Assets	10,000
Current Assets	6,000
Total Assets	16,000
Equity Share Capital	15,000
Sundry Creditors	1,000
Total Liabilities	16,000

The Company is contemplating for new sales strategy as follows :

(i) Sales to grow at 30% per year for next four years.

(ii) Assets turnover ratio, net profit ratio and tax rate will remain the same.

(iii) Depreciation will be 15% of value of net fixed assets at the beginning of the year.

(iv) Required rate of return for the company is 15%

Evaluate the viability of new strategy

(Exam November – 2018)

(Page No. 36)

QUESTION – 19

Eagle Ltd. reported a profit of ₹ 77 lakhs after 30% tax for the financial year 2011-12. An analysis of the accounts revealed that the income included extraordinary items of ₹ 8 lakhs and an extraordinary loss of ₹10 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future. In addition, the results of the launch of a new product are expected to be as follows:

	₹ In Lakhs
Sales	70
Material Cost	20
Labour Cost	12
Fixed Cost	10

28 PBT

You are required to:

(i) Calculate the value of the business, given that the capitalization rate is 14%.

(i) Value of Business

Income Statement

Existing Business

$$PBT = \frac{77}{(1-0.30)} = ₹110$$

(-) Extraordinary Income = ₹8

(+) Extraordinary Loss = ₹10

PBT ₹112

New product (70 - 42) ₹28

Total PBT ₹140

(-) Tax @ 30% 42

FMP ₹98

$$V_B = \frac{98}{14\%}$$

= ₹700 lakh

(ii) Determine the market price per equity share, with Eagle Ltd.'s share capital being comprised of 1,00,000 13% preference shares of ₹ 100 each and 50,00,000 equity shares of ₹ 10 each and the P/E ratio being 10 times.

(Study Material & PM)

(Page No. 28)

(ii) Market price

PAT	₹ 9800000
(-) pref. dividend (₹10000000 × 13%)	₹ 1300000
Earnings	₹ 8500000
÷ No. of Equity	5000000
EPS	1.70
(x) PIE	10
mps	₹ 17

QUESTION – 20

Excellent Ltd. reported a profit of ₹ 154 lakhs after 30% tax for the financial year 2019- 20. An analysis of the accounts revealed that there is an extraordinary loss of ₹ 20 lakhs and the income included extraordinary items of ₹ 16 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future. In addition, the results of the launch of a new product are expected to be as follows:

H·W
H·W
Copy

	₹ in lakhs
Sales	140
Material costs	40
Labour costs	24
Fixed costs	20

You are required to:

(i) Calculate the value of the business, given that the capitalization rate is 14%.

(ii) Determine the market price per equity share, with Excellent Ltd.'s share capital being comprised of 2,00,000 at 13% preference shares of ₹ 100 each and 100,00,000 equity shares of ₹ 10 each and the P/E ratio being 12 times. (Ignoring Corporate Dividend Tax).

(Exam July – 2021)

(Page No. 30)

QUESTION – 21

The closing price of LX Ltd. is ₹ 24 per share as on 31st March, 2019 on NSE Ltd. The Price Earnings Ratio was 6. It was found that an amount of ₹ 24 Lakhs as income and an extra ordinary loss of ₹ 9 lakhs were included in the books of accounts. The existing operations except for the extraordinary items are expected to continue in future. Further the company has launched a new product during the year with the following expectations:

H·W
H·W
COPY

	(₹ in Lakhs)
Sales	150
Material Cost	40
Labour Cost	34
Fixed Cost	24

The company has 500,000 equity shares of ₹ 10 each and 100,000 9% Preference Shares of ₹ 100 each. The Price Earnings Ratio is 6 times. Post tax cost of capital is 10 per cent per annum. Tax

rate is 34 per cent. You are required to determine:

(i) Existing Profit from old operations

(ii) The value of business

(Exam May – 2019)

(Page No. 31)

Comparative Valuation Method

Cement

A Ltd

Asset 450 × 1.771 = 796.95

Sales 800 × 0.441 = 352.80

576.875 L

MV to Sales

0.417

B Ltd

M.V. = ₹500L

Asset = ₹300

1.667

Sales = 1200L

0.464

0.441

C Ltd

M.V. = 650L

Asset = 350L

1.875

Sales = 1400

QUESTION – 26

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

(Exam November – 2019)

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Calculation of Ratio

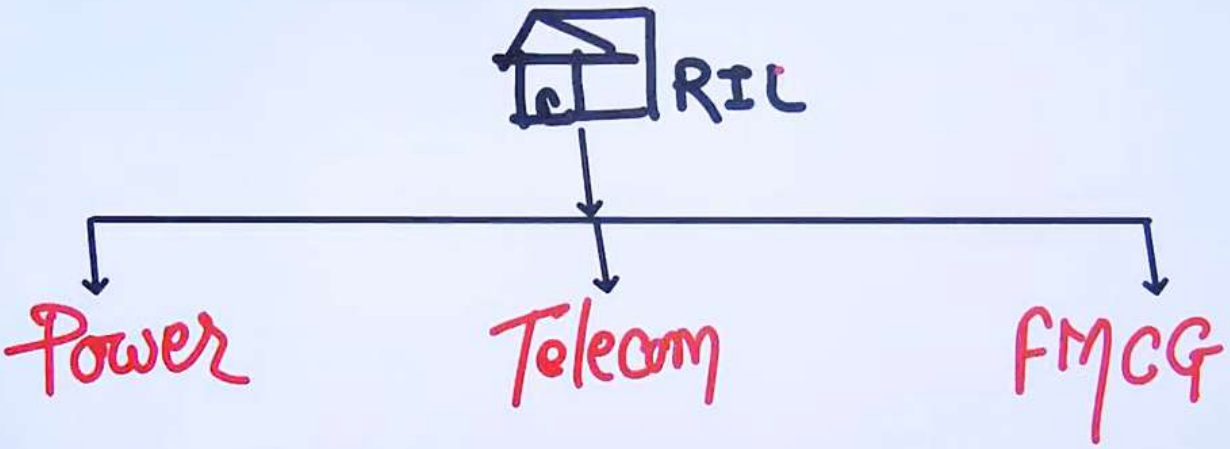
Ratio	SK Ltd	AS Ltd	Avg
Market to B.V.	1.125	1.333	1.229
Market to Replace	0.75	0.727	0.739
market to Sales	0.818	0.889	0.854
Market to NI	25	25	25

Value of XY Ltd

Basis	Amt	Ratio	Amt X Ratio
Book Value	250	1.229	307.25
Replacement	500	0.739	369.50
Sales	500	0.854	427
NI	14	25	350
			363.44 Lakh

VB

Chop-Shop Approach (Breakup Value Approach)



QUESTION – 36

Using the chop-shop approach (or Break-up value approach), assign a value for Cranberry Ltd. whose stock is currently trading at a total market price of €4 million. For Cranberry Ltd, the accounting data set forth three business segments: consumer wholesale, retail and general centers. Data for the firm's three segments are as follows:

Business Segment	Segment Sales	Segment Assets	Segment Operating Income
Wholesale	€225,000	€600,000	€75,000
Retail	€720,000	€500,000	€150,000
General	€ 2,500,000	€4,000,000	€700,000

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

Business Segment	Capitalization/Sales	Capitalization/Assets	Capitalization/ Operating Income
Wholesale	0.85	0.7	9
Retail	1.2	0.7	8
General	0.8	0.7	4

(Practice Manual)

(Page No. 59)

on the basis of Sales

Segment	Sales	Ratio	Sales × Ratio
W	€225000	0.85	191250
R	€720000	1.20	864000
G	€250000	0.8	200000
		VB	€3055250

HW

QUESTION – 41

Given below is the Balance Sheet of S Ltd. as on 31.3.2008:

Liabilities	₹ (in lakh)	Assets	₹ (in lakh)
Share capital		Land and building	40
(share of ₹ 10)	100	Plant and machinery	80
Reserves and	40	Investments	10
surplus		Stock	20
Long Term Debts	30	Debtors	15
		Cash at bank	5
	170		170

You are required to work out the value of the Company's, shares on the basis of Net Assets method and Profit-earning capacity (capitalization) method and arrive at the fair price of the shares, by considering the following information:

(i) Profit for the current year ₹ 64 lakhs includes ₹4 lakhs extraordinary income and ₹ 1 lakh income from investments of surplus funds; such surplus funds are unlikely to recur.

1 Net Assets Method

L & B	96
P & M	100
Investments	10
Stock	20
Debtors	15
Cash	5
(-) Debt	30
	216 Lakhs
Net Asset	
÷ No. of Equity shares	10
Value per share	₹ 21.60

(ii) In subsequent years, additional advertisement expenses of ₹ 5 lakhs are expected to be incurred each year.

(iii) Market value of Land and Building and Plant and Machinery have been ascertained at ₹ 96 lakhs and ₹ 100 lakhs respectively. This will entail additional depreciation of ₹ 6 lakhs each year.

(iv) Effective Income-tax rate is 30%.

(v) The capitalization rate applicable to similar businesses is 15%.

(Practice Manual)

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It is assumed that given profit is PBT

2. Profit Earnings Capacity

PBT	₹64
(-) Extra. Income	4
(-) Income from Investment	1
(-) Advertisement Exp.	5
(-) Dep.	6
FMP before Tax	48
(-) Tax @ 30%	14.40
FMP	33.60

$V_f = \frac{33.60}{15\%} = 224$

(-) VD 30

V_E 194

÷ No. of Equity 10

₹19.40

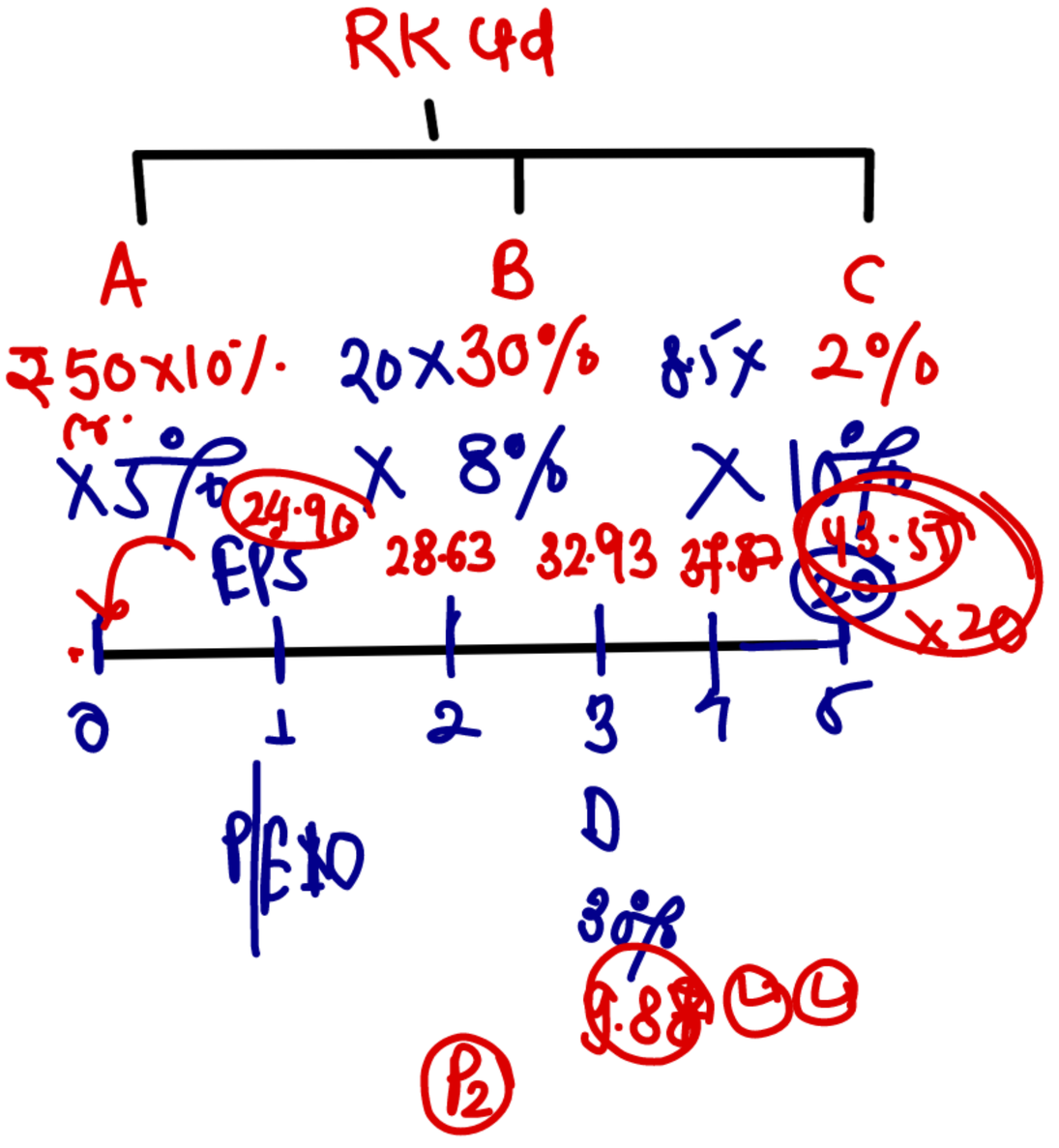
Fair Value $= \frac{21.60 + 19.40}{2}$

$= ₹20.50$

QUESTION – 27

You are interested in buying some equity stocks of RK Ltd. The company has 3 divisions operating in different industries. Division A captures 10% of its industries sales which is forecasted to be ₹ 50 crore for the industry. Division B and C captures 30% and 2% of their respective industry's sales, which are expected to be ₹ 20 crore and ₹ 8.5 crore respectively. Division A traditionally had a 5% net income margin, whereas divisions B and C had 8% and 10% net income margin respectively. RK Ltd. has 3,00,000 shares of equity stock outstanding, which sell at ₹ 250.

The company has not paid dividend since it started its business 10 years ago. However from the market sources you come to know that RK Ltd. will start paying dividend in 3 years time and the pay-out ratio is 30%. Expecting this dividend, you would like to hold the stock for 5 year. By analyzing the past financial statements, you have determined that RK Ltd.'s required rate of return is 18% and that P/E ratio of 10 for the next year and on ending P/E ratio of 20 at the end of the fifth year are appropriate.



Required:

(i) Would you purchase RK Ltd. equity at this time based on your one year forecast?

(ii) If you expect earnings to grow @ 15% continuously, how much are you willing to pay for the stock of RK Ltd ?

Ignore taxation.

PV factors are given below :

Years	1	2	3	4	5
PVIF@ 18%	0.847	0.718	0.609	0.516	0.437

(Exam November – 2019 & MTP March – 2021)

(Page No. 40)

Share is overpriced, hence it should not be purchased.

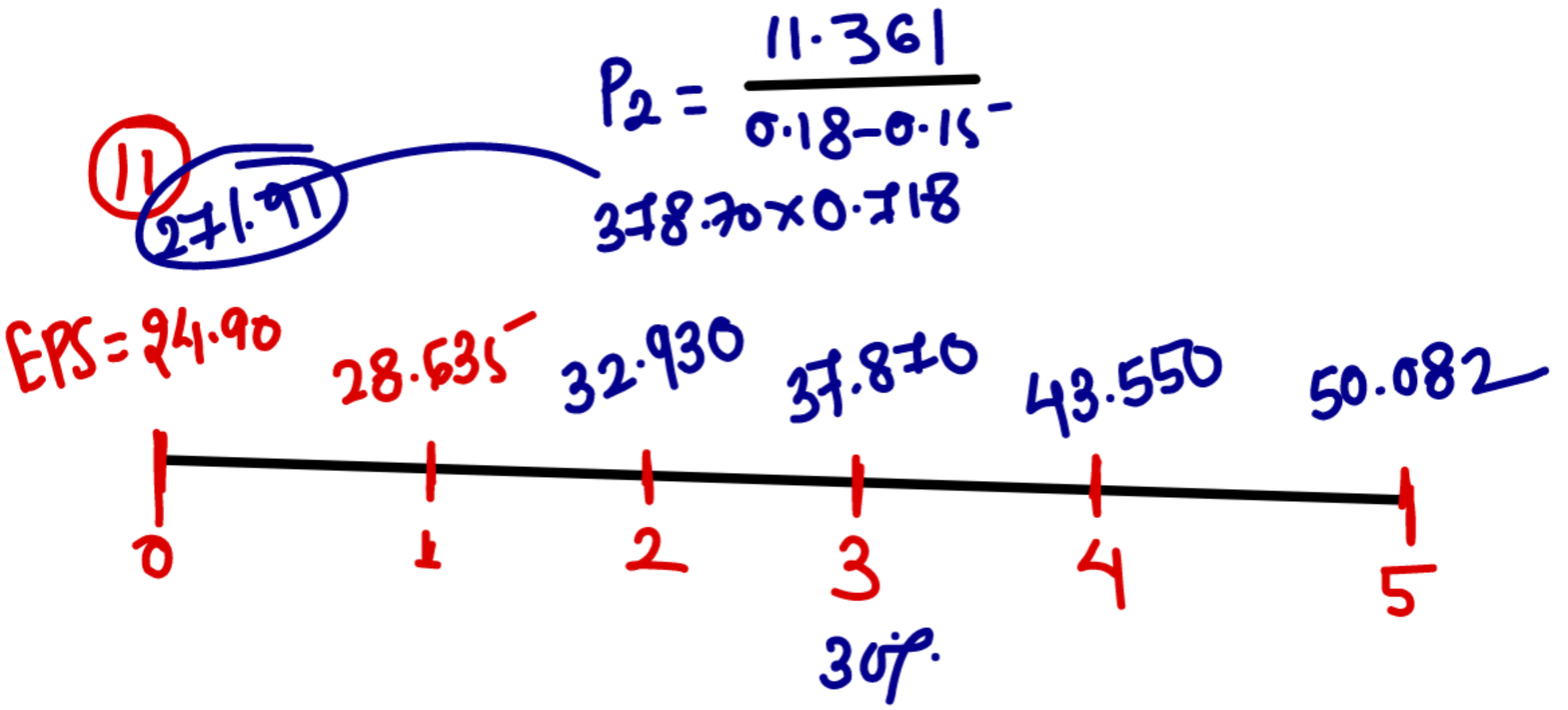
Estimated EPS

	Net Income
A (50 Cr. × 10% × 5%)	₹ 2500000
B (20 Cr. × 30% × 8%)	₹ 4800000
C (8.5 Cr. × 2% × 10%)	₹ 170000
Estimated Earning	₹ 7470000
÷ No. of Equity shares	300000
EPS_1	₹ 24.90

Price = EPS × P/E

= 24.90 × 10 = ₹ 249

$P_0 = (249 \times 0.847) = ₹ 210.90$


$P_2 = \frac{11.361}{0.18-0.15}$
11
271.91
378.70 × 0.718
EPS = ₹4.90
28.635
32.930
37.870
43.550
50.082
0
1
2
3
4
5
30%
₹11.361
× 0.609
13.065
× 0.516
15.025
575.96
× 0.437
P_0 = ₹271.92
Share is underpriced,
Buy.
$P_5 = \frac{15.095(1.15)}{0.18-0.15}$

$$B_A = B_E \times \frac{E}{E+D}$$

$$2 = B_E \times \frac{300000}{300000 + 200000}$$

$$2 = 0.6\, B_E$$

$$B_E = \frac{2}{0.6} =$$

Example – 06

Equity = 3,00,000

Debt = 2,00,000

Assets beta or overall beta = 2

Stock beta or equity beta ?

Beta of Equity

$$BA = BE \times \frac{E}{E+D}$$

$$1.50 = BE \times \frac{3}{3+2}$$

$$BE = 2.50$$

Cost of Equity

$$Ke = Rf + (Rm - Rf)BE$$

$$= 6 + (10-6)2.50 = 16\%$$

$$Kd = 6\%$$

$$Ko = \frac{(16 \times 3) + (6 \times 2)}{5} = 12\%$$

Example – 07

FCFF1 / Ko = ₹ 4,00,000 p.a. perpetual

D/E = 2:3

Assets beta = 1.50

R_F ✓ = 6%

R_M ✓ = 10%

Calculate value of firm.

If question is silent then Rf = Kd

$$Vf = \frac{fcff1}{Ko} = \frac{400000}{12\%}$$

= ₹ 3333333

Asset of Beta of Two Similar firm shall be same

Hence Use BA of B Ltd i.e. 0.9

Equity Beta of A Ltd

$$BA = BE \times \frac{E}{E+D}$$

$$0.9 = BE \times \frac{4}{4+1}$$

$$BE = 1.125$$

$$Ke = 5 + (12-5)1.125 = 12.875\%$$

$$Kd = 5\%$$

Example – 08

A Ltd. is an Electronic firm

D/E	= 1:4
$FCFF_1$	= ₹ 2,50,000
R_F	= 5%
R_M	= 12%

BE
Ke
Kd Ko

Calculate Value of A Ltd.

- *Assets beta of another electronic firm B Ltd. is 0.9*

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$$Ko = \frac{(12.875 \times 4) + (5 \times 1)}{5}$$

$$= 11.30\%$$

$$Vf = \frac{250000}{11.30\%} = ₹\ 2212389$$

BA of B Ltd

$$BA = BE \times \frac{E}{E+D}$$

$$= 1.75 \times \frac{4}{4+1}$$

$$= 1.40$$

Use BA of B Ltd in A Ltd Valuation

BE of A Ltd

$$1.40 = BE \times \frac{3}{3+1}$$

$$BE = 1.867$$

$$Ke = 7 + (13-7)1.867 = 18.20\%$$

$$Kd = 7\%$$

Example – 09

A Ltd is an electronic firm

$FCFF_1$	= 1,75,000
R_F	= 7%
R_M	= 13%
D/E	= 1:3

Calculate Value of A Ltd.

B Ltd. is similar electronic firm

BE	= 1.75
D/E	= 1:4

BE → BA

BA (Same) BA

$$Ko = \frac{(18.20 \times 3) + (7 \times 1)}{4}$$

$$= 15.4\%$$

$$Vf = \frac{175000}{15.4\%} = ₹\ 1136364$$

Example – 10

$D/E = 2:3$

$BA = 1.20$

$BD = 0.40$

$BE = ?$

$$BA = \left(BE \times \frac{E}{E+D}\right) + \left(B_D \times \frac{D}{E+D}\right)$$

$$1.20 = \left(BE \times \frac{3}{3+2}\right) + \left(0.40 \times \frac{2}{3+2}\right)$$

$$1.20 = 0.6\,BE + 0.16$$

$$BE = \frac{1.20 - 0.16}{0.6} = 1.733$$

Example – 11

$FCFF_1$	= ₹ 80,000
BA	= 1.15
D/E	= 2:3
R_F	= 10%
R_M	= 15%
Tax	= 30%

Value of company = ?

$$BA = \left(BE \times \frac{E}{E+D(1-t)}\right) + \left(BD \times \frac{D(1-t)}{E+D(1-t)}\right)$$

$$1.15 = \left(BE \times \frac{3}{3+2(1-0.30)}\right)$$

$$1.15 = BE \times \frac{3}{4.40}$$

$$BE = 1.687$$

$$Ke = 10 + (15-10)1.687 = 18.435\%$$

$$Kd = 10(1-0.30) = 7\%$$

$$Ko = \frac{(18.435 \times 3) + (7 \times 2)}{5}$$

$$= 13.86\%$$

$$Vf = \frac{80000}{13.86\%} = 5772$$

QUESTION – 37

The total market value of the equity share of O.R.E. company is ₹ 60,00,000 and the total value of the debts is ₹ 40,00,000. The treasure estimate that the beta of the stock is currently 1.5 and that the expected risk premium on the market is 10%. The treasury bill rate is 8%.

Required:

(1) What is the beta of the company's existing portfolio of assets?

(2) Estimate the company's cost of capital and the discount rate for an expansion of the company's business.

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If Company Expand same business with same Risk then Disc. Rate 17% should be used.

① Asset Beta

$$B_A = B_E \times \frac{E}{E+D}$$

$$= 1.5 \times \frac{6000000}{10000000} = 0.9$$

② Cost of Capital

$$K_e = R_f + MRP \times B_E$$

$$= 8 + 10 \times 1.5 = 23\%$$

$$K_d = R_f = 8\%$$

$$WACC = \frac{(6000000 \times 23) + (4000000 \times 8)}{10000000}$$

$$= 17\%$$

QUESTION – 38

Equity of KGF Ltd. (KGFL) is ₹ 410 Crores, its debt, is worth ₹ 170 Crores. Printer Division segments value is attributable to 74%, which has an Asset Beta (β_p) of 1.45, balance value is applied on Spares and Consumables Division, which has an Asset Beta (β_{sc}) of 1.20 KGFL Debt beta (β_D) is 0.24.

You are required to calculate:

(i) Equity Beta (β_E),

(ii) Ascertain Equity Beta (β_E), if KGF Ltd. decides to change its Debt Equity position by raising further debt and buying back of equity to have its Debt Equity Ratio at 1.90. Assume that the present Debt Beta (β_{D1}) is 0.35 and any further funds raised by way of Debt will have a Beta (β_{D2}) of 0.40.

(iii) Whether the new Equity Beta (β_E) justifies increase in the value of equity on account of leverage?

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KGFL [E 410 + D 170]

₹ 580 Cr. $B_D = 0.24$

Printer (74%) — $B_p = 1.45$

SCD (26%) — $B_p = 1.20$

BA of KGFL

$BA = (1.45 \times 74\%) + (1.20 \times 26\%)$

$= 1.385$

(i) Equity Beta of JKGFL

$$B_A = \left(B_E \times \frac{E}{E-D}\right) + \left(B_D \times \frac{D}{E+D}\right)$$

$$1.385 = \left(B_E \times \frac{410}{580}\right) + \left(0.24 \times \frac{170}{580}\right)$$

$$1.385 = 0.7069\, B_E + 0.0703$$

$$B_E = \frac{1.385 - 0.0703}{0.7069}$$

$$= 1.86$$

(ii) B_E of JKGFL

₹580 cr.

Equity	Debt
$580 \times \frac{1}{2.9}$	$580 \times \frac{1.9}{2.9}$
= 200 cr.	₹380 cr.
	present Debt = 170
	B_D = 0.35
	further Debt = 210
	B_D = 0.40

$$1.385 = \left(B_E \times \frac{200}{580}\right) + \left(0.35 \times \frac{170}{580}\right) + \left(0.40 \times \frac{210}{580}\right)$$

$$1.385 = 0.3448\, B_E + 0.1026 + 0.1448$$

$$B_E = \frac{1.385 - 0.1026 - 0.1448}{0.3448} = 3.299$$

(iii) Since BE increased due to Increase in debt, Hence Risk of Equity also increase

QUESTION – 39

STR Ltd.'s current financial year's income statement reported its net income after tax as ₹ 50 Crore.

Following is the capital structure of STR Ltd. at the end of current financial year:

	₹
Debt (Coupon rate = 11%)	80 Crore
Equity (Share Capital + Reserves & Surplus)	250 Crore
Invested Capital	330 Crore

Following data is given to estimate cost of equity capital:

Asset Beta of TSR Ltd.	1.11
Risk free rate of return	8.5%
Average market risk premium	9%

The applicable corporate income tax rate is 30%.

Estimate Economic Value added (EVA) of RST Ltd. in ₹ lakh.

(RTP November – 2021 & MTP October – 2020)

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1 WACC

$$\beta_A = \beta_E \times \frac{E}{E + D(1-t)}$$

$$1.11 = \beta_E \times \frac{250}{250 + 80(1-0.30)}$$

$$1.11 = 0.8170\ \beta_E$$

$$\beta_E = \frac{1.11}{0.8170} = 1.36$$

$$K_e = R_f + MRP\,\beta_E$$

$$= 8.5 + 9 \times 1.36 = 20.74\%$$

$$K_d = I(1-t) = 11(1-0.30) = 7.70\%$$

$$WACC = \frac{(250 \times 20.74) + (80 \times 7.70)}{330} = 17.58\%$$

2. NOPAT

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

$$= \frac{5000}{(1-0.30)} + 880 = ₹\,8022.857$$

$$NOPAT = EBIT(1-t)$$

$$= 8022.857(1-0.30) = ₹\,5616.00$$

3. EVA

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

$$= 5616 - 33000 \times 17.58\%$$

$$= -₹\,185.40 \text{ Cr.}$$

Q40, Q33, Q30, Q28 Merger

Q29 Ratio