

**PAPER – 20: FINANCIAL ANALYSIS & BUSINESS VALUATION**

## Answer to PTP\_Final\_Syllabus 2012\_June 2016\_Set 1

The following table lists the learning objectives and the verbs that appear in the syllabus learning aims and examination questions:

	<b>Learning objectives</b>	<b>Verbs used</b>	<b>Definition</b>	
<b>LEVEL C</b>	KNOWLEDGE	List	Make a list of	
	What you are expected to know	State	Express, fully or clearly, the details/facts	
		Define	Give the exact meaning of	
		Describe	Communicate the key features of	
	COMPREHENSION	What you are expected to understand	Distinguish	Highlight the differences between
			Explain	Make clear or intelligible/ state the meaning or purpose of
			Identify	Recognize, establish or select after consideration
			Illustrate	Use an example to describe or explain something
	APPLICATION	How you are expected to apply your knowledge	Apply	Put to practical use
			Calculate	Ascertain or reckon mathematically
			Demonstrate	Prove with certainty or exhibit by practical means
			Prepare	Make or get ready for use
			Reconcile	Make or prove consistent/ compatible
			Solve	Find an answer to
			Tabulate	Arrange in a table
	ANALYSIS	How you are expected to analyse the detail of what you have learned	Analyse	Examine in detail the structure of
			Categorise	Place into a defined class or division
			Compare and contrast	Show the similarities and/or differences between
			Construct	Build up or compile
			Prioritise	Place in order of priority or sequence for action
			Produce	Create or bring into existence
	SYNTHESIS	How you are expected to utilize the information gathered to reach an optimum conclusion by a process of reasoning	Discuss	Examine in detail by argument
			Interpret	Translate into intelligible or familiar terms
Decide			To solve or conclude	
EVALUATION	How you are expected to use your learning to evaluate, make decisions or recommendations	Advise	Counsel, inform or notify	
		Evaluate	Appraise or asses the value of	
		Recommend	Propose a course of action	

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## Paper – 20: Financial Analysis & Business Valuation

Time Allowed: 3 hours

Full Marks: 100

This paper contains 4 questions, representing two separate sections as prescribed under syllabus 2012. All questions are compulsory, subject to the specific guidance/ instructions stated against every question.

All workings, wherever necessary, must form a part of your answer. Assumptions, if any, should be clearly stated.

**Question No. 1.** (Answer all questions. Each question carries 10 marks)

1. (a) The following are the income statement of Khan Ltd. for the years ended 31st March 2015 and 31st March 2016.

Particulars	31.03.15 ₹	31.03.16 ₹
Net Sales	1,82,000	1,99,000
Less: Cost of Goods Sold	1,13,000	1,26,000
Gross Profit (A)	69,000	73,000
Administrative Expenses (B)	14,500	15,200
Selling Expenses :		
Advertisement Expenses	3,500	4,200
Other Selling Expenses	39,000	41,000
Total Selling Expenses (C)	42,500	45,200
Operating Expenses (B + C)	57,000	60,400
Operating Profit (D) [D = A - (B + C)]	12,000	12,600
Other Incomes (E)	5,200	7,500
Other Expenses (F)	5,900	5,200
Profit before Tax (PBT) [PBT = D + E - F]	11,300	14,900
Income Tax (T)	5,300	7,200
Profit after Tax (PAT) [PAT = PBT - T]	6000	7,700

Prepare a comparative income statement and comment on the performance of the company. [5+5]

- (b) Firms A, B and C is engaged in diverse operations. Some of their particulars for the next accounting year are:

Firms	A	B	C
Output (units)	8,000	20,000	12,000
Selling Price (p.u.) (₹)	10	20	2
Variable Cost (p.u.) (₹)	4	10	1

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Operating Fixed Cost p.a. (₹)	36,000	1,60,000	8,000
Fixed financial charges p.a. (₹)	10,000	20,000	Nil

You are required to make a comparative analysis of operating financial and total risks of the firm on the basis of leverage, and comments thereon. [5+5]

Answer:

1. (a)

### Khan Ltd. Comparative Income Statement for the years ended 31st, March 2015 and 2016

Particulars	31.03.15	31.03.16	Absolute Change	Percentage Change
	₹	₹	₹	₹
Net Sales	1,82,000	1,99,000	17,000	9.34
Less : Cost of Goods Sold	1,13,000	1,26,000	13,000	11.5
Gross Profit (A)	69,000	73,000	4,000	5.78
Administrative Expenses (B)	14,500	15,200	700	4.82
Selling Expenses :				
Advertisement Expenses	3,500	4,200	700	20
Other Selling Expenses	39,000	41,000	2,000	5.13
<b>Total Selling Expenses (C)</b>	42,500	45,200	2,700	6.35
Operating Expenses (B + C)	57,000	60,400	3,400	5.96
Operating Profit (D) [D = A - (B + C)]	12,000	12,600	600	5
Other Incomes (E)	5,200	7,500	2,300	44.23
Other Expenses (F)	5,900	5,200	(-) 700	(-) 11.86
Profit before Tax (PBT) [PBT = D + E - F]	11,300	14,900	3,600	31.86
Income Tax (T)	5,300	7,200	1,900	35.85
Profit after Tax (PAT) [PAT = PBT - T]	6,000	7,700	1,700	28.33

#### Comments

The following comments may be made on the performance of Khan Ltd. from the study of the above comparative income statement:

**(I) Analysis of change in gross profit:** Over the period of study sales increased by ₹ 17,000 while cost of goods sold increased by ₹ 13,000. In relative terms the increases were 9.34% and 11.5% respectively. It indicates that incremental sales were achieved with the help of more than proportionate increase in cost of goods sold. So, the rise in gross profit was not in sympathy with the increase in sales. It should therefore, be further investigated to see whether sales had to be increased by reducing selling price and or the relative rise in costs was due to reasons beyond control.

**(II) Analysis of change in operating expenses:** Operating expenses which are expected to remain constant over a particular range of operation increased by 5.96%. In absolute term the amount of increase was ₹ 3,400.

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**(III) Analysis of change in operating profit:** The operating profit increased marginally i.e., by 5% only. In absolute terms the increase was ₹ 600.

**(IV) Analysis of change in net profit:** The other income of the company increased substantially in relative (44.23%) as well as in absolute terms (₹ 2,300). The other expenses have also decreased moderately, i.e. by 11.86%. In absolute terms the decrease was ₹ 700. These two items resulted in increase in profit before tax by 31.86%. It indicates that the profitability of the company over the period of study increased not due to improvement in operational efficiency but due to increase in other income which is likely to be non-repetitive.

(b)

### Statement Showing the Computation of Operating, Financial and Total/Leverage

Particulars	Firms		
	A ₹	B ₹	C ₹
Sales (No. of Units x Rate p.u.)			
A = 8,000 × ₹ 10	80,000	--	--
B = 20,000 × ₹ 20	--	4,00,000	--
C = 12,000 × ₹ 2	--	--	24,000
less: Variable Cost			
A = 8,000 × ₹ 4	32,000	--	--
B = 20,000 × ₹ 10	--	2,00,000	--
C = 12,000 × ₹ 1	--	--	12,000
Contribution	48,000	2,00,000	12,000
Less: Operating Fixed Cost	36,000	1,60,000	8,000
EBIT	12,000	40,000	4,000
Less: Fixed Financial Charges	10,000	20,000	Nil
EBT	2,000	20,000	4,000

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹48,000}{₹12,000} = 4; \quad \frac{₹2,00,000}{₹40,000} = 5; \quad \frac{₹12,000}{₹4,000} = 3.$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{₹12,000}{₹2,000} = 6; \quad \frac{₹40,000}{₹20,000} = 2; \quad \frac{₹4,000}{₹4,000} = 1$$

$$\text{Total Leverage} = \text{DOL} \times \text{DFL} = 4 \times 6 = 24; \quad 5 \times 2 = 10; \quad 3 \times 1 = 3$$

#### Comment:

**DOL =** From the above statement it is clear that the firm possesses greater degree of risk as its operating leverage is highest among the other two firms. Operating leverage presents the role of changes in sales on EBIT. It is needless to say that high degree of operating leverage not only bears greatest degree of risk but also has an effect on EBIT.

**DFL =** Financial Leverage appears where there is fixed financial changes and which measure the financial risk of a firm. It is interesting to note from the above table that Firm C does not have any effect on EPS since it does not have any fixed financial charges. Firm A possesses the highest degree of financial risk.

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**DCL** = We know that firms having high operating leverage and high financial leverage bears greatest degree of risk. From the above it becomes clear that Firm C bears the smallest amount of risk among the three firms. *The ideal situation is that when one ratio is high whereas the other is low in order to maximise profit with minimum degree of risk.* In the present situation Firm A bears the highest degree of financial risk.

**Question No. 2** (Answer **any two** questions. Each question carries **15 marks**)

2. (a) (i) Discuss Financial Modelling. State the attributes of a financial model.

$\left[ 2\frac{1}{2} + 2\frac{1}{2} \right]$

(a) (ii) The following figures apply to a small manufacturing company:

Particulars	Amount (₹)
Annual sales for the previous year	4,60,000
Profit after tax for the previous year	27,096
Budgeted annual sales for the next year	4,84,000
Budgeted profit after tax for the next year	28,000

In the first of the two years, the average total assets amounted to ₹4,00,000, and are estimated to be ₹4,40,000 for the next year.

Assuming full budget realization and taking turnover into account, calculate the alteration that will take place in the ratio representing return on capital employed and discuss the reasons for such alteration. [5]

(a) (iii) On 1st January 2016, EFG issued 20,000 5% convertible bonds at their par value of ₹ 50 each. The bonds will be redeemed on 1st January 2021. Each bond is convertible at the option of the holder at any time during the five year period. Interest on the bond will be paid annually in arrears.

The prevailing market interest rate for similar debt without conversion options at the date of issue was 6%.

At what value should the equity element of the hybrid financial instrument be recognised in the financial statements of EFG at the date of issue? [5]

**Answer:**

2. (a) (i)

Financial modeling is the task of building a financial model, or the process of using a financial model for financial decision making and analysis. It is an abstract representation of a financial decision making situation. It is used to do historical analysis of a company's performance, and to do projections of its financial performance into the future. Financial Modeling is not just for the Accountant or Financial Consultant, who are called upon to develop financial projections, but also for business owners and managers.

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### Attributes of a Financial Model:

A model is considered to be good if it has the following attributes:

- (i) Realistic - Assumptions, relationships, and inputs must be realistic so that the outputs are useable.
- (ii) Error Free - harder than it looks.
- (iii) Flexible - This is a two edged sword. Develop the model to be easy and error free, and then add elements of flexibility. Experience will tell you when a model gets too complicated and should be segregated into separate models for separate purposes.
- (iv) Easy to use - Use clear labels and descriptions.
- (v) Easy to understand - A financial model is only as good as the analyst using it.

### (a) (ii)

$$\frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}} = \frac{\text{Profit}}{\text{Capital Employed}}$$

$$\text{Previous year } \frac{27,096}{4,60,000} \times 100 \times \frac{4,60,000}{4,00,000} \times 100 = \frac{27,096}{4,00,000} \times 100$$
$$5.89\% \times 115\% \times 100 = 6.77\%$$

$$\text{Next year } \frac{28,000}{4,84,000} \times 100 \times \frac{4,84,000}{4,40,000} \times 100 = \frac{28,000}{4,40,000} \times 100$$
$$5.79\% \times 110\% \times 100 = 6.36\%$$

The reasons for the change in the ratio of return on capital employed, i.e., from 6.77 per cent to 6.36 per cent are:

- I. The profit to turnover ratio has decreased from 5.89 per cent to 5.79 per cent representing a very slight declination.
- II. The capital turnover ratio has declined significantly from 115 per cent to 110 per cent. Although sales have improved, the additional capital employed has not resulted in a proportionate increase in sales this will be clear from the following:

Increase in capital employed by ₹ 40,000 i.e., 10 per cent on original capital.

Increase in sales ₹ 24,000 i.e., 5.2 per cent over previous year's sales.

Again, if the additional return on additional capital employed is compared with the previous year's return on capital employed, the following result will be obtained:

$$\frac{\text{Addl. Profit}}{\text{Addl. Capital Employed}} \times 100 = \frac{₹904}{40,000} \times 100 = 2.26 \text{ per cent}$$

When the amount of capital employed is computed on the basis of the assets side of the balance sheet, the following adjustments should be made:

1. Intangible assets like goodwill, patents, trademarks, etc. should be excluded unless they have definite market values.

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- Fictitious assets, e.g., preliminary expenses, cost of issue of share/debentures, deferred advertisement expenses, should be excluded.
- Idle or unused assets, e.g., plant and machinery, excess cash and bank balance, if any, should not be taken into account.
- Obsolete stock items and debts, which are likely to become bad should be deducted from inventories and debtors respectively.

While computing profit, extraneous and fortuitous expenditure and income and abnormal losses and gains should be excluded.

The ROCE ratio is the indicator of the profitability or otherwise of a firm. In other words, the higher the return, the more profitable is the position of the firm, and vice versa.

**(a) (iii)**

Bond principal:  $20,000 \times ₹50 = ₹10,00,000$ .

Annual interest payment =  $₹10,00,000 \times 5\% = ₹50,000$ .

	₹
Present value of principal: $₹10,00,000 / (1.06)^5$ (factor from table = 0.747)	7,47,000
Present value of interest: $₹50,000 \times$ cumulative discount factor (from table = 4.212)	2,10,600
Total	9,57,600
Balancing figure = equity element	42,400
Principal	10,00,000

2. (b) The following ratio of C Ltd. and their corresponding Industry averages are available.

Ratios	C Ltd.	Industry
Current	1.75	2.10
Liquid	0.85	2.25
Stock to working capital	25%	20%
Inventory turnover	6.5	8.2
Debt collection period	35 days	30 days
Return on Assets	9.2%	10.7%
Earning per share	₹ 3.50	₹ 2.75

You are required to comment on the financial position and performance of C Ltd.

[15]

Answer:

**2 (b)**

In order to comment on the financial position and performance of the company, let us classify the ratios of the company as well as those for the industry into three categories according to (I) Liquidity (II) efficiency of activities and (III) Profitability.



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### (I) Ratios indicating Liquidity

Ratios	Industry average	C. Ltd.	Difference
(a) Current ratio	2.10	1.75	16.67% below the average
(b) Liquid Ratio	2.25	0.85	62.2% below the average
(c) Stock to working capital	20%	25%	25% higher the average

**Comments:** The liquidity position, i.e. the short-term debt paying capacity of the firm is not sound enough as the current ratio is 16.67% below the industry average. However, the most alarming fact is that the immediate debt paying capacity of C Ltd. is abnormally poor as indicated by its liquid ratio which is 62.2% below the industry average. It appears that the higher percentage of stock to working capital compared to industry average has led to its poor immediate debt paying capacity.

### (II) Ratio indicating efficiency of activities

Ratios	Industry average	C Ltd.	Difference
(a) Inventory Turnover	8.2	6.5	20.7% below the average
(b) Debt collection Period	30 day	35 days	5 days longer the average

**Comments:** The inventory turnover ratio indicates how rapidly the inventory is turning into receivables through sales. A high inventory turnover ratio is the indicative of efficient inventory management. As the inventory turnover ratio is 20.7% below the industry average, the company is less efficient in managing its inventory. The debt collection period indicates how quickly the firm realises its receivables. A lower debt collection period is the indication of better receivables management. In this respect also the firm is less efficient as its debt collection period is 5 days longer than the industry average.

### (III) Ratios indicating Profitability:

Ratios	Industry average	C Ltd.	Difference
(a) Return on Assets	10.7%	9.2%	14.1% below the average
(b) Earning Per share	₹ 2.75	₹ 3.50	27.3% above the average

**Comments:** The overall Profitability of C Ltd. is poor compared to industry average as its return on Assets is 14.1% below industry average. However the Profitability from the view point of equity shareholder is better for C Ltd. as its EPS is 27.3% higher than industry average. Obviously this has been possible for C Ltd. for using cheaper debt Capital.

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2. (c) (i) Sweta Ltd. has a machine having an additional life of 5 years, which costs ₹2,00,000 and which has a book value of ₹50,000. A new machine costing ₹4,40,000 is available. Though its capacity is same as that of the old machine, it will mean a saving in variable costs to the extent of ₹ 1,40,000 p.a. The life of the machine will be 5 years at the end of which it will have a scrap value of ₹80,000. The rate of income tax is 30% and Sweta Ltd. does not make an investment, if it yields less than 12%. The old machine, if sold, will fetch ₹20,000.

Advise Sweta Ltd. whether the old machine should be replaced or not.

Note:

P.V. of ₹ 1 receivable annually for 5 years at 12% = 3.605

P.V. of ₹ 1 receivable at the end of 5 years at 12% = 0.567

P.V. of ₹ 1 receivable at the end of 1 year at 12% = 0.893

[5]

- (c) (ii) The following informations are related to financial position of Swizz Ltd. for 3 years which ended on 31<sup>st</sup> March every year:

Particulars	2014 (₹)	2015 (₹)	2016 (₹)
Share capital	1,40,000	1,80,000	1,90,000
Current Liabilities	40,000	?	?
Working Capital	60,000	50,000	1,40,000
Long-term Loan	1,00,000	?	1,20,000
Fixed assets	2,40,000	2,50,000	2,35,000
Net Worth	2,00,000	2,20,000	2,55,000
Current Assets	?	1,20,000	2,00,000
Capital Employed	3,00,000	?	?
Reserves & Surplus	?	40,000	65,000

You are required to find out the values of the missing figures and prepare a Vertical Trend Balance Sheet taking 2013-14 as the base and also interpret the result.

[4+3+3]

Answer:

2. (c) (i)

Statement Showing the Net Present Value of New Machine

	₹	₹
Cash Inflow		
Saving in Variable Cost		1,40,000
Less: Dep. on new machine		
₹ $\left( \frac{4,40,000 - 80,000}{5} \right)$	72,000	
Less: dep. On old machine		
₹ $\left( \frac{50,000}{5} \right)$	10,000	
		62,000
Net Profit		78,000
Less: Tax @ 30%		23,400
Net Inflow/ saving after Tax		54,600
Add: depreciation		62,000
∴ Annual Cash inflow		1,16,600

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Now,

Particulars	₹
P.V. of Cash inflow for 5 years = ₹1,16,600 x 3.605	4,20,343
P.V. of scrap value at the end of 5 years = ₹80,000 x 0.567	45,360
P.V. of total cash inflow	4,65,703
Less: P.V. of cash outflow (4,40,000 – 20,000)	4,20,000
Net Present Value	45,703

Since, the NPV is positive; it is profitable to install the new machine. The old machine should be replaced.

(c) (ii)

**Swizz Ltd.**  
**Vertical Trend Balance Sheet**  
**(Base Year 2013-2014)**

	2013-14		2014-15		2015-16	
	Amount (₹)	Trend %	Amount (₹)	Trend %	Amount (₹)	Trend %
<b>Equity &amp; Liabilities:</b>						
Shareholders' Funds:						
Share Capital [A]	1,40,000	100	1,80,000	128.57	1,90,000	135.71
Reserve & Surplus [B]	60,000	100	40,000	66.67	65,000	108.33
Net Worth [C=A+B]	2,00,000	100	2,20,000	110	2,55,000	127.50
Non-current Liabilities:						
Long-term Loan [D]	1,00,000	100	80,000	80	1,20,000	120
Capital Employed [E=C+D]	3,00,000	100	3,00,000	100	3,75,000	125
Current Liabilities [F]	40,000	100	70,000	175	60,000	150
<b>Total</b>	<b>3,40,000</b>	<b>100</b>	<b>3,70,000</b>	<b>108.82</b>	<b>4,35,000</b>	<b>127.94</b>
<b>Assets:</b>						
Non-current Assets:						
Fixed Assets	2,40,000	100	2,50,000	104.17	2,35,000	97.92
Current Assets	1,00,000	100	1,20,000	120	2,00,000	200
<b>Total</b>	<b>3,40,000</b>	<b>100</b>	<b>3,70,000</b>	<b>108.82</b>	<b>4,35,000</b>	<b>127.94</b>

**Notes:**

- (i) Computation of Missing Figures for 2013-14:  
 Reserve & Surplus: Net Worth – Share Capital = ₹2,00,000 – ₹1,50,000 = ₹50,000  
 Current Assets = Working Capital + Current Liabilities = ₹60,000 + ₹40,000 = ₹1,00,000
- (ii) Computation of Missing Figures for 2014-15:  
 Current Liabilities = Current Assets – Working Capital = ₹1,20,000 – ₹50,000 = ₹70,000  
 Capital Employed = Fixed Assets + Working Capital = ₹2,50,000 + ₹50,000 = ₹3,00,000

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Again, Capital Employed = Net Worth + Long-term Loan

Long-term Loan = Capital Employed - Net Worth = ₹3,00,000 - ₹2,20,000 = ₹80,000

(iii) Computation of Missing Figures for 2015-16:

Current Liabilities = Current Assets - Working Capital = ₹2,00,000 - ₹1,40,000 = ₹60,000

Capital Employed = Net Worth + Long-term Loan = ₹2,55,000 + ₹1,20,000 = ₹3,75,000.

### Interpretation:

1. Although the reserve & surplus has decreased in 2014-15 but increased significantly in the year 2015-16. The share capital has also increased in both the years. As a result, the net worth has also increased significantly in the last year.
2. The requirement of long-term loan is to some extent lower in 2014-15 than 2013-14 but increased in 2015-16. The current liabilities is increased heavily in 2014-15 but after that slightly decreased.
3. The fixed assets have gone up marginally in 2014-15 but go down to 97.92% in 2015-16. The position of current assets has increased significantly.

**Question No. 3.** (Answer all questions. Each question carries 10 marks)

3. (a) The following figures relates to Pankaj Ltd which has ₹ 10,00,000 in Equity Shares and ₹ 3,00,000 in 9% Preference Shares, all of ₹ 100 each.

Year	2014	2015	2016
Average Net Worth (excluding Investment) (₹)	18,60,000	21,50,000	21,90,000
Adjusted Profit After Tax (₹)	1,90,000	2,10,000	2,50,000

The Company has Investments worth ₹ 2,80,000 (at Market Value) on the valuation date, the yield in respect of which has been excluded in arriving at the above adjusted Profit figures. It is customary for similar types of Companies to set aside 25% of the Profit after Tax for rehabilitation and replacement purposes.

On the valuation date, the Net Worth (excluding Investments) amount to ₹ 22,50,000. The Normal Rate of Return expected is 9%. The Company has paid Dividends consistently within a range of 8% to 10% on Equity Shares over the Previous Years and it expects to maintain the same.

Ascertain the value of each Equity Share on the basis of post-tax Productivity on Capital Employed, applying suitable weighted avg. [10]

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(b) The following information (as of 31.03.2016) is supplied to you by Fox Ltd.

Particulars	₹ Crores	
(i) Profit after Tax (PAT)		205.90
(ii) Interest		4.85
(iv) Equity Share Capital	40.00	
Accumulated Surplus	700.00	
Shareholders Fund	740.00	
Loans (Long term)	37.00	
Total Long Term Funds		777.00
(iv) Market Capitalization		2,892.00

**Additional Information:**

(a) Risk Free Rate	12.00 percent				
(b) Long Term Market Rate (Based on BSE Sensex)	15.50 percent				
(c) Effective Tax Rate for the company	25.00				
(d) Beta ( $\beta$ ) for last few years					
Year	1	2	3	4	5
Beta	0.48	0.52	0.60	1.10	0.99

Using the above data you are requested to calculate the Economic Value Added of Fox Limited as on 31st March 2016. [10]

**Answer:**

3. (a)

### Computation of Weighted Average Return on Capital Employed

Year	Profit After Tax	Profit Product	Capital	ROCE
2014	1,90,000	1,90,000	18,60,000	10.22%
2015	2,10,000	4,20,000	21,50,000	9.77%
2016	2,50,000	7,50,000	21,90,000	11.42%
<b>Weighted Average ROCE =</b> $\frac{(10.22 \times 1) + (9.77 \times 2) + (11.42 \times 3)}{1 + 2 + 3}$				<b>10.68%</b>

### Valuation of Equity Shares

Particulars	Value
Capital Employed on Valuation Date (excluding Non-Trade Investments)	22,50,000
Weighted Average Post-Tax Return on Capital Employed (Productivity Factor)	10.68%
Expected PAT i.e. Productivity Value (Capital Employed x 10.68%)	2,40,300
<b>Less:</b> Provision for Replacement and Rehabilitation (25% x ₹ 2,40,300)	(60,075)
<b>Less:</b> Preference Dividend (₹ 3,00,000 x 9%)	(27,000)
<b>Future Maintainable Profits for Equity Shareholders</b>	<b>1,53,225</b>

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Normal Rate of Return (given assumed to be post tax rate)	9%
Capitalised Value of Future Maintainable Profits = $\frac{1,53,225}{9\%}$	17,02,500
<b>Add:</b> Non-Trade Investments	2,80,000
Total Net Assets available to Equity Shareholders	19,82,500
Number of Equity Shares = $\frac{₹10,00,000}{₹100}$	10,000
<b>Value per Equity Share</b>	<b>₹ 198.25</b>

**Note:**

- Since Tax Rate is not given in the Question, Expected PAT is calculated by applying Post-Tax ROCE on the Capital Employed at the Valuation Date. Ideally, Pre-Tax ROCE should be calculated and tax expense should be subtracted there from, to derive the future expected PAT.
- Alternatively, provision for replacement and rehabilitation need not be deducted, since it does not represent a charge on profit but only accumulation of profit. These are very much part of Equity Earnings.

(b)

**(I) Average Equity Beta:**

$$\text{Average } \beta \text{ for past 5 years} = \frac{(0.48 + 0.52 + 0.60 + 1.10 + 0.99)}{5}$$

$$\text{Equity Beta} = \mathbf{0.738}$$

**(II) Cost of Equity** =  $K_e = R_f + \text{Beta} \times (R_m - R_f) = 12 + 0.738 \times (15.50 - 12) = \mathbf{14.58\%}$

**(III) Computation of Cost Debt:**

$$\begin{aligned} \text{Interest Rate} &= \text{Interest} \div \text{Loan Amount (Assumed to be Face Value)} \\ &= 4.85 \text{ Crores} \div 37.00 \text{ Crores} = \mathbf{13.11\%} \end{aligned}$$

$$\text{Cost of Debt} = \text{After Tax Interest Rate} = 13.11\% \times (100\% - \text{Tax Rate } 25\%) = \mathbf{9.83\%}$$

**(IV) Computation of Weighted Average Cost of Capital**

Particulars	Amount	Cost	Product
Shareholders' Funds	740 Crores	14.58%	107.89
Debt Funds	37 Crores	9.83%	3.64
<b>Total</b>	<b>777 Crores</b>		<b>111.53 Crores</b>

$$\text{Weighted Average Cost of Capital} = 111.53 \text{ Crores} \div 777 \text{ Crores} = 14.35\%$$

**(V) Economic Value Added** = Operating Profits After Tax **Less** Capital Employed x Cost of Capital

$$\begin{aligned} \text{Operating Profits after Tax} &= \text{Profits after Tax} + \text{After Tax Interest} \\ &= ₹ 205.90 + ₹ 4.85 \times (1 - 0.25) = ₹ 209.54 \text{ Cr.} \end{aligned}$$

$$\text{So, EVA} = ₹ 209.54 \text{ Crores Less } (777 \text{ Crores} \times 14.35\%) = \mathbf{₹ 98.01 \text{ Crores}}$$

**Note:** Alternative answers exist since WACC can be computed based on Market Capitalisation instead of Book Values, and Beta may be taken as the highest Beta of recent years

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**Question No. 4.** (Answer any two questions. Each question carries 15 marks)

4. (a) (i) Company A will acquire Company B with shares of common stock. The financial details are given hereunder:

Particulars	(Amounts in ₹)	
	Company A	Company B
Present earnings	20 million	5 million
EPS	4.00	2.50
Market Price	64	30
P/E	16	12

It is given that Company B has agreed on an offer of ₹35 in common stock of Company A. Analyze the merger proposal for both companies. [9]

- (a) (ii) Common factors that spurred the mergers and acquisition activity worldwide? [6]

Answer:

4. (a) (i)

Statement showing necessary calculation:

Particulars	(Amounts in ₹)	
	Company A	Company B
Present earnings	20 million	5 million
EPS	4.00	2.50
Market Price	64	30
P/E	16	12
Number of Shares	5 million	2 million

Total earnings of the merged entity = ₹(20 + 5) million = ₹25 million

Exchange ratio = [Value paid of A Co. share / Value of A Co. share]  
= ₹35 / ₹64 = 0.546875

New Shares of Company A issued = 0.546875 x 20,00,000 = 10,93,750

Total shares outstanding of the merged entity = 60,93,750

Earnings per share of the merged entity =  $\frac{\text{Total Earnings}}{\text{Total number of shares outstanding}}$   
= 25 million / 60,93,750 = ₹4.10

### EPS Analysis:

The shareholders of Company A will experience an increase in earnings per share because of the acquisition [₹4.10 post-merger EPS versus ₹4.00 pre-merger EPS].

The shareholders of Company B will experience a decrease in earnings per share because of the acquisition [0.546875 x ₹4.10 = ₹2.24 post-merger EPS versus ₹2.50 pre-merger EPS]

OR

₹2.50 / 0.546875 = ₹4.57 pre-merger EPS versus ₹4.10 post-merger EPS].

## Answer to PTP\_Final\_Syllabus 2012\_June 2016\_Set 1

### Verification using P/E:

Acquiring firm will have its EPS increased if its price paid to acquire, results in a lower P/E than its existing P/E. In this case P/E ratio "paid" for Company B is ₹35/₹2.50 = 14 versus pre-merger P/E ratio of 16 for Company A. In other words had A Co. paid a higher price for B Co. shareholders, resulting in a P/E greater than 16, and then A Co. would not have benefited from the merger.

(a) (ii) Merger and acquisition the most talked about term today creating lot of excitement and speculative activity in the markets. However, before the idea of M&A crystallizes, the firm needs to understand its own capabilities and industry position. It also needs to know the same about the other firms it seeks to tie up with, to get a real benefit from a merger. A mergers and Acquisitions activity is that the divesting firm moves from diversifying strategy to concentrate on core activities in order to improve and increase competitiveness. Globalization has increased the competitive pressure in the markets. In a highly challenging environment a strong reason for M&A is a desire to survive. Thus apart from growth, the survival factor has off late, spurred the M&A activity worldwide.

### Some such factors are listed below:

- The company's business prospects and nature of its business
- The prospects for industry in which the company operates
- Management reputation
- Goodwill and brand value
- Marketing network
- Technology level
- Efficiency level in terms of employees
- Financial performance
- Future earnings
- The legal implications
- Government policy in general and in particular for that industry
- Current valuations of shares in stock markets

4. (b) The Balance Sheet of D Ltd on 31<sup>st</sup> March 2016 is as under-

**Balance Sheet as at 31<sup>st</sup> March 2016**

Equity and Liabilities	₹	Assets	₹
<b>(1) Shareholders' Funds:</b>		<b>(1) Non-Current Assets:</b>	
<b>(a) Share Capital -</b>		<b>Fixed Assets:</b>	
1,25,000 Shares of ₹ 100	1,25,00,000	<b>(i) Tangible Assets</b>	
each fully paid		- Building	80,00,000
<b>(b) Reserves &amp; Surplus</b>		- Machinery	70,00,000
-P&LA/c	53,00,000	<b>(ii) Intangible Assets</b>	
<b>(2) Current Liabilities:</b>		- Goodwill	10,00,000
<b>(a) Short Term Borrowings</b>		<b>(2) Current Assets:</b>	
- Bank Overdraft	46,50,000	<b>(a) Inventories</b>	80,00,000
<b>(b) Trade Payables</b>		<b>(b) Trade Receivables</b>	
- Creditors	52,75,000	- Debtors	50,00,000
<b>(c) Short Term Provisions</b>			
- Provision for Tax	12,75,000		
<b>Total</b>	<b>2,90,00,000</b>	<b>Total</b>	<b>2,90,00,000</b>



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The Profit/Loss for the last five years is as follows –

- 2011-2012 Loss ₹ (13,75,000),
- 2012-2013 Profit ₹ 24,55,000,
- 2013-2014 Profit ₹ 29,25,000,
- 2014-2015 Profit ₹ 36,25,000,
- 2015-2016 Profit ₹ 42,50,000.

There is no change in the paid up capital of the company since its inception.

Income Tax Rate so far has been 40% and the above Profits have been arrived at on the basis of such tax rate. From 2016-2017, the rate of Income Tax should be taken at 45%, 10% Dividend is 2012-2013, 2013-2014 and 15% dividend in 2014-2015 and 2015-2016 has been paid. Market Price of this Share on 31<sup>st</sup> March, 2016 is ₹ 125 with effect from 1<sup>st</sup> April, 2016, the Managing Directors remuneration will be ₹ 20,00,000 instead of ₹ 15,00,000. The Company has secured a contract from which it can earn an additional ₹ 10,00,000 per annum for the next five years.

Calculate the value of Goodwill at 3 years purchase of Super Profit, (for calculation of Future Maintainable Profits weighted average is to be taken). [15]

Answer:

4. (b)

### 1. Computation of Average Capital Employed

Particulars	₹	₹
<b>Assets:</b> Building		80,00,000
Plant and Machinery		70,00,000
Stock		80,00,000
Sundry Debtors		50,00,000
<b>Total Assets</b>		<b>2,80,00,000</b>
<b>Less:</b> Outside liabilities: Bank Overdraft	46,50,000	
Creditors	52,75,000	
Provision for Taxation	12,75,000	1,12,00,000
<b>Closing Capital Employed</b>		<b>1,68,00,000</b>
<b>Add:</b> Dividend at 15% paid during the year (Note) (15% x ₹ 1,25,00,000)		18,75,000
<b>Less:</b> Half of the Profit After Tax for the year i.e. 42,50,000 x 50%		(21,25,000)
<b>Average Capital Employed</b>		<b>1,65,50,000</b>

**Note:** It is assumed that Dividend has been paid towards the end of the year, out of current year profits

### 2. Computation of Future Maintainable Profits

Year	Profit	Weight	Product
2012 -13	24,55,000	<b>1</b>	24,55,000
2013-14	29,25,000	<b>2</b>	58,50,000
2014-15	36,25,000	<b>3</b>	1,08,75,000
2015-16	42,50,000	<b>4</b>	1,70,00,000
<b>Total</b>		<b>10</b>	<b>3,61,80,000</b>

## Answer to PTP\_Final\_Syllabus 2012\_June 2016\_Set 1

Weighted Average Profit after Tax = $\frac{₹3,61,80,000}{10}$	36,18,000
Since Tax Rate = 40%, Weighted Average Profit before Tax = $\frac{₹3,61,80,000}{60\%}$	60,30,000
Adjustments for Future Incomes / Expenses Increase in Managing Directors' Remuneration = (20,00,000 - 15,00,000)	(5,00,000)
Additional Earnings	10,00,000
Future Maintainable Profits before Tax	65,30,000
<b>Less:</b> Tax Expenses at 45% in future	(29,38,500)
Future Maintainable Profit after Tax	<b>35,91,500</b>

**Note:** Loss for 2011-12 has not been considered in the above calculations assuming to be an abnormal item. All income and expenditure adjusted as above are assumed to be taxable and tax deductible respectively.

### 3. Computation of Normal Rate of Return

#### (a) Method 1: EPS based NRR [For Controlling Acquisition]

❖ EPS for the year ending 31 <sup>st</sup> March 2016 = $\frac{\text{PAT}}{\text{Number of Equity Shares}} = \frac{₹42,50,000}{1,25,000}$	₹34 per share
❖ Market Price per Share on 31 <sup>st</sup> March 2016	₹ 125 per share
❖ $\text{NRR} = \frac{1}{\text{PE Ratio}} = \frac{1}{\text{MPS} \div \text{EPS}} = \frac{\text{EPS}}{\text{MPS}}$	<b>27.2%</b>

#### (b) Method 2: Simple Average Dividend based NRR [For Small Acquisition]

❖ Simple Average Dividend Rate for last four years = $\frac{10+10+15+15}{4}$	12.5%
❖ Dividend Per Share [Face Value ₹ 100 x 12.5%]	₹ 12.50
❖ Market Price per Share on 31 <sup>st</sup> March 2016	₹ 125 per share
❖ $\text{NRR} = \frac{\text{DPS}}{\text{MPS}} = \frac{₹13.50}{₹125}$	<b>10.0%</b>

#### (c) Method 3: Weighted Average Dividend based NRR

❖ Weighted Average Dividend Rate for last four years = $\frac{(10 \times 1) + (10 \times 2) + (15 \times 3) + (15 \times 4)}{(1 + 2 + 3 + 4)} = \frac{135\%}{10}$	13.5%
❖ Dividend Per Share [Face Value ₹ 100 x 13.50%]	₹ 13.50
❖ Market Price per Share on 31 <sup>st</sup> March 2016	₹ 125 per Share
❖ $\text{NRR} = \frac{\text{DPS}}{\text{MPS}} = \frac{₹13.50}{₹125}$	<b>10.8%</b>

## Answer to PTP\_Final\_Syllabus 2012\_June 2016\_Set 1

### 4. Valuation of Goodwill using different NRR calculated above

Approach	EPS based	Simple Avg Dvd	Weighted Avg Dvd
(a) Future Maintainable Profits	₹ 35,91,500	₹ 35,91,500	₹ 35,91,500
(b) Normal Profits = Avg Capital x NRR	1,65,50,000 x 27.2% = ₹ 45,01,600	1,65,50,000 x 10% = ₹ 16,55,000	1,65,50,000 x 10.8% = ₹ 17,87,400
(c) Super Profits = (a) - (b)	Nil	₹ 19,36,500	₹ 18,04,100
(d) Goodwill at 3 years purchase of super profits	Nil	₹ 58,09,500	₹ 54,12,300

**Note:** Alternatively, Normal Profits can also be computed based on Closing Capital Employed.

4. (c) (i) Describe the underlying assumptions of Black Scholes option pricing formulae. [7]

(c) (ii) The following financial share data pertaining to CMC LTD an IT company is made available to you:

Year ended March 31st	2016	2015	2014
EBIT (₹)	696.03	325.65	155.86
Non-branded Income (₹)	53.43	35.23	3.46
Inflation compound factor @ 8%	1.000	1.087	1.181
Remuneration of Capital	5% of average capital employed		
Average capital Employed (₹)	1112.00		
Corporate Tax Rate	35%		
Capitalization Factor	16%		

You are required to calculate the Brand Value for CMC Ltd.

[8]

**Answer:**

4. (c) (i)

#### Assumptions of Black Scholes Model:

The BS model is based on the following assumptions:

- (I) Stock price follow a geometric Brownian motion with constant drift ( $\mu$ ) and volatility ( $\sigma$ ).
  - ❖ It follows from this that the return is a normal distribution (then the underlying is a lognormal distribution).
  - ❖ It often implies the validity of the efficient market hypothesis.
- (II) It is possible to borrow and lend cash at a known and constant risk free interest rate,  $R_f$ .
- (III) The market is efficient and there are no transaction costs and taxes. Options and share are perfectly divisible. Information is available to all investors with no costs.
- (IV) The stock does not pay any dividend.

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- (V) The short selling of securities with the full use of proceeds is permitted. There is no risk free arbitrage opportunity.
- (VI) Option use the European exercise terms, which detects that option, may only be exercised on the date of expiration.
- (VII) Security trading is continuous. This means that the share prices behave in a manner consistent with a random walk in continuous time.

(c) (ii)

### CMC LTD. Computation of Brand Value

(Amount in ₹ Crores)

Year ended March 31st	2016	2015	2014
EBIT (₹)	696.03	325.65	155.86
Less : Non-brand income (₹)	53.43	35.23	3.46
Adjusted Profits (₹)	642.60	290.42	152.40
Inflation Compound Factor @ 8%	1.000	1.087	1.181
Present Value of Profits for the brand (₹)	642.60	315.69	179.98
Weightage Factor	3	2	1
Weightage Profits (₹)	1927.80	631.38	179.98
Weight Average Profits = $\frac{1927.80 + 631.38 + 179.98}{3 + 2 + 1}$ (₹)	456.53		
Remuneration of Capital [5% of Average capital employed] (i.e. 1112x5%)	55.60		
Brand Related	400.93		
Corporate tax @ 35%	140.33		
Brand Earning	260.60		
Capitalization Factor	16%		

**Brand Value:** (Return / Capitalization Rate) =  $260.60 / 0.16 = ₹ 1628.75$  Crore.