STRATEGIC PERFORMANCE MANAGEMENT AND BUSINESS VALUATION

Time Allowed: 3 Hours **Full Marks: 100**

The figures in the margin on the right side indicate full marks.

SECTION – A (Compulsory)

1. (a) Choose the correct option: **[15 x 2 = 30]**

(i) If A Bottom-up approach used in strategy formulation is known as_____.

(a) Strategy Implantation
(b) Formulation of operational plan
(c) Formulation of tactical plan
(d) Reverse mapping

(ii) Small/Mid-sized Six Sigma projects are executed by professionals titled as:

(a) Champion
(b) Green Belt
(c) Black Belt
(d) Site Champion

(iii) Monopolistic competition and Oligopoly are the examples of_____.

(a) Perfect
(b) Imperfect
(c) No market structure
(d) All of the above

(iv) Which of the following are not the element/ parameter of NCAER model of corporate distress prediction?

(a) Net worth positions
(b) Outstanding liability position
(c) Net working capital position
(d) Cash profit position

(v) What does Warren Buffet's phrase 'Price is what you pay and value is what you get' suggest?

(a) Price and value are always the same.
(b) Price is more important than value.
(c) Price is less important than value.
(d) Price and value can be different.

(vi) A project assumed monetary gain or loss by discounting entire cash inflows and outflows by utilising the necessary rate of return is listed as

(a) Net recorded cash value
(b) Net discounted value
(c) Net future value
(d) Net present value

(vii) Which of the following is true about the callable bond?
(a) Callable bonds always trade at a discount to non-callable bonds
(b) Callable bonds expose issuers to the risk of reduced re-investment return
(c) Callable bonds are actually variable tenor bonds
(d) Callable bonds are not as liquid as non-callable bonds

(viii) 8% bond of Face Value ₹100 is selling for ₹96. What would be its Current Yield?
(a) 8%
(b) 12%
(c) 8.33%
(d) None of the above

(ix) If X ltd has ₹100 crores worth of common equity on its balance sheet comprising of 50 lakhs shares. The company's market value Added (MVA) is ₹24 crores. What is company's stock price?
(a) 230
(b) 238
(c) 248
(d) 264

(x) If purchase consideration is more than net assets of the transferor company, then difference will be shown as:
(a) Goodwill account
(b) Capital reserve account
(c) General reserve account
(d) None of the above

(b) Read the following scenario and answer the following questions:
An investor has been watching two similar companies, Lotus Inc., and ASA Inc. that have recently been improving their return on equity compared to the rest of companies in the industry. This could be a good thing if the two companies are making better use of assets or improving profit margins. But if the companies have increased the debt proportion in the capital structure, this would also be reflected in the ROE but would actually mean an increase in the financial risk perception of the companies.
In order to decide which company has a better opportunity, the investor decides to use DuPont

analysis to determine the efforts of each company in improving its ROE and whether that improvement is sustainable.

The following information are provided:

					figures in ₹ '000
	Particulars	Lotus Inc.		ASA Inc.	
		Year 1	Year 2	Year 1	Year 2
i.	Net Income	1,000	1,200	2,100	2,100
ii.	Revenue from operation	10,000	10,000	17,500	17,500
iii.	Average Assets	5,000	4,800	8,750	8,750
iv.	Average Equity	2,000	2,000	5,000	3,500

Based on the above case, you are required to answer the questions no. from (i) to (v):

(i) The profit margin of Lotus Inc. in the Year 2 will be:

(a) 8.33
(b) 0.1
(c) 0.12
(d) None of the above.

(ii) What will be the asset turnover ratio of ASA Inc. in Year 1?

(a) 2
(b) 2.08
(c) 0.5
(d) None of the above.

(iii) Which company has better ROE in Year 1?

(a) Lotus Inc.
(b) ASA Inc.
(c) Both companies have same ROE
(d) None of the above.

(iv) The ROE of Lotus Inc. in the Year 1 will be:

(a) 42%
(b) 50%
(c) 60%
(d) None of the above.

(v) The equity multiplier of ASA Inc. in Year 1 and Year 2 will be respectively:

(a) 2.5 and 2.4
(b) 2.5 and 1.75
(c) 1.75 and 2.5
(d) None of the above.

Answer:

(a)

(i) D
(ii) B
(iii) B
(iv) B
(v) D
(vi) D
(vii) C
(viii) C
(ix) C
(x) A

(b)

(i) C
(ii) A
(iii) A
(iv) B
(v) C

SECTION – B

(Answer any five questions out of seven questions given. Each question carries 14 Marks.)

[5x14=70]

2. (a) Explain Customer Relationship Management (CRM) and describe its types. [7]

(b) Explain the steps in developing a Balanced Score Card. Describe the information to be required for performance measurement under Balanced Score Card. [7]

Answer:

(a) Traditional market segmentation strategy, divided the customers into subgroups or segments based on their needs, based on which standardized products and services were designed and readied for a particular segment and delivered to that segment. However, the issue of individual customer preference took a back seat. This was the preferred norm as consumer level data was not available or was too costly which made the products and services too expensive.

CRM is information technology dependant and is built around software that enable an enterprise manage customer relationships in an organised way. It is a business strategy that builds around customer satisfaction to maximise profitability. It fosters customer centric processes. CRM is becoming an important business strategy and companies are spending billions of dollars on CRM software the world over. On the basis of a

report generated by Gartner Inc. In 2012, the estimated annual spending on CRM technology was $14 billion in 2013, and would become approximately $18.4 billion in 2016.

There is, as such, a debate between managerial and technological issues in implementing a CRM. The managerial approach to CRM emphasises a disciplined approach to customer relationship for maintaining profitable customers may be developed with or without involvement of technology. On the other, the technological school emphasises that in a large organisation the notion of dealing with millions of customers across multiple channels is incomprehensible without systemised and upgraded information technology.

Types of CRM:

There are, as such, three main forms of CRM; strategic, operational and analytical. In the following few lines a brief note is added for each of them.

1. Strategic CRM: this is specifically a managerial concept and CRM is defined as a customer centric business strategy for attracting new customers and retaining old profitable customers. The main issue is development of a customer-centric business culture which is mainly reflected in leadership behaviours and the design of formal systems of the company,

2. Operational CRM: this advocates partial automation of those aspects which are interfaces with the customer such as selling, marketing and after sales service.

3. Analytical CRM: this is a technology driven definition, applicable mainly for larger organisations. All possible data related to the customer are captured and extracted from various sources, stored in a centralised database, distributed and interpreted as and when required to enhance customer value. A repository is created which stores purchase, sales data, financial data and marketing data, which is retrieved in accordance. The emergence of 'big data' is a big thing in the business environment. Though the same arose to prominence during early 2000, it is only since 2010 that 'big data' coupled with IT enabled analytics, became a novelty. Big data extends beyond structured data, including unstructured data of all varieties: text, audio, video, click streams, log files and more. The tools for searching, making sense of, and acting on unstructured data differ from those available for data-mining structured datasets. With the advent of big data and business data analytics analytical CRM gained superior strategic importance

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(b)

(i) The steps in the process of developing of BSC are:

- Identify the key outcomes to the success of the organization.
- Identify the process that leads to these outcomes.
- Develop key performance indicators for these processes.
- Develop reliable data capture and measurement systems.

- Develop a mechanism for reporting these to the relevant managers and staff.
- Enact improvement programs to ensure that performance improves.

(ii) The main types of information required by the managers to implement the balanced score card approach to performance measurement are:

Customer perspective- How do customers see us – price, quality, delivery, customer support etc.

Internal perspective- where we must excel at – efficiency of manufacturing process, sales penetration, new production introduction, skilled manpower etc.

Learning and growth perspective- can we continue to improve and create value Technology leadership, cost leadership, market leadership, research and development, cost reduction etc.

Financial perspective- How do we look to the shareholders- Sales, cost of sales, return on capital employed, profitability, prosperity etc.

3. (a) A manufacturer can sell 'Q' items (Q > 0) at a price of (330 – Q) each; the cost of producing Q items is TC (Q) = Q^2 + 10Q + 12. Calculate the maximum profit and the number of items he should sell to achieve this maximum profit. [7]

(b) Explain briefly the Risk Enabled Performance Management (REPM). Summarize the focus areas of the traditional ERM and classify the areas of practices on which the transformation to REPM is based. [7]

Answer:

(a) Given, Price (P) = 330 – Q and Cost (c) = Q^2 + 10Q +12 and Q ≥ 0

Revenue (R) = P × Q = 330Q – Q^2

Profit (π) = R – C = 330Q – Q^2 – (Q^2 + 10Q +12)

π = 330Q – Q^2 – Q^2 - 10Q -12

π = 320Q – 2Q^2 -12

In order to maximize the profit, the two steps are followed:

dπ/ dQ = 320 - 4Q = 0 (setting the first order derivative equal to zero).

Thus, at Q = 320/4 = 80, which is the critical point of the profit function. Thus the second order condition is taken up

= $d^2π$/ dQ^2 = -4 which is negative

Therefore, the profit is maximum at Q = 80 and the maximum profit is calculated as;

π = 320Q – 2Q^2 -12

π = 320 (80) – 2$(80)^2$ -12

π = 12788.

(b) For the purpose of handling uncertainties and opportunities at the same time, business leaders need to be incorporate risk exposure, what-if scenarios, uncertainty, best case/worst case forecast, earned value models, risk drivers and contingency plans etc in their business plans. They cannot afford the traditional set up where risk is something handled independently by risk managers once a quarter. They need access to

the insights, tools and models on a continuous basis. Thus, there is a need for a more comprehensive Risk Enabled Performance Management (REPM) which grows out of the traditional ERM model.

The focus areas of the traditional or foundational ERM may be summarized as

1. Independent enterprise risk identification and assessment process.
2. Risk reporting to the top management is one of the primary aspects of traditional ERM.
3. The risk management process is independent of operations and performance management.
4. Historical perspective design the evaluation of current exposure
5. The focus is on compliance

The transformation to REPM is based on some leading practices which are grouped in three aspects;

(I) REPM is used to measure and drive performance
- (i) Integrates risk and performance management.
- (ii) Creates linkages between KRIs and performance drivers.
- (iii) Uses data analytics for risk analysis

(II) REPM is forward looking
- (i) Defines future trends and undertakes predictive analysis
- (ii) Emerging risks are also considered
- (iii) Scenario analysis and stress testing are two important tools used

(III) Action and result orientation - Risk and uncertainty are key elements in strategic and operational decision framework and management process.

4. (a) Describe (with formula) the Five Component DuPont Analysis. [7]

(b) Mr. Sharma, a Cost Accountant by profession, is an independent financial analyst. He extracted the respective ratios (Note 1) and calculated the overall Altman Z-score for Y-Connection, an Indian firm engaged in the manufacture of electronics products during the period 2020 to 2024, which is given as under:

Years	2020	2021	2022	2023	2024
X1	0.020	0.010	-0.010	0.020	0.040
X2	0.174	0.110	0.110	0.110	0.070
X3	0.253	0.080	0.180	0.200	0.130
X4	0.565	0.469	0.663	0.922	0.724
X5	0.823	0.900	1.060	1.200	1.540
Score	1.840	1.580	2.000	2.450	2.490

Note 1:

X_1 = Working Capital to Total Assets

X_2 = Retained Earnings to Total Assets

X_3 = EBIT to Total Assets

X_4 = Market Value of Equity to Total Debts

X_5 = Sales to Total Assets

You, as a new recruit, have been asked by Mr. Sharma to interpret the above results, Summarize your response and comment on the financial position of the firm.

[7]

Answer:

(a) The 5 –component DuPont analysis is an extension of the original model of DuPont Analysis. In this case, the ROE is segregated into five components which provide information on five aspects of profitability.

The identity is presented as;

ROE = Operational Efficiency × Interest Burden on Earnings × Tax burden on earnings × Asset Utilization × equity multiplier (Financial leverage).

The impact of operational efficiency (measured in terms of net margin), asset utilization (measured in terms of asset turnover) and financial leverage (measured in terms of the equity multiplier) is comprehended in 3 component analysis. Two additional aspects; the effect of interest on earning and the effect of tax on earnings, which are also the components of ROE, are deliberated in the 5 –component analysis.

The above identity is represented through five ratios, given below:

ROE = (EBIT÷ Sales) × (EBT÷ EBIT) × (EAT ÷ EBT) × (Sales ÷ Total Assets) × (Total Assets ÷ Equity)

- (EBIT ÷ Sales) - this is approximation of the net margin. Here earnings before interest and taxed (EBIT) is used as an approximation of the net profit. EBIT is calculated by adjusting net profit. This shows the operational efficiency of the firm.
- (EBT÷EBIT) – this component is an addition in the 5 – component framework as compared to 3 component analysis. Earnings before Taxes (EBT) is mapped against the EBIT. This component shows the impact of interest burden on the earnings of the firm. If this ratio is one, it implies zero interest burden which further implies that there is no debt in the capital structure (all equity firm).
- (EAT÷EBT) –this is the third component in the 5 – component framework. Earnings after taxes (EAT) is mapped against EBT. This component shows the impact of tax burden on the earnings of the firm.
- (Sales ÷ Total Assets) - The asset turnover is a measure of productivity which measures how efficiently a company uses its assets to generate sales. The ratio of asset turnover measures the sales generated in terms of the asset base of the company. The issue of sset utilization is addressed in this ratio.
- (Total Assets ÷ Equity) – This ratio is referred as the equity multiplier and is an approximation of the financial leverage. If the ratio is one, it implies that all of the assets is sourced from equity and there is no debt component.

(b) Interpretation of Z-score of Y-Connection:

The Altman Z-Score is a financial model used to predict the likelihood of a company entering bankruptcy. It is based on five key financial ratios, and the final score is used to assess the financial health of a firm. Let' s analyses the results of Y-Connection for the period 2020-2024, based on the Altman Z-Score formula and the individual components provided.

Comment on Individual Ratios:

Ratio	Comments

X1: Working Capital to Total Assets	There is an improvement in this ratio from 2020 (0.020) to 2024 (0.040), which indicates an increase in the company's liquidity position. This is a positive sign, suggesting better short-term financial health.
X2: Retained Earnings to Total Assets	This ratio has generally declined from 2020 (0.174) to 2024 (0.070). This decline indicates a reduction in the firm's retained earnings as a proportion of total assets, which could be a sign of lower profitability or higher dividend payouts.
X3: EBIT to Total Assets	There is a decline in this ratio from 2020 (0.253) to 2023 (0.200), followed by a further drop in 2024 (0.130). This indicates lower operational efficiency and return on assets, and in the light of reduced retained earnings to total assets the decline upto 2024 warrants attention.
X4: Market Value of Equity to Total Debts	This ratio shows significant improvement from 2020 (0.565) to 2023 (0.922), followed by a slight decline in 2024 (0.724). A high and improving ratio indicates that the firm is becoming less reliant on debt and improving its financial structure.
X5: Sales to Total Assets	This ratio has consistently improved from 2020 (0.823) to 2024 (1.540), indicating that the firm has become more efficient in generating sales from its assets. This is a positive sign of growth and effective asset utilization. Although this may be at the cost of lower realization and lower profitability per unit.

Z-Score Interpretation:

The Z-Score for Y-Connection has shown an improving trend over the five years, from 1.840 in 2020 to 2.490 in 2024.

A Z-Score below 1.8 generally indicates a high risk of bankruptcy.
A Z-Score between 1.8 and 3.0 suggests a "gray area" of potential financial distress, with the firm at some risk but not yet at a crisis level.
A Z-Score above 3.0 generally suggests the company is financially healthy with a low risk of bankruptcy.

The Z-Score of Y - Connection is consistently in the "gray area" (between 1.8 and 3.0), though it has been improving year over year. This suggests that the company has been managing its financial risks effectively, but it is still in a position where caution is required.

The improvement from 1.840 to 2.490 is encouraging, indicating that the company is gradually strengthening its financial position and is moving towards greater stability and if the progress continues it will become financially healthy.

Conclusion:

The firm is still in the gray zone, meaning it is not in immediate danger of bankruptcy but should continue to focus on improving profitability, maintaining strong operational performance, and strengthening its equity base. The improving trend in the Z-Score is encouraging, but vigilance is necessary to ensure that the company does not fall into a riskier financial position in the future.

5. (a) The free cash flow of Suvision Ltd is projected to grow at a compound annual average rate of 35% for the next 5 years. Growth is then expected to slow down to a normal 5% annual growth rate. The current year's cash flow of Suvision Ltd is ₹ 4 lakhs. Suvision Ltd.'s cost of capital during the high growth period is 18% and 12% beyond the fifth year, as growth stabilizes. Calculate the value of the Suvision Ltd. [7]

(b) XENON Ltd. reported a profit of ₹100.32 lakhs after 34% tax for the financial year 2024-25. An analysis of the accounts reveals that the income included extraordinary items of ₹ 14 lakhs and an extraordinary loss of ₹ 5 lakhs. The existing operations, except for the extraordinary items, are expected to continue in future. Further, a new product is launched and the expectations are as under:

Particulars	₹ in lakhs
Sales	**70**
Material Costs	**20**
Labour Costs	**16**
Fixed Costs	**10**

The company has 50,00,000 Equity Shares of ₹ 10 each and 80,000 9% Preference Shares of ₹ 100 each with P/E Ratio being 6 times. Cost of capital is 12% (post tax).
Calculate:
(i) The value of the business.
(ii) The market price per equity share. [7]

Answer:

(a) Present Value of Cash Flows during the Forecast Period

$PV_{1-t} = \{[FCFE_0 \times (1 + g_t)^t]/ (1 + WACC)^t\}$

$= [(4 \times 1.35)/1.18] + [\{4 \times (1.35)^2\}/ (1.18)^2] + [\{4 \times (1.35)^3\} / (1.18)^3] + [\{4 \times (1.35)^4\}/ (1.18)^4] + [\{4 \times (1.35)^5\} / (1.18)^5]$

$= 5.4 / 1.18 + 7.29/ (1.18)^2 + 9.84/ (1.18)^3 + 13.29/ (1.18)^4 + 17.931/ (1.18)^5$

$= 4.58 + 5.24 + 5.99 + 6.85 + 7.84$

$=$ ₹30.50 lakh

Calculation of Terminal Value

Where $P_n = FCFE_n \times (1 + g) / (k_e - g)$

$=$ ₹ $(17.93 \times 1.05) /0.12-0.05$

$=$ ₹ 18.83/0.07

$=$ ₹ 269 Lakh

PV of Terminal Price $= 269 / (1.18)^5 = 117.58$

Value of the firm $= PV_{1-t} + PV_t$

= ₹30.50 + ₹117.58 = ₹ 148.08 lakh.

(b) (i)

Computation of Value of XENON Ltd.:

Particulars	(₹ in Lakhs)	(₹ in Lakhs)
Profit before Tax (100.32/0.66)		152.00
less: Extraordinary income		14.00
Add: Extraordinary Losses		5.00
Normal Profit		143.00
Profit from New product		
Sales	70	
Less : Material costs	20	
Labour costs	16	
Fixed Costs	10	
		24.00
Profit Before Tax		167.00
Less: Tax		56.78
Future Maintainable Profit after taxes		110.22
Relevant Capitalization rate		0.12
Value of business		918.50

(ii) Determination of Market Price per share:

Future Maintainable Profit after taxes (₹)	1,10,22,000.00
less: Preference Share Dividend 80,000 shares of 100 @ 9% (₹)	7,20,000.00
Earnings available for Equity Shareholders (₹)	1,03,02,000.00
No. of Equity Shares	50,00,000.00
EPS (₹)	2.06
P/E Ratio (in times)	6
Market price of share (₹)	12.36

6. (a) Bloomsbury India, the current publisher of the book, Handbook on Valuation of Securities and Financial Assets by Vikash Goel, is willing to sell the copyrights of this book to another publisher who is keen to buy the copyrights. The following assumptions may be relevant.

The current price of the book is INR 3,000 and the publisher currently sells 6,500 copies of the book annually. The cost of production, distribution and author royalties amount to 70 percent of Sales. The book is becoming popular and the publisher estimates that the sales of the book may increase by 5 percent every year for the next 5 years. This is including the newer editions of the same book.

However, after 5 years, given the introduction of other books on the same subject, dilution of exclusivity, violation of copyrights and plagiarism, there may not be any increase in sales but the sales may be stable at the same level as at year 5.

Assuming a discount rate of 10 percent. Evaluate the value of the copyrights. **[7]**

(b) The Income Statement and Balance Sheet of Radeon Company Ltd. is given below:

INCOME STATEMENT

Particulars	INR in Lakhs	INR in Lakhs
Sales	6,250	
Total Income		6,250
Less:		
Manufacturing cost	1,500	
Administration cost	800	
Selling and distribution cost	350	
Depreciation	200	
		2,850
EBIT		3,400
Less: Interest		150
EBT		3,250
Less: Tax (30%)		975
PAT		2,275
EPS		45.5
P/E ratio		3

BALANCE SHEET

LIABILITIES	INR in Lakhs	ASSETS	INR in Lakhs
Equity Capital (₹10 share)	500	Buildings	900
Reserve Surplus	350	Machinery	500
Term loan	650	Stock	150
Payables	300	Debtors	250
Provisions	130	Bank	130
TOTAL	1,930	TOTAL	1,930

The cost of equity and cost of debt is 14% and 8% respectively. The company pays 30% corporate tax. Calculate the EVA. Also, calculate Market Value Added (MVA) on the basis of Market value of equity capital.

[7]

Answer:

(a) The copyrights valuation can be done using the Market or Income or even cost approach. If we apply the Income approach to value the copyrights:

(Amount in INR)

Year	0	1	2	3	4	5	Terminal
Book Price	3,000						
Units Sales per Year	6,500						
Sales	1,95,00,000	2,04,75,000	2,14,98,750	2,25,73,688	2,37,02,372	2,48,87,490	2,48,87,490
Less: Costs	1,36,50,000	1,43,32,500	1,50,49,125	1,58,01,581	1,65,91,660	1,74,21,243	1,74,21,243
FCFE	58,50,000	61,42,500	64,49,625	67,72,106	71,10,712	74,66,247	74,66,247
Terminal Value							7,46,62,471
PV Factor		0.9091	0.8264	0.7513	0.683	0.6209	0.6209
PV of Cash Flows		55,84,147	53,29,970	50,87,883	48,56,616	46,35,793	4,63,57,928
Value of Equity	7,18,52,338						

(b) EVA Calculation:

EVA = NOPAT – (WACC × CE)

= ₹ [2,380 – (10.36% × 1,500)] lakhs

= ₹ 2,224.6 Lakhs

Calculation of NOPAT	INR in Lakhs
Sales	6,250
(-) Operating Expenses	2,650
(-) Depreciation	200
EBIT	3,400
(-) Tax @ 30%	1,020
NOPAT	2,380

Calculation of WACC

Sources	Amount in INR lakhs	Proportion	Cost	WACC
Equity Cap.	500	33.33	14%	4.67%
Retained	350	23.33	14%	3.27%
Term Loan	650	43.33	5.60%	2.43%
	1,500	100		10.36%

Cost of Debt (K_d) = I (1 – tax) = 8 (1 – 0.3) = 5.6

MVA = Market Capitalisation – Book value of Net Worth
= 6825 – 850
= ₹ 5975 lakhs

Market Capitalisation = MPS × No. of Shares
= 136.5 × 50
= ₹ 6825 lakhs

P/E Ratio = MPS÷ EPS
3 = MPS÷45.5
∴ MPS = 3 × 45.5
∴ MPS = ₹ 136.5

7. (a) MNO Company is considering the acquisition of PQR Company. The Target Company would receive INR 70 for each share of its common stock. The Acquiring Company does not expect any change in its price/earnings ratio multiple after the merger and chooses to value the target company conservatively by assuming no earnings growth due to synergy.

Calculate:

(i) The purchase price premium

(ii) The exchange ratio

(iii) The number of new shares issued by the acquiring company

(iv) Post-merger EPS of the combined firms

(v) Pre-merger EPS of the Acquiring Company

(vi) Pre-merger P/E ratio

(vii) Post-merger share price

(viii) Post-merger equity ownership distribution

The Following Additional Info is Available

	MNO	PQR
Earnings	**₹ 3,70,000**	**₹ 92,000**
Number of Shares	**90,000**	**24,000**
Market Price/share	**₹ 43**	**₹ 57**
Offer Price		**₹ 70**

[7]

(b) X Ltd. is considering a takeover of Y Ltd. The particulars of the two companies are given below:

Particulars	X Ltd.	Y Ltd.
Earnings after Tax (EAT) (in ₹)	20,00,000	10,00,000
Equity Shares (Nos.)	10,00,000	10,00,000
EPS	₹ 2	₹ 1
P/E Ratio (times)	10	5

Required:

(i) Calculate the market value of each company before merger.

(ii) Assuming that the management of X Ltd. estimates that the shareholders of Y Ltd. will accept an offer of one share of X Ltd. for four shares of Y Ltd. If there are no synergic effects, Calculate the market values of the Post-merger X Ltd. Suggest the shareholders of X Ltd. better off than they were before the merger?

(iii) Due to synergic effects, the management of X Ltd. estimates that the earnings will increase by 20%. Calculate the new Post-merger EPS and the Price per Share. Justify, will the shareholders be better-off or worse-off?

[7]

Answer:

(a)

(i) Purchase Price Premium = Offer price for target company stock / Target Company market price per share

= 70 / 57 = 1.228

(ii) Exchange Ratio = Price per share offered for target compay/ Makret price Per share for the acquiring Company

= 70 / 43 = 1.63

Acquiring company issues 1.63 shares for each share of target company.

(iii) New shares issued by acquiring company

= 1.63 × 24,000 = 39,070

(iv) Post Merger EPS of Combined Companies = Combined Earnings/ Total No. of Shares

Combined Earnings = 4,62,000
Total Shares = 1,29,070
Post merger EPS = 3.58

(v) Pre-Merger EPS of Acquiring Company

= 3,70,000 / 90,000 = 4.1

(vi) Pre-Merger P/E = 43 / 4.11 = 10.46

(vii) Post merger share price = Post merger EPS × Pre merger P/E

= 3.58 × 10.46 = 37.44

(viii) Post merger Equity Ownership distribution

Target Company = 39,070 / 1,29,070 = 30.27%
Acquiring Company = 100 – 30.27% = 69.73%

(b) (i) Market Value of Companies before merger:

	X Ltd.,	Y Ltd.,
EPS (₹)	2	1
P/E Ratio	10	5
Market Price/Share (₹)	20	5
Equity Shares	10,00,000	10,00,000
Total Market Value (₹)	2,00,00,000	50,00,000

(ii) Post-merger effect on X Ltd.

Post-merger earnings ₹ (20,00,000+10,00,000)	₹ 30,00,000
Equity Shares (10,00,000+10,00,000×1/4) [As the exchange ratio is 1:4]	12,50,000
EPS: 30,00,000/12,50,000	₹ 2.4
P/E Ratio	10.00
Market Value: 10 × ₹ 2.4 (P/E × EPS)	₹ 24
Total Value (12,50,000 × ₹ 24)	₹ 3,00,00,000

Gains from Merger:

Post-merger market value of the firm	₹ 3,00,00,000
Less: Pre-merger market value X Ltd., 2,00,00,000	

Y Ltd., 50,00,000	₹ 2,50,00,000
	₹ 50,00,000

Apportionment of gains between Shareholders:

	X Ltd.	Y Ltd.
Post-merger market value 10,00,000×₹ 24 2,50,000×₹ 24	₹ 2,40,00,000	₹ 60,00,000
Less: Pre-merger market value	₹ 2,00,00,000	₹ 50,00,000
	₹ 40,00,000	₹ 10,00,000

Thus, the shareholders of both the companies have gained from the merger**.**

(iii) Post-merger Earnings:

Increase in earnings by 20%

New earnings: ₹ 30,00,000 × 120% = ₹ 36,00,000

No. of Equity Shares = 12,50,000

EPS = ₹ 36,00,000/12,50,000 = ₹ 2.88

P/E Ratio = 10

Market Price/Share = ₹ 2.88 × 10 = ₹ 28.80

Therefore, shareholders will be better-off.

8. (a) Last year, Mr. Sandeep was engaged as a consultant to the Expert Electricals and prepared some analysis of its cost-volume-profit relationships. Among his findings was that the profit volume ratio was 40% at the firm's planned selling price of ₹ 50. The firm expected to sell 8,000 units at the price of ₹ 50, which would result in an income of ₹ 96,000. Sandeep stressed the point in his report to the chief executive of the Company that profits would change at the rate of ₹ 0.40 per rupee change in sales.

The chief executive called Sandeep to tell him that the result did not come out as were told to him. The firm earned profits of ₹ 1,26,400 on sales volume of ₹ 4,53,600. Although variable costs per unit were incurred as expected, the firm had higher fixed costs than expected because of ₹ 4,000 advertising campaign during the year. The campaign was coupled with an increase in selling price and the chief executive was very pleased with the results. However, Sandeep is asked to explain why profits did not increase by 40% of the added sales volume of ₹ 53,600 but rather somewhat more.

You are required to do the following:

(i) Reconstruct the income statement for the year based on the actual results.

(ii) Identify (I) the number of units sold and (II) the selling price per unit.

Explain to the chief executive why the results were at variance with the planned results.

[7]

(b) XYZ Ltd. is considering merger with ABC Ltd. XYZ Ltd.'s shares are currently traded at ₹ 25. It has 2,00,000 shares outstanding and its profits after taxes (PAT) amount to ₹ 4,00,000. ABC Ltd. has 1,00,000 shares outstanding. Its current market price is ₹ 12.50 and its PAT are ₹ 1,00,000. The merger will be effected by means of a stock swap (exchange). ABC Ltd. has agreed to a plan under which XYZ Ltd. will offer the current market value of ABC Ltd.'s shares:

(i) Calculate the pre-merger earnings per share (EPS) and P/E ratios of both the companies.

(ii) If ABC Ltd.'s P/E ratio is 8, calculate its current market price. Evaluate the exchange ratio and calculate XYZ Ltd.'s post-merger EPS.

(iii) Assess the exchange ratio, must be for XYZ Ltd. so that pre and post-merger EPS to be the same.

[7]

Answer:

(a) Income Statement based on actual results:

(i) Income statement contains sales revenue, variable costs, fixed costs and profit (loss).

In the problem, sales and income are known. We are required to determine variable costs and fixed costs. Given the P/V ratio of 40%, the expected contribution margin is ₹ 1,60,000 i.e. (40% x 8,000 x ₹ 50) and the expected profit is ₹ 96,000. Hence expected fixed costs would be ₹ 64,000 (i.e. ₹ 1,60,000 – ₹ 96,000). The actual fixed costs were higher by the amount of advertisement expenditure of ₹ 4,000 i.e. actual fixed costs would be ₹ 68,000. Since actual income was ₹ 1,26,400 and fixed costs were ₹ 68,000, total actual contribution must have been ₹ 1,94,400 (₹ 1,26,400 + ₹ 68,000), Variable costs, then should be ₹ 2,59,200 i.e. (₹ 4,53,600 – ₹ 1,94,400).

The income statement for the year would be as follows:

	Amount (₹)
Sales	4,53,600
Less : Variable costs	2,59,200
Contribution	1,94,400
Less : Fixed costs	68,000
Net Income	1,26,400

(ii) (I) Since variable costs per unit were as expected, variable costs per unit were (60% x ₹ 50) i.e. ₹ 30. Total actual variable costs were ₹ 2,59,200.
Units sold were (₹ 2,59,200 ÷ ₹ 30) = 8,640 units

(II) Sales price per unit = Total sales revenue / No. of units sold
= ₹ 4,53,600 / 8,640 = ₹ 52.50

Explanation to Chief Executive:

Mr. Sandeep's answer to the chief executive should highlight the changes in the selling price and fixed costs. In the cost-volume-profit-relationship, assumptions are critical. If they vary, the planned and actual results are bound to differ. Here, selling price has gone up causing higher P/V ratio (variable cost per unit remains constant) and hence, more profit rate than ₹0.40 per rupee of additional sales. Revised P/V ratio is 42.86% (9/21 per rupee of sales). Furthermore, additional fixed costs have been incurred. These two factors distorted the cost-volume profit relationship stipulated by Mr. Sandeep.

(b)

(i) Pre-merger EPS and P/E ratios of XYZ Ltd. and ABC Ltd.

Particulars	XYZ Ltd.	ABC Ltd.
Profit and taxes	₹ 4,00,000	₹ 1,00,000
Number of shares outstanding	2,00,000	1,00,000
EPS (Earning after tax/No. of shares)	₹ 2	₹ 1
Market price per share	₹25.00	₹ 12.50
P/E Ratio (times) (MPS÷EPS)	12.50	12.50

(ii)

Particulars	XYZ Ltd.	ABC Ltd.
If ABC PE is 8. Market Price		8.00
Exchange Ratio = Transferor Price / Transferee Price		0.32
Number of shares to be issued (Transferor's old Number of shares × Exchange Ratio)		32,000
Total New Shares (Transferee's Old number of shares + New shares issued)	2,32,000	
Total Earnings	5,00,000	
New EPS	2.16	

(iii) Desired exchange ratio

Total number of shares in post-merged company

=Post - merged earnings ÷ Pre-merger EPS of XYZ Ltd. = 5,00,000 ÷ 2 = 2,50,000

Pre-merger EPS of XYZ Ltd. = ₹2

Number of shares required to be issued = 2,50,000 – 200,000 = 50,000

the exchange ratio is = 50,000/ 1,00,000 = 0.50