

**Paper 20 - Strategic Performance Management & Business Valuation**

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Full Marks: 100

Time allowed: 3 hours

The figures in the margin on the right side indicate full marks.  
Working notes should form part of the answer.

**Section - A**

Answer Question No. 1 which is compulsory and any two from the rest of this section

1. Multiple choice questions: [5×2=10]  
[1 mark for right choice and 1 mark for justification]

- (i) The risk which deals with the portion of security's total variability of returns that derives from the possibility that the issue may be called or redeemed before maturity, is called:
- (a) Default Risk
  - (b) Operational Risk
  - (c) Industry Risk
  - (d) Callability Risk
- (ii) What is the cost when output is 5 units for the given function  $C = \frac{3}{5}x + \frac{15}{4}$  :
- (a) 6.75
  - (b) 12.25
  - (c) 8.40
  - (d) None of the above.
- (iii) Which of the following condition is not correct in order to obtain the equilibrium position of an industry under perfect competition?
- (a) The industry gets an equilibrium position where  $MC=MR$
  - (b) All firms in the industry get both normal & abnormal profits
  - (c) Number of the firms is constant
  - (d) At equilibrium point the  $MC, AC, MR$  and  $AR$  are equal.
- (iv) Which of the following is a part of Internal Quality Costs for quality management?
- (a) Prevention Costs
  - (b) Appraisal Costs
  - (c) Failure Costs
  - (d) All of the above.
- (v) In the context of Statistical Quality Control, the control chart which measures the proportion defective, is:
- (a) C Charts
  - (b) R charts
  - (c) P Charts
  - (d) X bar charts.

**Answer:**

- (i) (d) Callability Risk is that portion of security's total variability of returns that derives from the possibility that the issue may be called or redeemed before maturity. Callability risk

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commands a risk premium that comes in the form of a slightly higher average rate of return. This additional return should increase as the risk increases.

(ii) (a) Given function  $C = \frac{3}{5}x + \frac{15}{4}$

cost when output is 5 units =  $3/5 \times 5 + 15/4 = 6.75$

(iii) (b) In order to obtain the equilibrium position of an industry under perfect competition, there will be no abnormal profits. All firms in the industry get only normal profits.

(iv) (d) Internal Quality Costs are consist of Prevention Costs, Appraisal Costs and Failure Costs.

(v) (c) P Charts measures proportion defective. C Charts measures the number of defects/unit. X bar and R charts are used together to control a process by ensuring that the sample average and range remain within limits for both.

**2.(a)(i) Write the approaches for measurement of Productivity and Efficiency in Performance Management. [6]**

**(ii) Customer Relationship Management (CRM) is often thought of as a business strategy. State the areas where it enables businesses to improve. [4]**

**(b) What is MRP I? State any three objectives of it. Also, state the data requirements for the operation of a MRP system. [2+3+5=10]**

**Answer:**

**(a)(i)** Basically, for a single firm that produces one output using a single input, the ratio of output to input is a measure of the productivity level. In this case, productivity is relatively easy to measure. However, in the case of many outputs and many inputs in a production process, the measurement of an output- input ratio is difficult. Hence, many different approaches have been applied by many researchers to the measurement of productivity and efficiency changes in various types of institutions, and levels of DMUs (Decision Making Units) as well. Further, different approaches to productivity measurement give different numeric answers. Therefore, it is essential to select appropriate measurements for productivity and efficiency to avoid measurement bias in the results.

The various approaches to the measurement of productivity and efficiency identified from the literature. In general, productivity and efficiency can be measured on a 'Partial' factor or 'Total' factor basis. Partial Factor Productivity (PFP) refers to the change in output owing to the change in the quantity of one input, whereas Total Factor Productivity (TFP) refers to the change in output owing to changes in the quantity of more than one input. Examples of PFP are material yield, output per man-hours, etc. A comprehensive example of TFP is Return on Investment (ROI) or overall profitability index which can be broken up into several parts through product profitability and capital turnover rate.

In general, in an industrial context, goods and services are produced by a combination of many factors or inputs. The output of goods and services cannot be used as a measure of the productivity of any one of the inputs. The output is only a measure of the joint power of inputs to achieve results. This is the main disadvantage of measuring productivity and efficiency using the PFP approach. To overcome this shortcoming of PFP, TFP has been developed. TFP measures overall productivity and efficiency by considering all inputs and all outputs in the production process. With full technical efficiency, producing maximum potential output from the allocated inputs.

(ii) Customer Relationship Management (CRM) enables businesses to:

- Understand the customer
- Retain customers through better customer experience
- Attract new customer
- Win new clients and contracts
- Increase profitability
- Decrease customer management costs.

(b) Materials Requirement Planning (MRP or MRP I) is a technique which aims at to ensure that material resources - raw materials bought-in components and in-house sub-assemblies - are made available just before they are needed by the next stage of production or despatch. It is basically a system which controls system of inventory so that up-to-date records of the status of a large number of items in inventory can be kept. MRP takes care of the timely phasing of requirements, planned order releases, generation of component level requirements and rescheduling capability. The ability of the MRP system is to deliver what is required in correct place at the correct time will be dependent on the quality of the information which is put into the computer model.

The basic objectives of MRP are as follows:

- It determines the quality and timing of finished goods demanded.
- It determines time phased requirements of the demand for materials, components and sub-assemblies over a specified planning time horizon.
- It computes the inventories, work-in-progress batch sizes and manufacturing and packing lead times.
- It controls inventory by ordering components and materials in relation to orders received rather than ordering them from stock level point of view.

MRP originated in the early 1960s as a computerised approach for coordinating the planning, acquisition and production of materials. Important requirements for the operation of a MRP system are as follows:

1. Master Production Schedule - It specifies the quantity of each finished unit of products to be produced along with the time at which each unit will be required.
2. Bill of Material File- This file specifies the sub-assemblies, components and materials requirement for each item of finished goods.
3. Inventory File - It maintains details of items in hand for each sub-assemblies, components and materials required.
4. Routing File - This file specifies the sequence of operations required to manufacture components, sub-assemblies and finished goods.
5. Master Parts File - It contains information about the production time of sub-assemblies and components produced internally and lead time for externally procured items.

**3.(a) A manufacturer can sell 'x' items per month, at price  $P = 300 - 2x$ . Manufacturer's cost of production ₹ Y of 'x' items is given by  $Y = 2x + 1000$ . Find no. of items to be produced to yield maximum profit per month. [10]**

**(b) Using Altman's Multiple Discriminant Function, calculate Z-score of S & Co. Ltd., where the five accounting ratios are as follows and comment about its financial position:**

**Working Capital to Total Assets=0.250**

**Retained Earnings to Total Assets = 50%**

**EBIT to Total Assets = 19%**

**Book Value of Equity to Book Value of Total Debt= 1.65**

**Sales to Total Assets = 3 times.**

**[10]**

**Answer:**

**(a)** Units = x

$$\text{Price} = 300 - 2x$$

$$\text{Revenue (R)} = Px = 300x - 2x^2$$

$$\text{Cost (C)} = 2x + 1000$$

$$\text{Profit (z)} = 300x - 2x^2 - 2x - 1000$$

$$-2x^2 + 298x - 1000$$

$$\frac{dz}{dx} = -4x + 298 = 0$$

$$-4x = -298$$

$$x = \frac{298}{4} = 74.5$$

$$\frac{d^2z}{dx^2} = -4 \text{ which is Negative}$$

$$\frac{d^2z}{dx^2} = <0$$

∴ Profit is maximum at x = 74.5 units

**(b)** As the Book Value of Equity to Book Value of Total Debt is given in the problem in place of Market Value of Equity to Book Value of Total Debt, the value of Z-score is to be computed as per Altman's 1983 Model of Corporate Distress Prediction instead of Altman's 1968 Model of Corporate Distress Prediction.

As per Altman's Model (1983) of Corporate Distress Prediction,

$$Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = 0.250$$

$$X_2 = \text{Retained Earnings to Total Assets} = 0.50$$

$$X_3 = \text{EBIT to Total Assets} = 0.19$$

$$X_4 = \text{Book Value of Equity Shares to Book Value of Total Debt} = 1.65$$

$$X_5 = \text{Sales to Total Assets} = 3 \text{ times}$$

$$\begin{aligned} \text{Hence, Z-score} &= (0.717 \times 0.25) + (0.847 \times 0.50) + (3.107 \times 0.19) + (0.420 \times 1.65) + (0.998 \times 3) \\ &= 0.17925 + 0.4235 + 0.59033 + 0.693 + 2.994 = 4.88 \end{aligned}$$

Note: As the calculated value of Z-score is much higher than 2.9, it can be strongly predicted that the company is a non-bankrupt company (i.e., non-failed company).

**4.(a) What is Risk? Economic risk is concerned with the general economic climate within the country. Write the factors which reflect the economic climate of a country. [3+7=10]**

**(b) "MIS comprises of three elements viz., management, information and system." — describe how these three elements are correlated to each other. [10]**

**Answer:**

**(a)** A risk is a random event that may possibly occur and, if it did occur, would have a negative impact on the goals of the organization. It is the probability of incurring loss due to unexpected and unfavorable movement of certain parameters.

Risk is composed of three elements — the scenario, its probability of occurrence, and the size of its impact if it did occur (either a fixed value or a distribution). Risk is thus measured by volatility.

In the corporate world, accepting risks is necessary to obtain a competitive advantage and generate profit. Introducing new product or expanding production facilities involves both return and risk. When a company is exposed to an event that can cause a shortfall in a targeted financial measure or value, this is financial risk.

The factors which reflect the economic climate of a country are:

1. level of affluence enjoyed by the country.
2. the growth rate of income.
3. the nation's propensity to save/invest.
4. the stability of prices (inflation).
5. characteristics of the labour force.
6. level of sophistication of the financial system.
7. level of foreign debt outstanding.
8. major income earners (exports) and their sensitivity to overall global economic changes.
9. extent of dependence on major export items.
10. trends in balance of payments.
11. level of imports
12. level of reserve and credit standing, and
13. fluctuations of exchange rate and controls on foreign exchange.

**(b)** MIS is a set of procedures designed to provide managers at different levels in the organization with information for decision making, and for control of those parts of the business for which they are responsible. MIS comprises of three elements viz., management, information and system. The concept of MIS is better understood if each element of the term MIS is defined separately.

Management: A manager may be required to perform following activities in an organisation:

- (i) Determination of organisational objectives and developing plans to achieve them.
- (ii) Securing and organising human beings and physical resources so as to achieve the laid down objectives.
- (iii) Exercising adequate controls over the functions performed at the lower level.
- (iv) Monitoring the results to ensure that accomplishments are proceeding according to plans.

Thus, management comprises of the processes or activities that describe what managers do while working in their organisation. They in fact plan, organise, initiate, and control operations. In other words, management refers to a set of functions and processes designed to initiate and co-ordinate group efforts in an organised setting directed towards promotion of certain interests, preserving certain values and pursuing certain goals. It involves mobilisation, combination, allocation and utilisation of physical, human and other needed resources in a judicious manner by employing appropriate skills, approaches and techniques.

Information: Information is data that have been organised into a meaningful and useful context. For example, data regarding sales by various salesmen can be merged to provide information regarding total sales through sales personnel. This information is of vital importance to a marketing manager who is trying to plan for future sales.

Data is the input, information is the output. Data-analysis or information-processing converts data into information. Therefore, quality of data influences quality of information based on which management makes business decisions and translates these into actions through appropriate processes. Today, Information & Communication Technology (ICT) also partakes in various processes with interfacial digital devices and local & global networks. Some of these are stated below:

- Bar Coding & Decoding (used in inventory management).
- Programmable Logic Controller or PLC (used for monitoring work-flow and machine conditions).
- General Pocket Radio system or GPRS (used in LAN for controlling fleet of mobile equipments. Sometimes vehicles are provided with sensors for recording work load, fuel stock, etc).
- Face Recognition System or FRS (used for recording attendance of employees by recognizing faces photographed in the system).
- Computer Aided Designing or CAD and Digital Surveying.
- Computer Aided Manufacturing or CAM.
- E-commerce (used in online bidding, ordering, invoicing, banking, etc), etc.
- Enterprise Resource Planning (ERP): Integrated information has achieved a different dimension with the advent of ERP systems by the end of 20th century. Several data (financial and non-financial) including those downloaded online or offline from the above systems, can be integrated into ERP system. Let us take the following examples –
  1. Online invoicing and inventory records are facilitated by e-Commerce and Bar Coding & Decoding.
  2. Order fulfillment in both Purchasing and Selling can be monitored on integration of purchase orders and sales orders with goods receipts and issues in inventory records for stores and finished goods. Likewise, indents for stores and finished goods can be tracked against respective orders.
  3. FRS can used to migrate attendance data into Pay Roll system for calculation of employee-wise wages & salary including overtime and for updating leave records.
  4. Plenty of data downloaded from PLC and GPR systems can be built-up in integrated information (e.g. work completed, work-in-progress, equipment running hours, power or fuel & lubricant consumptions, vehicle trips, breakdowns, machine conditions in terms of temperature, stress, vibrations, noise level, etc).

System: System may be defined as a composite entity consisting of a number of elements which are interdependent and interacting, operating together for the accomplishment of an objective. One can find many examples of a system. Human body is a system, consisting of various parts such as head, heart, hands, legs and so on. The various body parts are related by means of connecting networks of blood vessels and nerves. This system has a main goal which we may call "living". Thus, a system can be described by

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specifying its parts, the way in which they are related, and the goals which they are expected to achieve. A business is also a system where economic resources such as people, money, material, machines, etc. are transformed by various organisation processes (such as production, marketing, finance, etc.) into goods and services.

Thus, MIS can be defined as a network of information that supports management decision making. The role of MIS is to recognise information as a resource and then use it for effective and timely achievement of organisational objectives.

### Section - B

Answer Question No. 5 which is compulsory and any two from the rest of this section

5. Multiple choice questions: [5×2=10]  
[1 mark for right choice and 1 mark for justification]

- (i) If a company has a P/E ratio of 12 and a Market to Book Value Ratio 2.10, then its Return on Equity will be
- (a) 14.10%
  - (b) 17.50%
  - (c) 25.20%
  - (d) None of the above.
- (ii) Assume that in a stock market the CAPM is working. A company has presently beta of 0.84 and its going to finance its new project through debt. This would increase its debt/equity ratio to 1.56 from the existing 1.26. Due to increased debt/equity ratio, the company's beta would:
- (a) increase
  - (b) decrease
  - (c) remain unchanged
  - (d) nothing can be concluded.
- (iii) Duration of a bond will \_\_\_\_\_ when the yield-to-maturity on the bond increases.
- (a) Decrease
  - (b) Increase
  - (c) not change
  - (d) all three above are possible
- (iv) An investment is risk free when actual returns are always \_\_\_\_\_ the expected returns.
- (a) Equal to
  - (b) Less than
  - (c) More than
  - (d) Depends upon circumstances.
- (v) Economic margin framework is not only a performance metric but also encompasses on value drives, like:
- (a) Profitability
  - (b) growth
  - (c) cost of capital
  - (d) All of the above

**Answer:**

- (i) (b) Return on Equity will be 17.5% (= 2.10/12)



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- (ii) (c) Remain unchanged (Because as per CAPM the company specific risk has no impact on the systematic risk).
- (iii) (a) Duration of a bond has a negative or inverse relation with YTM (Yield-to-Maturity). Higher the YTM, lower will be the duration of a bond hence duration of a bond will "Decrease".
- (iv) (a) equal to, as risk free investments give an assured fixed rate of return like government securities, where interest and principal repayment is guaranteed by the Central /State Government.
- (v) (d) Economic margin focuses on economic profit. It encompasses on four main value drives – profitability, competition, growth, and cost of capital.

**6.(a)(i) True Value Ltd. (TVL) is planning to raise funds through issue of common stock for the first time. However, the management of the company is not sure about the value of the company and, therefore, they attempted to study similar companies in the same line which are comparable to True value in most of the aspects.**

From the following information, you are required to compute the value of TVL using the comparable firms approach.

	(₹ in crores)			
Company	True value Ltd. (₹)	Jewel-value Ltd. (₹)	Real value Ltd. (₹)	Unique value Ltd. (₹)
Sales	250	190	210	270
Profit after tax	40	30	44	50
Book value	100	96	110	128
Market value		230	290	440

TVL feels that 50% weightage should be given to earnings in the valuation process; sales and book value may be given equal weightages. [8]

- (ii) From the following details, calculate Free Cash Flow to Firm (FCFF) for a company:  
Sales - ₹ 10,00,000; Costs - ₹ 7,50,000; Depreciation - ₹ 2,00,000; Tax - 35%; Change in Net Working Capital - ₹ 10,000; Change in Capital Spending - ₹ 1,00,000. [2]

(b) Following are the information of two companies for the year ended 31st March, 2016:

Particulars	Company A	Company B
Equity Shares of ₹ 10 each	8,00,000	10,00,000
10% Pref. Shares of ₹ 10 each	6,00,000	4,00,000
Profit after tax	3,00,000	3,00,000

Assume the Market expectation is 18% and 80% of the Profits are distributed.

(i) What is the rate you would pay to the Equity Shares of each Company?

- (1) If you are buying a small lot.
- (2) If you are buying controlling interest shares.

(ii) If you plan to Invest only in preference shares which company's preference shares would you prefer?

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- (iii) Would your rates be different for buying small lot, if the company 'A' retains 30% and company 'B' 10% of the profits? [5+2+3=10]

**Answer:**

(a)(i) The valuation multiples of the comparable firms are as follows:

Particular	Jewel-value Ltd.	Real value Ltd.	Unique value Ltd.	Average
Prices/Sales ratio (Working Note)	1.21	1.38	1.63	1.41
Price/Earnings ratio (Working Note)	7.67	6.59	8.80	7.69
Price/Book value ratio (Working Note)	2.40	2.64	3.44	2.83

Applying the multiples calculated as above, the value of TVL can be calculated as follows:

Particular	Multiple Average	Parameter (₹ cr.)	Value (₹ cr.)
Prices/Sales	1.41	250	352.50
Price/Earnings	7.69	40	307.60
Price/Book value	2.83	100	283.00

By applying the weightage to the P/S ratio, P/E ratio and P/BV ratio we get:

$[(352.50 \times 1) + (307.60 \times 2) + (283.00 \times 1)] / (1+2+1) = 312.675$ , i.e. ₹ 312.675 crores is the value.

Alternative:

₹  $(352.50 \times 0.25 + 307.60 \times 0.50 + 283.00 \times 0.25)$  crores = ₹ 312.675 crore.

Working Notes:

Price/ Sales Ratio = Market Value/ Sales

Price/ Earnings Ratio = Market Value/ Profit after tax

Price/ Book value ratio = Market Value/ Book Value

(ii) The Free Cash Flow to Firm (FCFF) for the given data can be calculated as follows:

Sales - Costs - Depreciation	₹ 50,000
Less: Tax	₹ 17,500
PAT	₹ 32,500
Add: Depreciation	₹ 2,00,000
Less: Change in Net Working Capital	₹ 10,000
Less: Change in Capital Spending	₹ 1,00,000
Free Cash Flow to Firm (FCFF)	₹ 1,22,500

(b)(i)(1) Buying a small lot of equity shares: If the purpose of valuation is to provide data base to aid a decision of buying a small (non-controlling) position of the equity of the companies, dividend capitalisation method is most appropriate. Under this method, value of equity share is given by:

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$$\frac{\text{Dividend per share}}{\text{Market capitalisation rate}} \times 100$$

$$\text{Company A: } \frac{₹2.4}{₹18} \times 100 = ₹13.33$$

$$\text{Company B: } \frac{₹2.08}{₹18} \times 100 = ₹11.56$$

- (2)** Buying controlling Interest equity shares: If the purpose of valuation is to provide data base to aid a decision of buying controlling interest in the company, EPS capitalisation method is most appropriate. Under this method, value of equity is given by:

$$\frac{\text{Earning per share (EPS)}}{\text{Market capitalisation rate}} \times 100$$

$$\text{Company A: } \frac{₹3}{₹18} \times 100 = ₹16.67$$

$$\text{Company B: } \frac{₹2.6}{₹18} \times 100 = ₹14.44$$

- (ii)** Preference Dividend coverage ratios of both companies are to be compared to make such decision. Preference dividend coverage ratio is given by:

$$\frac{\text{Profit after tax}}{\text{Preference Dividend}} \times 100$$

$$\text{Company A: } \frac{₹3,00,000}{₹60,000} = 5 \text{ times}$$

$$\text{Company B: } \frac{₹3,00,000}{₹40,000} = 7.5 \text{ times}$$

If we are planning to invest only in preference shares, we would prefer shares of B Company as there is more coverage for preference dividend.

- (iii)** Yes, the rates will be different for buying a small lot of equity shares, if the company 'A' retains 30% and company 'B' 10% of profits.

The new rates will be calculated as follows:

$$\text{Company A: } \frac{₹2.1}{₹18} \times 100 = ₹11.67$$

$$\text{Company B: } \frac{₹2.34}{₹18} \times 100 = ₹13.00$$

Working Notes:

1. Computation of earnings per share and dividend per share (companies distribute 80% of profits)

Particulars	Company A	Company B
Profit after tax	3,00,000	3,00,000
Less: Preference dividend	60,000	40,000
Earnings available to equity shareholders (A)	2,40,000	2,60,000
Number of Equity Shares (B)	80,000	1,00,000
Earnings per share (A/B)	3.0	2.60

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Retained earnings 20%	48,000	52,000
Dividend declared 80% (C)	1,92,000	2,08,000
Dividend per share (C/B)	2.40	2.08

2. Computation of dividend per share (Company A retains 30% and Company B 10% of profits)

Earnings available for Equity Shareholders	2,40,000	2,60,000
Number of Equity Shares	80,000	1,00,000
Retained Earnings	72,000	26,000
Dividend Distribution	1,68,000	2,34,000
Dividend per share	2.10	2.34

- 7.(a) Kolkata Ltd. and Bombay Ltd. have agreed that Kolkata Ltd. will take over the business of Mumbai Ltd. with effect from 31<sup>st</sup> December, 2018. It is agreed that:

(i) 10,00,000 shareholders of Mumbai Ltd. will receive shares of Kolkata Ltd.. The swap ratio is determined on the basis of 26 week average market prices of shares of both the companies. Average prices have been worked out at ₹50 and ₹25 for the shares of Kolkata Ltd. and Mumbai Ltd. respectively.

(ii) In addition to (i) above, the shareholders of Mumbai Ltd. will be paid in cash based on the projected synergy that will arise on the absorption of the business of Mumbai Ltd. by Kolkata Ltd. 50% of the projected benefits will be paid to the shareholders of Mumbai Ltd.

The following projections have been agreed upon by the management of both the companies:

Year	2019	2020	2021	2022	2023
Benefit ₹ (in lakhs)	50	75	90	100	105

The benefit is estimated to grow at the rate of 2% from 2023 onwards. It has been further agreed that a discount rate of 20% should be used to calculate the cash that the holders of each share of Mumbai Ltd. will receive.

- Calculate the cash that holder of each share of Mumbai Ltd. will receive
- Calculate the total purchase consideration.

(Discounting Rate 20%: 1 year-0.833, 2 year-0.694, 3 year-0.579, 4 year-0.482, 6 year-0.335). [7+3=10]

- (b) The following information is provided in relation to the acquiring firm M Ltd. and the target firm P Ltd.

Particulars	M Ltd.	P Ltd.
Earnings after tax (₹)	200 lakhs	40 lakhs
Number of shares outstanding	20 lakhs	10 lakhs
P /E Ratio	10	5

Required:

- (i) What is the swap ratio in terms of current market price?
- (ii) What is the EPS of M Ltd. after acquisition?

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- (iii) What is the expected market price per share of M Ltd. after acquisition assuming that P / E ratio of M Ltd. remains unchanged?  
 (iv) Determine the market value of the merged firm. [10]

**Answer:**

(a) (i) Present Value of Synergy Benefits

Year	Computation	PV = ₹ Lakhs
2019	50 x 0.833	41.65
2020	75 x 0.694	52.05
2021	90 x 0.579	52.11
2022	100 x 0.482	48.20
2023	105 x 0.402	42.21
2024 onwards (Terminal Value Note)	(105 x 102% ÷ 18%) x 0.402	239.19
<b>Total</b>		<b>475.41</b>

50% on the Synergy Benefits = ₹ 475.41 lakhs x 50% = ₹ 237.705 lakhs for the business  
 Cash for every share held in Mumbai Ltd. = ₹ 237.705 lakhs ÷ 10 lakhs = ₹ 23.77

(ii) Total Purchase Consideration:

(1) Equity Share (25/50 x 10,00,000 x ₹ 50)	₹ 250.00 lakhs
(2) Cash= 50% of Synergy Benefits	₹ 237.70 lakhs
<b>Total</b>	<b>₹ 487.70 lakhs</b>

(b)

Particulars	M Ltd.	P Ltd.
Earnings after tax (₹)	200 lakhs	40 lakhs
Number of shares outstanding	20 lakhs	10 lakhs
P / E Ratio	10	5
EPS	10	4
Market price (₹)	100	20

- (i) Swap ratio in terms of market prices: 20/100 = 0.20  
 (ii) EPS of M Ltd. after acquisition: (200 + 40) / (20 + 0.2x10) = 240/22 or say ₹10.91  
 (iii) Expected market price per share of M Ltd. with the same P/E ratio of 10 will be:  
 10.91 x 10 = ₹109.10  
 (iv) Market value of merged firm: Total number of outstanding shares x market price = ₹ 2,400.2 lakhs.

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

- (i) Beta for the year 2018-19 is 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, 2019

	₹
<b>Equity</b>	<b>29,160</b>
<b>Reserve &amp; Surplus</b>	<b>43,740</b>
<b>Shareholder's Fund</b>	<b>72,900</b>
<b>Loan Funds</b>	<b>8,100</b>
<b>Total Funds (Long term)</b>	<b>81,000</b>

- (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 x 100) 24.45%.

Calculate Economic Value Added of Sandeep Ltd. as on 31<sup>st</sup> March 2019. [10]

## Answer to MTP\_Final\_Syllabus 2016\_Dec 2019\_Set 2

(b) M Ltd. wants to acquire L Ltd. and has offered a swap ratio of 1:2 (0.5 shares of M Ltd. for every one share of L Ltd.). Following informations are provided:

	M Ltd.	L Ltd.
Profit after tax	₹ 18,00,000	₹ 3,60,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS	₹ 3	₹ 2
P/E ratio	10 times	7 times
Market price per share	₹ 30	₹ 14

Required:

- (i) The number of equity shares to be issued by M Ltd. for acquisition of L Ltd.
- (ii) What is the EPS of M Ltd. after the acquisition?
- (iii) What is the expected market price per share of M Ltd. after the acquisition, assuming its P/E multiple remains unchanged?
- (iv) Determine the market value of the merged firm. [10]

**Answer:**

(a) We know that  $EVA = NOPAT - \text{Cost of Capital Employed}$

Where, EVA= Economic Value Added  
NOPAT = Net Operating Profit after tax

Required calculations are as follows:

NOPAT:

Profit after tax	₹20,394.16 lakhs
Add-Interest Net of Tax[(₹ 487 lakhs (1-0.2445))]	₹ 367.93 lakhs
NOPAT	₹ 20,762.09 lakhs

Cost of Equity:

Cost of Equity = Risk free rate +  $\beta$  [Market rate – Risk free return]  
= 12% + 1.05 x [15.14% - 12.00%] = 12% + 3.30% = 15.30%.

Cost of Debt:

Cost of Debt = Interest on Loan Funds (1-Tax Rate) / Loan Funds x 100  
= 487 x (1-0.2445) / 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

= ₹ 20,762.09 lakhs - ₹ 11,518.20 lakhs  
= ₹ 9,243.89 lakhs.

(b) (i) The number of shares to be issued by M Ltd. —  
 $1,80,000 \times 0.5 = 90,000$  shares

(ii) EPS of M Ltd. after acquisition —

Total earnings (₹ 18,00,000 + ₹ 3,60,000) = ₹ 21,60,000  
No. of shares (6,00,000 + 90,000) = 6,90,000

## Answer to MTP\_Final\_Syllabus 2016\_Dec 2019\_Set 2

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$$\text{EPS} = ₹ 21,60,000 / 6,90,000 = ₹ 3.13$$

(iii) New market price of M Ltd. (P/E ratio remains unchanged)

Present P/E ratio of M Ltd.	10 times
Expected EPS after merger	₹ 3.13
Expected market price (₹ 3.13 × 10)	= ₹ 31.30

(iv) Market value of merged firm:

Total no. of shares	6,90,000
Expected market price	₹ 31.30
Total value (6,90,000 × ₹ 31.30)	₹ 2,15,97,000