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) _____ involves breaking down each of the activities of a firm into its various activities, and showing where value is added for its customers.

(a) Storyboarding.
(b) Value Chain analysis.
(c) Blueprinting.
(d) Perceived service.

(ii) How many different perspectives are there with a balanced scorecard?

(a) 3
(b) 2
(c) 6
(d) 4

(iii) One of the following is not a Competition based pricing method.

(a) Going rate pricing
(b) Sealed bid pricing
(c) Marginal cost pricing
(d) Trade association based pricing

(iv) The standard error (SE) of the sample mean loss distribution is equal to the

(a) Cash profit position standard deviation of the population multiplied by the square root of the sample size
(b) standard deviation of the population multiplied by the cube root of the sample size.
(c) standard deviation of the population divided by the square root of the sample size.
(d) standard deviation of the population divided by the cube root of the sample size.

(v) When valuation process is under multiple scenarios, you take into consideration,

(a) Scenarios
(b) Ranges of value
(c) Ranges of value or Scenarios
(d) Ranges of value & Scenarios

(vi) What does the Liquidation Value refer to in the asset-based approach to valuation?

- **(a) The current cost of replacing all the assets of a company**
- **(b) The value of the asset on a free market**
- **(c) Sum of estimated sale values of the assets owned by a company**
- **(d) The present value of the future earnings from the asset.**

(vii) In the absence of any information, valuers must consider valuing such unquoted investments at their

- **(a) Net Asset Values under cost approach**
- **(b) P/BV under market approach**
- **(c) PECV under Income approach**
- **(d) the Discounted Cash Flow (DCF) approach**

(viii) Market value Added (MVA) is the difference between the _____ of a firm and the _____contributed by investors

- **(a) Current market value, Capital**
- **(b) Book value, Capital**
- **(c) Book Value, Debt**
- **(d) None of the above**

(ix) The sales turnover of a company is ₹150 million. The peer group sales turnover is ₹600 million, and peer group market capitalisation is ₹1,800 million. The peer group sales multiple is?

- **(a) 2 Times**
- **(b) 3 Times**
- **(c) 4 Times**
- **(d) 6 Times**

(x) What type of merger took place between Vodafone India and Idea Cellular?

- **(a) Horizontal merger**
- **(b) Vertical merger**
- **(c) Conglomerate merger**
- **(d) Vortex merger.**

(b) Read the following scenario and answer the following questions:

Krishna Inks, a leading manufacturer of fountain pen inks, is striving to enhance product quality, process efficiency and financial performance. The company integrates Statistical Quality Control (SQC), Total Productive Maintenance (TPM) and financial performance measurement to improve operational effectiveness.

Phase 1: Quality Control & Defect Rate Monitoring (SQC Implementation)

The Quality Assurance (QA) team at Krishna Inks employs p-charts to monitor defect rates. A sample of 10 production batches, each containing 200 ink bottles, was tested for nonconforming units. The recorded defects per batch were:

Batch No.	1	2	3	4	5	6	7	8	9	10
Defects	12	7	9	15	10	5	6	13	8	9

The quality control manager is responsible for calculating the fraction defective (p) and determining control limits (UCL & LCL) to check if the production process is statistically stable.

Phase 2: Total Productive Maintenance (TPM) & OEE Calculation

Krishna Inks has three production machines (M1, M2, M3), each producing ink bottles.

The data for the machines is:

Machine	Availability (%)	Performance (%)	Quality (%)
M1	88	90	98
M2	92	85	97
M3	95	88	95

Phase 3: Financial Performance Analysis & Decision Making

The company is also evaluating its financial performance using Data Envelopment Analysis (DEA) to assess the efficiency of four plants (P1, P2, P3, P4) in terms of output per unit of input cost.

Plant	Production Output (units)	Total Cost (₹ million)
P1	110,000	18
P2	130,000	20
P3	100,000	15
P4	125,000	19

Choose the correct answer from the four alternatives given based from the above scenario:

(i) What is the calculated fraction nonconforming (p) in the production process?

(a) 0.043
(b) 0.047
(c) 0.050
(d) 0.055

(ii) What is the OEE for Machine M1?

(a) 78.2%
(b) 81.5%
(c) 85.1%
(d) 77.6%

(iii) What does a process being "out of control" in SQC indicate?

(a) Defects are present in every sample.

(b) The process is stable but shows minor deviations.

(c) A single data point lies outside the control limits.

(d) All defect rates are within normal variation.

(iv) Which plant is the most efficient based on DEA?

(a) P1

(b) P2

(c) P3

(d) P4

(v) If Krishna Inks wants to improve its financial efficiency while maintaining quality, which strategy is optimal?

(a) Reduce input costs in the least efficient plant

(b) Increase production without adjusting costs

(c) Lower quality control inspections to save time

(d) Expand investment in the highest cost plant

Answers:

(a)

i	ii	iii	iv	v	vi	vii	viii	ix	x
b	d	c	c	d	c	a	a	b	a

(b)

i	ii	iii	iv	v
b	d	c	c	a

SECTION – B

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

[5x14=70]

2. **(a) Explain the four intrinsic flows of the supply chain and Components of Supply Chain Management.** **[7]**

(b) Distinguish between Six Sigma and Total Quality Management. **[7]**

Answer:

(a) Supply chain is also known as 'value chain' when the 'links' are considered as value adding activities. The supply chain is also considered as a 'demand chain' when the chain is considered as a continuous demand originated from the consumers stretched to upstream suppliers. There are four intrinsic flows of the supply chain.

a) Material flow: For all manufacturing entities, materials flow from the beginning of the supply chain and flows to the customers as finished products, who are at the end of the supply chain.

b) Information flow: Unlike material flows, information flows both upstream and downstream. It is important to note that information requirement and flow is specific to a supply chain and differs from requirement in another supply chain.

c) Finance flow: Finance is the lifeblood of business and therefore smooth finance flow is an important aspect of the supply chain. Without smooth finance flow supply chains falters and becomes ineffective. Finance flows downstream and ultimately adds value to the supply chain.

d) Commercial flow: Most supply chains represent a transactional commercial flow. This means that the material flow that runs through the supply chain changes its ownership. This transactional commercial flow will only take place in a supply chain where there are more than one company in the supply chain.

Components of Supply Chain Management

Customer satisfaction in terms of quality products and timely delivery and internal operating efficiencies of the companies in the supply chain are the two aspects of effective supply chain management. Internal operating efficiency is measured in terms of the rate of return on investments in inventory and other assets and lower than average operating expenses. As such, companies in the supply chain -referred as 'links'- have to make effective decisions regarding the five specific areas.

a) Production: Producing as per requirements of the market is the primary requirement of supply chain management. It needs immaculate planning. Master production schedules have to be in place which takes into account plant capacities, workload balancing, quality control and equipment maintenance scheduling.

b) Inventory: In supply chain management, decisions regarding inventory to be held at each stage of the supply chain is crucial as a wrong decision has a cascading effect. Inventory often acts as a buffer against uncertainty in the supply chain. However, higher the inventory, higher is the cost of holding. Thus optimal inventory levels need to be fixed which will have a positive impact on all the links of the supply chain.

c) Location: The next important decision making issue, in supply chain management, is the selection of location for production and storage of inventory. The underlying issue is cost efficiency. These decisions facilitate products to flow through the supply to the final customer.

d) Transportation: Decision regarding inventory, discussed previously, is related to the mode of transportation. Cost effective mode of transportation results in delayed movement of products and uncertainty in transportation. The uncertainty may be countered with higher stock levels which will increase the cost of investment in inventory. Thus deciding upon the mode of transportation is critical to the success of the supply chain.

e) Information: Smooth flow of information is the key to successful implementation of supply chain and its management. With good information, people can make effective decisions about what to produce and how much, about where to locate inventory, and how best to transport it.

(b) TQM, Six-Sigma, and Toyota production system (or lean production), are three main quality improvement programs initiated by various companies in order to better their production processes to meet ever-growing challenges of the new competitive business environment. All three are quality improvement programs. Of the two, lean production system is taken up for discussion in the next section.
Both Six Sigma and TQM are quality management tools which have been put to effective use by companies. Although the methodologies and procedures used in the two appear quite similar, there are certain differences between the two which are enumerated in the next few lines;

a) Six-Sigma is a relatively newer concept than TQM – while TQM refers to continuous effort by employees to ensure high quality products Six Sigma incorporates many small changes in the systems to ensure effective results and better customer satisfaction. As such TQM evolved, through contributions of various quality gurus post 1950, as a philosophy of quality management. Feigenbaum introduced the concept of "Total Quality Control" (TQC) his first book "Quality Control Handbook" in 1951. This is considered as the starting of the philosophy of TQM. Six Sigma, on the other, incepted in 1981 in Motorola.

b) Focus - The main focus of TQM is to preserve existing quality standards whereas. Six Sigma focuses on improving quality by minimizing and eventually eliminating defects from the system.

c) Implementation – implementation of Six Sigma is much complicated in comparison to implementation of the TQM process. Deployment of Six Sigma is dependent on certified professionals (referred as Master Black Belts). Even the employees are certified as "Green Belts" or "Black Belts" depending on their level of proficiency. TQM, on the other, is a philosophy which can be referred to a part time activity which does not require any special training.

d) Results - Six-Sigma is delivers better and effective results than TQM. Customers' feedbacks make Six Sigma more accurate and result oriented. There is a growing consensus that six sigma will outperform TQM in future.

3. (a) A radio manufacturer produces "x" sets per week at total cost of $x^2+78x+2500$. He is a monopolist and the demand function for his product is x = (600-P)/8, when the price is "p" per set. Demonstrate that maximum net revenue is obtained when 29 sets are produced per week and calculate the monopoly price. [7]

(b) Explain briefly the process and objectives of risk management. **[7]**

Answer:

(a) Cost (C) = $x^2 + 78x + 2500$
Demand (D) X = (600 –P) / 8
8x = 600 – P
∴ P = 600 – 8x
Total Revenue per "x" sets
Price = $600x – 8x^2$

Maximum revenue is obtaining at MC = MR
Marginal Cost =dc/dx = 2x + 78 ……. (i)
Marginal Revenue = dr/dx= 600 – 16x……(ii)
Equating (i) & (ii),
2x +78 = 600 – 16x
or, 18x = 522
∴ x = 522/18 = 29
Monopoly price = 600 – 8x
= 600 – (8 × 29)
= 600 – 232 = 368.

(b) Risk management is the process of identifying, evaluating, and prioritizing risks followed by integrated and economical application of resources to reduce, observe, and control the probability or impact of unfortunate events or to maximize the realization of opportunities. The process of risk management embrace five specific steps;

a) **Identification of Risk** – risk should be identified before it is managed. For the purpose, the risk of the enterprise needs to be categorised in silos as discussed in the previous section.

b) **Analyse the Risk** – after identification of the risk the task of the risk manager is to look into the nature, magnitude and consequence of the risk. During this step, the risk management team will examine the probability of occurrence and consequence of each risk in order to identify the focus area. Factors such as possible financial loss, time lost, and severity of impact play a part in precisely analyzing each risk. By placing each risk under the microscope, the risk manager exposes any common issues across a project and further improve the risk management process for future projects

c) **Prioritize the risk** – an organisation is exposed to various forms of risk. On the basis of the analysis undertaken in step 2 the risk manager has to prioritize which risk to focus when. This step gives the risk manager a comprehensive view of the task at hand and pinpoints where the team's focus should lie. This helps identification of useful solutions for each risk.

d) **Mitigate the risk** – after prioritisation of the risk, which assist risk manager to focus which risk to target upon, he attempts mitigating the particular risk. Starting with the highest priority risk first, the risk management team under the guidance of the risk manager delves in eliminating the risk or at least reducing the risk so that the negative impact is minimised and the strategic goal can be accomplished.

e) **Monitor the risk** – risk management is a continuous process and it is very important that risk along with the measures adopted in step four is monitored. For this transparent communication among the risk manager and the stakeholders is crucial.

Objectives of Risk Management

- to prepare the firm for potential losses in the most economical way.
- to reduce of anxiety and fear of unadjusted exposures.
- to meet any legal obligation.
- to ensure that after a loss occur, the firm can resume at least partial operations within some reasonable time period. The ability to operate after a loss is extremely important. A public utility firm must continue to provide service.
- to ensure that EPS can be maintained if the firm continues to operate. However, a firm may incur substantial additional expenses to achieve this goal.

4. (a) Describe RONA (Return on Net Assets) and its implications in details. **[7]**

(b) Mr. Hajime is considering investing in bonds of two companies; Lotus Inc. and Woodex Inc. He has a recently received a sum of ₹35,50,000 from sale of a market related insurance product which he invested in 10 years back. He is nearing retirement age and desire to undertake minimal risk in his investment. He is also worried about the default risk associated with his investment and desire to assess the chance of the company (in which he invests) going bust. For the purpose of the financial assessment he recalls his childhood friend Simmamoto who is currently into financial consultancy. He requests her to assess the bankruptcy risk associated with the two companies; Lotus Inc. and Woodex Inc. For the purpose she looks into the financial statements of the two companies which are extracted from the annual reports and are given below;

Relevant particulars from the annual reports of Lotus Inc. and Woodex Inc.

Particular	Lotus Inc.	Woodex Inc.
	Amount (₹)	Amount (₹)
Working Capital	10,00,000	20,00,000
Retained Earnings	5,00,000	9,50,000
Earnings Before Interest and Taxes	7,50,000	7,50,000
Market Value of Equity	15,00,000	18,00,000
Sales	12,00,000	15,00,000
Total Assets	10,00,000	12,00,000
Total Liabilities	10,00,000	12,00,000

Calculate which company is safer to invest by using Altman Z score and why. **[7]**

Answers:

(a) Return on net assets (RONA) is measure of profitability which calculates net profit as a proportion of the sum of fixed assets and net working capital. Thus RONA is yet another variation of the return on investment which considers the investment in the working capital, as well. The net profit, considered, is after interest and taxes.

Algebraically,

RONA = Net Profit/(fixed assets + NWC)

Where,

NWC = Current Assets −Current Liabilities

RONA = Return on net assets

NWC = Net working capital

The RONA ratio shows how well a company and its management are deploying assets in economically valuable ways; a high ratio result indicates that management is squeezing more earnings out of each dollar invested in assets. RONA is also used to assess how well a company is performing compared to others in its industry. Three important key aspects of the RONA may be identified;

a) Return on net assets (RONA) compares a firm's net profits to its net assets to show how well it utilizes those assets to generate earnings.
b) A high RONA ratio indicates that management is maximizing the use of the company's assets.
c) Net income and fixed assets can be adjusted for unusual or non-recurring items to gain a normalized ratio result.

Implications of RONA:

RONA provides a comparison between a firm's net income and its assets (fixed asset and excess of current asset over current liabilities). This provides assistances to financial analysts to define how well the company is generating profit from its assets. The higher a firm's earnings relative to its assets, the more effectively the company is deploying those assets. RONA is an especially important metric for capital intensive companies, which have fixed assets as their major asset component. In the capital-intensive manufacturing sector, RONA can also be calculated as:

RONA = Plant Revenue – Costs/ Net Assets

RONA is just another ratio used to evaluate a company's financial health of the enterprise.

(b) The Altman Z-Score for Lotus Inc. as follows;

$Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4 + 0\ .999\ X_5$

Where,

X_1 = Working capital/Total Assets = 10,00,000/10,00,000 = 1

X_2 = Retained/Total Assets= 5,00,000/10,00,000 = 0.5

X_3 = Earnings before Interest and Taxes/Total Assets = 7,50,000/10,00,000 = 0.75

X_4 = Market value of equity/Book value of total liabilities = 15,00,000/10,00,000 = 1.5

X_5 = Sales/Total Assets = 12,00,000/10,00,000 = 1.2

Therefore, Altman Z-Score (Z) is given as

$Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4 + 0\ .999\ X_5$

$Z = 1.2 \times 1 + 1.4 \times 0.5 + 3.3 \times 0.75 + 0.6 \times 1.5 + 0.999 \times 1.2$

$Z = 6.4738$

The Altman Z-Score for Lotus Inc as follows;

$Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4 + 0\ .999\ X_5$

WHERE,

X_1 = Working capital/Total Assets = 20,00,000/12,00,000 = 1.67

X_2 = Retained/Total Assets = 9,50,000/12,00,000 = 0.79

X_3 = Earnings before Interest and Taxes/Total Assets = 7,50,000/12,00,000 = 0.625

X_4 = Market value of equity/Book value of total liabilities = 18,00,000/12,00,000 = 1.5

X_5 = Sales/Total Assets = 15,00,000/12,00,000 = 1.25

Therefore, Altman Z-Score (Z) is given as

$Z = 1.2 \times 1.67 + 1.4 \times 0.79 + 3.3 \times 0.625 + 0.6 \times 1.5 + 0\ .999 \times 1.25$

$Z = 7.32125$

Simmamoto will advise Hajime that both the companies have pretty good scores and are considered to be financially heathy since the Z score of the companies under consideration is substantially higher than three.

$Z_{\text{Lotus Inc}} = 6.4738$

$Z_{\text{Woddex Inc}} = 7.32125$

However there is slight difference in the scores and from the above it is clear that $Z_{\text{Woddex Inc}} > Z_{\text{Lotus Inc}}$. Thus Simmamoto will advise Hajime that though both the companies are in safe as regards to bankruptcy risk it may be stated that Woddex Inc. is a slightly safer company to invest than Lotus Inc as projected by the Altman Z score.

5. (a) Umang Ltd. has announced issue of warrants on 1:1 basis for its equity shareholders. The current price of the stock ₹10 and warrants are convertible at an exercise price of ₹11.71 per share. Warrants are detachable and are trading at ₹3. Compute the minimum price of the warrant and the warrant premium.

Now had the current price been ₹16.375, calculate the minimum price and warrant premium? (Consider warrants are tradable at ₹9.75). **[7]**

(b) Quinton Johnston is evaluating TMI Manufacturing Company, Ltd., which is headquartered in Taiwan. In 2019, when Johnston is performing his analysis, the company is unprofitable. Furthermore, TMI pays no dividends on its common shares. Johnston decides to value TMI Manufacturing by using his forecasts of FCFE. Johnston gathers the following facts and assumptions.

(i) The company has 17 billion shares outstanding.
(ii) Sales will be 5.5 billion in 2020, increasing at 28% annually for the next four years (through 2024).
(iii) Net income will be 32% of sales.
(iv) Investment in fixed assets will be 35% of sales; investment in working capital will be 6% of sales;
(v) Depreciation will be 9% of sales.
(vi) 20% of the investment in assets will be financed with debt.
(vii) Interest expenses will be only 2% of sales.
(viii) The tax rate will be 10%. TMI Manufacturing's beta is 2.1; the risk-free government bond rate is 6.4%;
(ix) The equity risk premium is 5%.
(x) At the end of 2024, Johnston projects TMI will sell for 18 times earnings.

Calculate the value of one ordinary share of TMI Manufacturing Company. [7]

Answer:

(a) Minimum Price = (Market Price of Common Stock - Exercise Price) × Exchange Ratio
= ₹ (10.00 – 11.71) × 1.0
= ₹1.71

Thus, the minimum price on this warrant is considered to be zero, because things simply do not sell for negative prices.

Warrant premium = Market price of warrant- Minimum price of warrant = ₹3 – 0 = ₹3.

Minimum price = (Market price of common stock- Exercise price) × (Exercise ratio)
= ₹(16.375- 11.71) × 1.0
= ₹4.665

Warrant premium = Market price of warrant - Minimum price of warrant = ₹(9.75- 4.665) = ₹5.085.

(b) The required rate of return found with the CAPM is

$k_e = R_f + (R_m – R_f) \times \beta$

$k_e = 6.4\% + 5\% \times 2$

$k_e = 16.4\%$

The following table shows the values of sales, net income, capital expenditures less depreciation, and investments in working capital. FCFE equals net income less the investments financed with equity:

FCFF = Net income – (1 – DR) (Capital Expenditure – Depreciation) – (1 – DR) (Investment in Working Capital)

Where DR is the Debt Ratio (debt financing as a percentage of debt and equity). Because 20 percent of new investments are financed with debt, 80 percent of the investments are financed with equity, which reduces FCFE by 80 percent of (Capital expenditures – Depreciation) and 80 percent of the investment in working capital.

Particulars (in billions)	2020	2021	2022	2023	2024
Sales (growing at 28%)	5.5	7.04	9.01	11.53	14.76
Net income = 32% of sales	1.760	2.253	2.884	3.691	4.724
Investment in Fixed asset - Dep = (35% - 9%) × sales	1.43	1.830	2.343	2.999	3.839
Working capital investment = 6% of sales	0.33	0.422	0.541	0.692	0.886
.80 × (Investment in Fixed asset - Dep + Working capital investment)	1.408	1.802	2.307	2.953	3.780
FCFE = Net income - .80 × (Investment in Fixed asset - Dep + Working capital investment)	0.352	0.451	0.577	0.738	0.945
PV of FCFE discounted at 16.4%	0.302	0.333	0.366	0.402	0.442
Terminal Value (4.724 × 18)					85.04
PV of Terminal Value discounted at 16.4%					39.7979
Total PV of FCFE					**1.845**
Total value of firm					**41.643**

The present value of the terminal value plus PV of first five year's FCFE is 41.643 billion. Because TMI Manufacturing has 17 billion outstanding shares, the value per ordinary share is ₹2.45.

6. (a) V. Goel, the current Copyright holder of the book "Business Valuation, Practitioners' Guide valuation of Companies" is willing to sell the copyrights of his book to a publisher who is keen to buy the copyrights. The following assumptions may be relevant.

Currently, 2500 copies of the book are sold at an annual price of ₹1,750 per book. The cost of production, distribution and author royalties amount to 70% of Sales. The book is becoming popular and the publisher estimates that the sales of the book may increase by 5 % every year for the next 5 years and for 2 % from year 6 to 10. 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 special advantage from the book beyond year 10. Assuming a discount rate of 10 %, Assess the value of the copyrights. [7]

(b) You are given following information about Sandeep Ltd.:

(i) Beta for the year 2024-25: 1.05

(ii) Risk free rate 12%

(iii) Long Range Market Rate (based on BSE Sensex): 15.14%

(iv) Extracts from the liabilities side of balance sheet as at 31st March, 2025:

PARTICULARS	₹
Equity	**29,160**
Reserve & Surplus	**43,740**
Shareholder's Fund	**72,900**
Loan Funds	**8,100**
Total Funds (Long term)	**81,000**

(v) Profit after tax ₹20,394.16 lakhs

(vi) Interest deducted from profit ₹487.00 lakhs

(vii) Effective tax rate (i.e. Provision for Tax/PBT × 100) 24.45%.

Calculate Economic Value Added of Sandeep Ltd. as on 31st March 2025 **[7]**

Answer:

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

Amount in ₹ Lakh	0	1	2	3	4	5	6	7	8	9	10
Annual Increase	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%
Book Price (₹)	1750										
Unit Sales per Year	2500										
Revenue	43.75										
Less: Costs @ 70%	30.63										
Cash Flows	13.13	13.78	14.47	15.19	15.95	16.75	17.09	17.43	17.78	18.13	18.49
PV Factor @ 10%		0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386
PV of Cash Flows		12.53	11.95	11.41	10.90	10.40	9.64	8.94	8.30	7.69	7.14
Value of Copyrights	**98.89**										

(b) We know that EVA = NOPAT -Cost of Capital Employed,
Where, EVA = Economic Value Added
NOPAT = Net Operating Profit after tax
Required Calculations are as under:

(i) NOPAT

Particulars	₹
Profit after tax	20,394.16 lakhs
Add: Interest Net of tax [487 lakh (1 - 0.2445)] = 487 lakh x 0.7555	367.93 lakhs
NOPAT	20,762.09 lakhs

(ii) Cost of Equity: Risk free rate + β [Market rate - Risk free return]
= 12% + 1.05 (15.14% - 12%)
= 12% + 1.05 x 3.14
= 12% + 3.30%
= 15.30%

(iii) Cost of Debt = [Interest on Loan Funds (1 - tax rate) / Loan Funds] x 100
Cost of Debt = [487 x (1-0.2445) /8100] x 100
= [487 x 0.7555/ 8100] x 100
= [367.93/8100] x 100
= 4.54

Weighted Average Cost of Capital:

	Amount in Lakhs (₹)	Weight	Cost	WACC%
Equity	72,900	0.90	15.30	13.77
Debt	8,100	0.10	4.54	0.45
	81,000	1.00		14.22

Cost of capital employed = ₹ 81,000 x 14.22% = ₹ 11,518.20 lakhs
EVA = NOPAT – Cost of Capital Employed = ₹ 20,726.09 lakhs - ₹ 11,518.20 lakhs = ₹ 9,207.89 lakhs

7. (a) ABC Ltd. run and managed by an efficient team that insists on reinvesting 60% of its earnings in projects that provide an ROE (return of equity) of 10%, despite the fact that the firm's capitalization rate (K) is 15%. The firm's current year's earning is ₹ 10 per share.
Calculate at what price the stock of ABC Ltd. Sell. Evaluate what is the present value of growth opportunities. Suggest why such a firm would be a takeover target. [7]

(b) Two firms RAJJAN and REKHA Corporation operate independently and have the following financial statements:

Particulars	Rajjan	Rekha
Revenue	**8,00,000**	**4,00,000**
Cost of Goods Sold (COGS)	**6,00,000**	**2,40,000**
EBIT	**2,00,000**	**1,60,000**
Expected growth rate	**6%**	**8%**
Cost of capital	**10%**	**12%**

Both firms are in steady state, with capital spending offset by depreciation. No working capital is required, and both firms face a tax rate of 40%. Combining the two firms will create economies of scale in the form of shared distribution and advertising cost, which will reduce the cost of goods sold from 70% of revenues to 65% of revenues. Assume that the firm has no debt capital. Calculate:
(i) The value of the two firms before the merger;
(ii) The value of the combined firm with synergy effect [7]

Answer:

(a) Dividend growth rate G = ROE × b
Where, b = 1 – pay-out ratio
G = 10% × 0.60 = 6%
Stock price of ABC Ltd = (10×0.4) ÷ (0.15 - 0.06) = 4 ÷0.09 = ₹ 44.44
Present value of growth opportunities (PVGO) = market price per share – No growth value per share
= ₹ 44.44 – (10÷0.15) = ₹44.44 – 66.66 = ₹-22.22 i.e., negative PVGO
Reasons for takeover target – Negative PVGO implies that the net present value of the firm's projects is

negative; the rate of return on those assets is less than the opportunity cost of capital. Such a firm would be subject to takeover target because another firm could buy the firm for the market price of INR 44.44 per share and increase the value of the firm by changing its investment policy. For example, if the new management simply paid out all earning as dividend, the value of the firm would increase up to its no growth value of ₹ 66.66.

(b) (i) Value of the Firms before the Merger

Calculation of Free Cash Flow to each of the Firm Free cash flow to RAJJAN

= EBIT (1 – tax rate) = 2,00,000 (1 – 0.4)

= 1,20,000 Free cash flow to REKHA

= EBIT (1 – tax rate)

= 1,60,000 (1 – 0.4) = 96,000

Value of the two firms independently

Value of RAJJAN = [1,20,000 (1.06)] / (0.10 – 0.06) = 31,80,000

Value of REKHA = [96,000 (1.08)] / (0.12 – 0.08) = 25,92,000

In the absence of synergy, the combined firm value is:

Combined Firm Value with No Synergy = 31,80,000 + 25,92,000 = 57,72,000

(ii) **Value of the Firm with Synergy**

On combining the two firm the cost of goods sold is reduced firm 70% to 65% of revenues.

The revenue of the combined firm = 8,00,000 + 4,00,000 = 12,00,000

Cost of goods sold = 65% of revenues = 0.65 × 12,00,000 = 7,80,000

Weighted average cost of capital for the combined firm

= 10% [31,80,000 / 57,72,000] + 12% [25,92,000 / 57,72,000]

= 0.0551 + 0.0539 = 0.109 Or 11% approximately Weighted average expected growth rate for the combined firm

= 6% [31,80,000 / 57,72,000] + 8% [25,92,000 / 57,72,000]

= 0.033 + 0.0359 = 0.0689 Or 7% approximately

Particulars	Firm with no Synergy	Firm with Synergy
Revenue	12,00,000	12,00,000
Cost of Goods Sold (COGS)	8,40,000	7,80,000
EBIT	3,60,000	4,20,000
Growth rate	7%	7%
Cost of Capital	11%	11%
FCF = EBIT (1 – T)	2,16,000	2,52,000

Value of the Firm without Synergy = [2,16,000 (1.07)] / 0.11 – 0.07 = 57,78,000

Value of the firm with Synergy = [2,52,000 (1.07)] / 0.11 – 0.07 = 67,41,000.

8. (a) The Balance Sheets of Maras Ltd. for the years ended on 31.03.2024 and 31.03.2025 are as follows:

(Amount in ₹ Lakh)

	As at 31.03.24	As at 31.03.25
Equity & Liabilities		
Shareholder's Fund:		
Share capital	**696.60**	**726.70**
Equity Share suspense	**30.07**	**—**
Equity Share warrants	**—**	**841.20**
Reserve & Surplus	**31,256.89**	**39,156.40**
Non-Current Liabilities:		
Secured Loans	**4,784.56**	**3,300.09**
Unsecured Loans	**9,128.31**	**14,939.75**
Deferred Tax liabilities	**3,491.00**	**3,936.27**
Current Liabilities:		
Other current liabilities	**8,432.77**	**10,522.73**
Provisions	**856.44**	**1,496.31**
	58,676.64	**74,919.45**
Assets		
Non-current assets	**—**	**—**
Fixed Assets (Net)	**31,830.23**	**30,941.81**
Capital work in progress	**3,764.07**	**11,502.92**
Non-Current Investment:		
Investment	**8,125.67**	**11,031.80**
Current Assets:		
Inventories	**6,068.25**	**7,123.77**
Trade receivables	**1,866.21**	**3,113.79**
Cash and bank balance	**917.68**	**2,140.03**
Other current assets	**1.53**	**36.27**
Loans and advances	**6,103.00**	**9,029.06**
	58,676.64	**74,919.45**

(i) Classify, how would you make the Common-Size Balance Sheet of Maras Ltd.?

(ii) Interpret your observations on the common-size Balance Sheet. [7]

(b) The following information is relating to Fortune India Ltd. having two division Pharma division and FMCG division. Paid up share capital of Fortune India Ltd. is consisting of 3,000 lakhs equity shares of ₹1 each. Fortune India Ltd. decided to de-merge Pharma Division as Fortune Pharma Ltd. w.e.f. 1.4.2024. Details of Fortune India Ltd. as on 31.3.2024 and of Fortune Pharma Ltd. as on 1.4.2024 are given below:

Particulars	Fortune Pharma Ltd. (₹) in lakh	Fortune India Ltd. (₹) in lakh
Other Liabilities		
Secured Loans	**400**	**3,000**
Unsecured Loan	**2,400**	**800**
Current Liabilities	**1,300**	**21,200**
Total Liabilities	**4,100**	**25,000**
Assets		
Fixed Assets	**7,740**	**20,400**
Investments	**7,600**	**12,300**
Current Assets	**8,000**	**30,200**
Loan & Advances	**1,700**	**7,300**
Deferred Tax / Misc. Exp.	**60**	**(200)**
Total Assets	**25,100**	**70,000**

Board of directors of the company have decided to issue necessary equity shares of Fortune Pharma Ltd. of ₹1 each, without any consideration to the shareholders of Fortune India Ltd. For that purpose, following points are to be considered:

- **Transfer of Liabilities and Assets at Book value**
- **Estimated profit for the year 2024-25 is 11,400 lakh for Fortune India Ltd. and 1,470 lakh for Fortune Pharma Ltd.**
- **Estimated Market price of Fortune Pharma Ltd. is ₹24.50 per share.**
- **Average P/E ratio of FMCG sector is 42 and Pharma sector is 25, which is to be expected for both the companies.**

Calculate:

(i) The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.

(ii) Expected Market price of Fortune India Ltd.

(iii) Book value per share of both the companies after demerger. **[7]**

Answers:

(a) (i) Common Size Balance Sheet of Maras Ltd. **(₹ in lakhs)**

	As at 31.03.2024	% of Total	As at 31.03.2025	% of Total
Equity & Liabilities				
Shareholders' Fund:				
Share Capital	696.60	1.187	726.70	0.970
Equity share suspense	30.07	0.051	-	-
Equity share warrants	-	-	841.20	1.123
Reserve and surplus	31256.89	53.270	39156.40	52.265

Non-current liabilities:				
Secured loans	4784.56	8.154	3300.09	4.405
Unsecured loans	9128.31	15.557	14939.75	19.941
Deferred tax liabilities	3491.00	5.950	3936.27	5.254
Current Liabilities:				
Other current liabilities	8432.77	14.372	10522.73	14.045
Provisions	856.44	1.460	1496.31	1.997
	58676.64	100.00	74919.45	100.00
Assets:				
Non-current Assets:				
Fixed assets (Net)	31830.23	54.247	30941.81	41.300
Capital work in progress	3764.07	6.415	11502.92	15.354
Investments	8125.67	13.848	11031.80	14.725
Current assets:				
Inventories	6068.25	10.342	7123.77	9.509
Trade Receivables	1866.21	3.180	3113.79	4.156
Cash and bank balance	917.68	1.564	2140.03	2.856
Other current assets	1.53	0.003	36.27	0.048
Loan and advances	6103.00	10.401	9029.06	12.052
	58676.64	100.00	74919.45	100.00

(ii) Analysis and presentation of observations:

1. The proportion of unsecured loans to total of balance sheet has increased from 15.56% to 19.94%.
2. The proportion of secured loans to total of balance sheet has fallen from 8.15% to 4.405% due to redemption of non-convertible debentures and repayment of term loans
3. The reserves and surplus have stayed nearly flat having marginally reduced from 53.27% at the end of year 31/03/2024 to 52.27% at end of year 31/03/2025.
4. Although the proportion of current liabilities in total share capital and liabilities has decreased from 14.37% to 14.05% but provisions have slightly increased from 1.46% to 2.00%
5. The deferred tax liabilities have decreased from 5.95% to 5.25%
6. The proportion of net fixed assets have fallen from 54.25% to 41.3%
7. The capital work-in-progress has increased from 6.42% to 15.35%.
8. The investments have increased by nearly 1% over the previous accounting year.
9. The current assets other than loans and advances, have increased from 15.09% to 16.57.
10. The loans and advances have increased from 10.4% to 12.05%.

(b)

(i) Shareholder's Fund:

Particulars	Fortune India Ltd. (31.03.2024) (A)	Fortune Pharma Ltd. (01.04.2024) (B)	Fortune India (FMCG) Ltd. (01.04.2024) (A-B)
Assets	70,000	25,100	44,900
Outside Liabilities	25,000	4,100	20,900
Net Worth	45,000	21,000	24,000

Figures of Fortune India (FMCG) India Ltd is balancing figure (A – B).

Calculation of Shares of Fortune Pharma Ltd. to be issued to shareholders of Fortune India Ltd:

Fortune Pharma Ltd.	
Estimated Profit (₹ in lakhs)	1470
Estimated Market Price (₹)	24.50
Estimated P/E	25
Estimated EPS (₹) (24.50 / 25)	0.98
No. of shares (Lakhs) (1,470 / 0.98)	1500

Hence, Ratio is 1 shares of Fortune Pharma Ltd. for 2 shares of Fortune India Ltd.

(ii) Expected Market Price of Fortune India Limited:

Fortune India (FMCG) Ltd.	
Estimated Profit (₹ in lakhs)	11,400
No. of Equity Share (in Lakhs)	3,000
Estimated EPS (₹)	3.8
Estimated P/E	42
Estimated Market Price (₹)	159.6

(iii)

	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Net Worth (₹ in Lakhs)	21,000	24,000
No. of Shares (In Lakhs)	1,500	3,000
Book Value of Share (₹)	14	8