FINAL EXAMINATION

GROUP IV

(SYLLABUS 2016)

SUGGESTED ANSWERS TO QUESTIONS

DECEMBER 2018

Paper- 20 : 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.

This paper has been dividend into Sections. viz, Section A and Section B.

Section – A: Strategic Performance Management

(50 marks)

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

1. Choose the correct option from amongst the four alternatives given: ***2×5=10***

(i) ________measures overall productivity and efficiency by considering all inputs and all outputs in the production process.

(A) Total Factor Productivity

(B) Partial Factor Productivity

(C) Parametric Index Number Approach

(D) Non-parametric Index Number Approach

(ii) The six sigma DMAIC process consists of

(A) Define, Measure, Analyze, Improve, Control

(B) Define, Manage, Analyze, Improve, Control

(C) Define, Measure, Analyze, Improve, Co-ordination

(D) Deliver, Measure, Analyze, Improve, Control

(iii) A firm has total cost function: $C = 1/9\ X^3 - l/2\ X^2 - 18\ X + 30$; C is total cost and X is quantity produced. One is wondering whether MC (marginal cost) can ever be zero. If you believe that the firm's MC can be zero, then it will be when X is equal to

(A) 2

(B) 5

(C) 9

(D) None of the above is true

(iv) The supply chain concept originated in what discipline?

(A) Operations

(B) Production

(C) Marketing

(D) Logistics

(v) Which one the following is NOT a type of Benchmarking?

(A) Product Benchmarking

(B) Competitive Benchmarking

(C) Process Benchmarking

(D) Brand Benchmarking

Answer : 1

(i) (a) Total Factor Productivity

(ii) (a) Define, measure, analyze, improve, control

(iii) (c) We know that C = 1/9 x ^3-1/2 x ^2-18 x+30; Then, MC = dC/dx = 1/3 x^2-x-18;

When MC = 0, we get 1/3 x^2-x-18=0↔x^2-3x-54=0↔(x-9)(x+6)=0. Since x can never be negative, x = 9, to get MC = 0

(iv) (c) Marketing

(v) (d) Brand Benchmarking is not a type of Benchmarking.

2.(a) (i) What are the components of supply chain management ?

(ii) What is operative and collaborative customer relationship management ?

(iii) Describe the benefits and limitations of Balance Score Card. 3+3+4 = 10

(b) (i) What are the steps in developing Balance Score Card ?

(ii) Discuss the information to be required for performance measurement under Balance Score Card. 5+5 = 10

Answer : 2(a)

(i) There are five basis components of supply chain management.

1. Plan : This is the strategic portion of supply chain management (SCM). You need a strategy for managing all the resources that go toward meeting the customer demand for your product and services.

2. Source : Choose the suppliers that will deliver the goods and services you need to create your product. Develop a set of pricing, delivery and payment processes with suppliers and create metrics for monitoring and improving the relationships.
3. Make : This is the manufacturing step. Schedule the activities necessary for production, testing, packaging the preparation for delivery.
4. Deliver : This is the part that many insiders refer to as logistics. Coordinate the receipt of orders from customers, develop a network of warehouses, prick carriers to get products to customers and set up an invoicing system to receive payments.
5. Return : The problem part of the supply chain. Create a network for receiving defective and excess products back from customers and supporting customers who have problems with delivered products.

(ii) **Operative CRM** mainly supports the actual contact with customers conducted by front office workers and general automation of business processes including sales of products, services and marketing. All communication with the customer is tracked and stored in the database and if necessary it is effectively provided to users (workers), It can also minimize the time that the worker has to spend typing the information and administrating (the data is shared). This allows the company to increase the efficiency of their employees work and they are then able to serve more customers.

Collaborative CRMenables all companies along the distribution channel, as well as all departments in a company, to work together and share information about customers, even speaks about partner relationship management. But sometimes we might see a rivalry between departments that undermines efforts of CRM to share relevant data throughout the whole company. The goal of collaborative CRM then is maximum sharing of relevant information acquired by all departments with the focus on increasing the quality of services provided to customers.

(iii) **Benefits** : An organization can derive the following benefits by implementation of BSC :

(a) It avoids management reliance on short term financial measures.

(b) It can successfully communicate corporate strategy to the functional heads and organization's subunits and forcing them to develop their own goals.

(c) It can assist stakeholders in evaluating the firm, if measurers are communicated externally,

(d) It helps in focusing the whole organization on the few key things needed to create breakthrough performance.

(e) It helps in clarifying and updating budgets.

(f) It helps in identifying and aligning strategic initiatives.

(g) It helps in conduct of periodic performance reviews to learn about and improve strategy.

Limitations : BSC is subject to following limitations :

a. There is no clear relation between BSC and shareholder value.

b. It does not lead to a single aggregated summary of control.

c. The measure may give conflicting signals and confuse management. It involves substantial shifts in corporate culture.

Answer : 2(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) The total cost function for a monopolist is given by TC= 900 + 40Q^2 . The demand function for the goods produced by the monopolist is given by 2Q = 48 – 0.08P. What will be the profit maximizing price ? **8**

(b) The following financial data related to the Balance Sheet of XYZ Limited for FY 2017 – 18 has been extracted from the Annual Report 2017 – 18:

BALANCE SHEET of XYZ Limited as at March, 31

(Rs. In crores)

ASSETS	2018
Non-Current Assets	
(a) Property, Plant and Equipment	**70,942.90**
(b) Capital Work-in-Progress	**5,641.50**
(c) Intangible Assets	**786.18**
(d) Financial Assets	**-**
(e) Other Assets	**2,140.84**
Total Non-Current Assets	**79,511.42**
Current Assets	
(a) Inventories	**11,023.41**
(b) Financial Assets	
(i) Investments	**14,640.37**
(ii) Trade Receivables	**1,875.63**
(iii) Cash and Cash Equivalents	**4,588.89**

(iv) Other Financial Assets	480.62
(c) Other Assets	1,822.94
Total Current Assets	**34,431.86**
TOTAL ASSETS	**1,13,943.28**
EQUITY AND LIABILITIES	
Equity	
(a) Equity Share Capital	1,146.12
(b) Other Equity	60,976.14
Total Equity	**62,122.26**
Non-Current Liabilities	
(a) Financial Liabilities	
(i) Borrowings	24,568.95
(ii) Other Financial Liabilities	19.78
(b) Provisions	1,961.21
(c) Other Liabilities	224.71
Total Non-Current Liabilities	**26,774.65**
Current Liabilities	
(a) Financial Liabilities	
(i) Borrowings	669.88
(ii) Trade Payables	11,242.75
(iii) Other Financial Liabilities	6,541.40
(b) Provisions	735.28
(c) Other Liabilities	5,857.06
Total Current Liabilities	**25,046.37**
TOTAL EQUITY AND LIABILITIES	**1,13,943.28**

Additional Information :

- **Market Price of XYZ Limited share having a face value of Rs. 10 as on the Balance Sheet date was Rs. 870.**
- **Operating Profit of the Company for the year was – Rs. 21,640 crores.**
- **Operating Profit Margin of the Company is 16.25%**

Using the above information and Altman's Multiple Discriminant Function, you are required to calculate Z-score of XYZ Limited as per the revised Z-Score Model of Altman (1983) and comment on the financial position of the Company. **12**

Answer : 3(a)

Demand function is given by

2Q = 48 – 0.08 P

or, 2Q – 48 = -0.08P

or, 48 – 2Q = 0.08P

or, P= 600 - 25Q

TR = PQ

$=600Q - 25Q^2$

TC is given by,

$TC = 900 + 40Q^2$

The first order condition for profit maximization is MR = MC

$TR = 600Q - 25Q^2$

$$MR = \frac{dTR}{dQ} = 600 - 50Q$$

$$MC = \frac{d(TC)}{dQ} = 80Q$$

For maximizing profit

MR = MC

i.e. $600 - 50Q = 80Q$

$$Q = \frac{600}{130} = 4.6 \text{ units}$$

Equilibrium Price =

$P = 600 - 25Q = 600 - 25(4.6)$

$= 600 - 115$

= Rs. 485

i.e. profit maximizing price is Rs. 485

Answer : 3(b)

(b) As per the revised Z-score Model of Altman (1983), we have -

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

Where

X1 = Working capital / total assets

X2 = Retained earnings / total assets

X3 = EBIT / total assets

X4 = Market Value of Equity/ Total Debts.

X5 = Sales/total assets

From the information given in the question, we get the following :

Market Price of Rs. 10 (Face Value)	Rs. 870.00
Working Capital (Current Assets – Current Liabilities)	Rs. 9,385.49
Retained Earnings (Other Equity)	Rs. 60,976.14

Total Assets	Rs. 1,13,943.28
EBIT (Operating Income)	Rs. 21,640.00
Market Value of Equity (Equity Capital/10 * 870)	Rs. 99,712.44
Operating Profit Margin	16.25%
Sales (EBIT/Operating Profit margin)	Rs. 1,33,169.23
Total Debts (Non-Current Liabilities + Current Liabilities)	Rs. 51,821.02

From the above information, we obtain –

X1 = 0.082

X2 = 0.535

X3 = 0.190

X4 = 1.924

X5 = 1.169

Using the Revised Z-Score Model (as given above), we get the value of Z 3.077. Since Z is more than 2.99, the firm is Non-failed or non-distressed firm.

4. (a) Define the following : **2 × 4 =8**

(i) Shadow Pricing

(ii) Liquidity Coverage Ratio

(iii) Risk Retention

(iv) Unsystematic Risk

(b) (i) Give the statistical methods of Demand Forecasting (any four) :

(ii) A manufacturing company is producing ball bearings. It's production-line is set to produce ball bearings with 8 mm diameter. Past records are showing that the process standard deviation of ball bearing diameter is 0.01 millimetres. Assume that you are working in the Quality Control Center of a company. On a particular day 7 samples of size 5(n= 5) are picked up. You are supposed to draw a suitable control chart with 3-sigma limits and comment whether the process is within control limits or not :

1	2	3	4	5	6	7
7.995	7.963	8.012	7.981	8.032	7.999	8.012

4+8=12

Answer : 4(a)

(i) Shadow Pricing :

Shadow prices are not prices obtained by observing the real world. Shadow prices ; they are "imputed values". The shadow price shows the marginal contribution of the factors of production employed. These imputed values show the increase in profit which would result if an additional unit of that scarce factor is used. The imputed value is the reduction in contribution if that scarce factor is removed.

(ii) Liquidity Coverage Ratio

Liquidity Coverage Ratio (LCR) is the ratio of Liquid Assets to Net Cash Outflow for short term (30 days) liquidity management. It shows how much of liquid assets can sustain the cash outflows for operating activities.

(iii) Risk Retention

This denotes acceptance of the loss or benefit arising out of a risk when it takes place. In short, it is also termed as self insurance. This strategy is viable when the risks are small enough to be transferred at a cost that may be higher than the loss arising out of the risk itself.

(iv) Unsystematic Risk

Unsystematic risk refers to that portion of the risk which is caused due to factors unique or related to a firm or industry. Such a risk is diversifiable and it can be eliminated through diversification on the part of the investors when they hold a portfolio of shares.

Answer : 4(b)

(i) There are following statistical methods that are to be used in demand forecasting :

- Simple average method
- Moving average method
- Weighted moving average
- Time series
- Linear trend
- Regression analysis (Simple and Multiple)
- Simultaneous equation and
- Barometric method.

(Candidates are to list any four of the above methods).

(ii) Mean diameter of ball bearings is 8 millimeters, and the standard deviation of ring diameter is 0.01 millimeters.

Standard Error = Standard Deviation / $\sqrt{n}$ = $0.01/\sqrt{5}$ = 0.00447

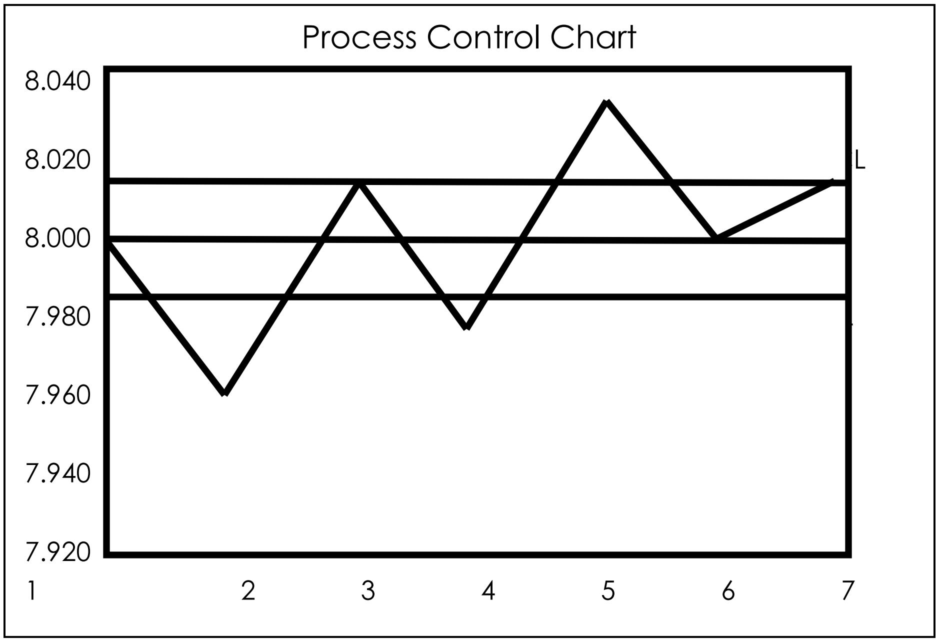
Therefore,

Central Limit Line = 8

Upper Control Line (Limit) = $8 + 3 \times 0.00447 = 8.0134$

Lower Control Line (Limit) = $8 - 3 \times 0.00447 = 7.9866$

Drawing the limits and the actual, we get the following process chart :



The control chart shows that the process is out of control as 3 out of 5 samples are outside the control limits and two are very close to the Upper Control limit, and therefore, some correction measures are required.

Section – B

Business Valuation

(50 marks)

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

5. Choose the correct option from amongst the four alternatives given, with justification/workings. I mark will be for the correct choice and I mark will be for the justification/workings. **2 × 5=10**

(i) If the expected rate of return on a stock exceeds the required rate,

(A) the stock is experiencing super normal growth.

(B) the stock should be sold.

(C) the company is not probably trying to maximize price per share.

(D) the stock is a good buy.

(ii) Which of the following items would not be included in a WACC calculation ?

(A) Proportion or weight of debt.

(B) Proportion or weight of equity

(C) Personal tax rate on interest payments

(D) Cost of equity.

(iii) In calculating Market Value added of the company ________ is/are considered.

(A) Market value of equity

(B) Market value of debt

(C) Both (A) and (B)

(D) Only economic value added

(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) 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

Answer : 5

(i) (d) The stock is a good buy, as the investor will earn higher than required rate.

(ii) (c) Personal tax rate on interest payments is not relevant, it is the corporate tax rate applicable to the company that may be relevant.

(iii) (c) both a and b, as both market value of equity as well as market value of debt are required to be considered.

(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) (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 "Decease".

6. (a) Suvo Ltd. plans to expand its operations and estimates the total cost of the expansion to be Rs. 24 crores. The same is proposed to be financed by internal accruals of Rs. 9 crores and the balance through the rights issue. The current share capital of the company is Rs. 2.40 crores. The shares of the company are currently quoting at Rs. 345. The company proposes to price the rights at Rs. 250.

Based on the information

(i) compute the ratio of the rights.

(ii) calculate the value of the rights.

(iii) determine the gain/loss of a shareholder, if he

(A) Exercises his rights in the rights issue

(B) Allows his rights to expire

(C) Sells his rights. **12**

(b) Das Ltd. is having a Machine carrying amount of which is Rs. 100 lakhs as on 31.03.2013. Its balance useful life is 5 years and residual value at the end of 5 years is Rs. 5 lakhs. Estimated future cash flows from the Machine for the next 5 years are :

Years	Estimated cash flows (Rs. in lakhs)
2014	52
2015	34
2016	32
2017	28
2018	32

Compute "Value in use" for plant if the discount rate is 15% and also compute the recoverable amount if net selling price of the machine as on 31.12.2013 is Rs. 55 lakhs.

8

Answer : 6(a)

(i) Total price of the Project = 24 crores

Less : Internal accruals = 9 crores

Size of the proposed right issue = 15 crores

Right issue price = Rs. 250 per share

Number of right shares = 15 Crs. / 250 = 6,00,000

Existing Capital = 24,00,000 shares

Proportion of rights = 6/24 = ¼

Hence the right ratio is 1 rights share for every 4 shares held.

(ii) Computation of the value of rights :

Value of rights = $\frac{P_0 - SR}{N+R} = \frac{345 - 250 \times 1}{4+1}$ = ` 19

(iii) (A) Gain/Loss to a shareholder

If the invests in the rights issue :

The ex-rights price of the share is expected to be = $\frac{P_0 - SR}{N+R}$

= $\frac{4 \times 345 + 250 \times 1}{4+1}$ = Rs. 326

Assume X holds 100 shares

Existing wealth = 100 x 345 = Rs. 34,500

Subscription in rights issue = 25 × 250 = 6,250

Total = 40,750
Expected post-rights market value of his portfolio
= 125 @ Rs. 326 = Rs. 40,750
No gain/loss to the shareholder.

(B) Allow the rights to expire :
Existing wealth = Rs. 34,500
Post-rights market value of his holdings = (100 x 326) = Rs. 32,600
Loss in the wealth of shareholder = Rs. 1,900

(C) Sells his rights
Existing wealth = Rs. 34,500
Amount realized by Sale of rights (100 x 19) = 1,900
Post –rights market value of the Holdings (100 × 326) = Rs. 32,600
Gain/Loss is Nil

Answer : 6(b).

Present value of the future cash flow

Year	Estimated cash flows (Rs. in lakhs)	Discount @ 15%	DCF
2014	52	0.870	45.24
2015	34	0.756	25.704
2016	32	0.658	21.056
2017	28	0.572	16.016
2018	32	0.497	15.904
Total			123.92

Present Value of residual price on 31.03.2018 : Rs. 5 x 0.497 = Rs. 2.485 (Rs. in laksh)

Present Value of estimated cash flow by use of an asset and residual value, which is called "Value in use".

Value in use is (Rs. 123.92 + Rs. 2.485) = Rs. 126.405 lakhs
Recoverable Amount = Net Selling Price (Rs. 55 Lakhs) or Value in Use (Rs. 126.405 Lakhs), whichever is higher.
Hence, Recoverable Amount = Value in Use = Rs. 126.405 Lakhs

7. Hard Company Limited is planning to acquire Soft Company Limited and merge it with the Company. The following financial information has been extracted from the respective Annual Reports of 2018 of these companies :

(Rs. in crores)

Particulars	**Hard Company Limited**	**Soft Company Limited**
Sales	**Rs. 1,233.00**	**Rs. 270.18**
Less : Operating Expenses	**Rs. 678.15**	**Rs. 148.60**
Operating Profit	**Rs. 554.85**	**Rs. 121.58**
Less : Interest	**Rs. 75.00**	**Rs. 75.00**

Profit Before Tax	**Rs. 479.85**	**Rs. 46.58**
Less : Tax @ 30%	**Rs. 143.96**	**Rs. 13.97**
Profit After Tax	**Rs. 335.90**	**Rs. 32.61**
Assets		
Non-Current Assets	**Rs. 8,560.00**	**Rs. 4,750.00**
Current Assets	**Rs. 5,475.00**	**Rs. 2,560.00**
Total Assets	**Rs. 14,035.00**	**Rs. 7,310.00**
Equity and Liabilities		
Equity Capital (Face Value – Rs. 10 per share)	**Rs. 500.00**	**Rs. 125.00**
Other Equities	**Rs. 6,780.00**	**Rs. 3,545.00**
Total Equity	**Rs. 7,280,.00**	**Rs. 3,670.00**
Non-Current Liabilities	**Rs. 4,750.00**	**Rs. 2,450.00**
Current Liabilities	**Rs. 2,005.00**	**Rs. 1,190.00**
Total Equity and Liabilities	**Rs. 14,035.00**	**Rs. 7,310.00**
Ratios :		
Net Profit Margin Ratio	**27.24%**	**12.07%**
Return on Equity	**4.61%**	**0.89%**
Price /Earnings Ratio	**14.29**	**10.35**

Required :

(i) What is the market price of each company's share before merger ?

(ii) Assuming that the management of Hard Company Limited (HCL) estimates that the shareholders of Soft Company Limited (SCL) will accept an offer of one share of HCL for four shares of SCL. If there are no synergic effects and post-merger Price/Earnings Ratio remains unchanged, then what will be the market price of the post-merger HCL share ?

(iii) Will the shareholders of HCL be better or worse off than they were before the merger ?

(iv) Due to synergic effects, the management of HCL estimates that the earnings will increase by 20%. In such a case, what will be the new post-merger EPS and price per share if the new Price/Earnings Ratio of HCL will be 15? Will the shareholders be better off or worse off than before the merger ? **20**

Answer : 7.

(i)

Particulars	Hard Company Limited	Soft Company Limited
Price/Earnings Ratio	14.29	10.35
Profit After Tax (PAT) (Rs. in crore)	Rs. 335.90	Rs. 32.61
Equity Capital (Face Value – Rs. 10 per share) (Rs. in crore)	Rs. 500.00	Rs.125.00
No. of Shares (in crore)	50.00	12.50
EPS (in Rs.)	Rs. 6.72	Rs. 2.61
Market Price before Merger (Rounded off to nearest Rs.)	Rs. 96.00	Rs. 27.00

(ii)

Post-Merger Assuming that there is no synergic gains (Hard Company Limited)	
Profit After Tax	Rs. 368.50
No. of Equity shares to be issued to the shareholder of SCL (one share of HCL for four shares of SCL)	3.125
Total No. of Shares of HCL after merger	53.13
EPS	Rs. 6.94
Price/Earnings Ratio after merger (assuming same)	14.29
Price per share of HCL after merger	Rs. 99.17

(iii)

After merger the price of HCL share has increased from Rs. 96.00 to Rs. 99.17. It shows that the HCL shareholders will be benefited from the merger.

(iv)

Post-Merger Assuming that there are synergic gains. (Hard Company Limited)	
Profit After Tax (Without Synergic Gains)	Rs. 368.50
Synergic Gains (%)	20%
Synergic Gains (Rs.)	Rs. 73.70
Total Profit After Tax considering Synergic Gains	Rs. 442.20
Total No. of Shares of HCL after merger	53.13
EPS	Rs. 8.32
New Price/Earnings Ratio after merger	15
Price per share of HCL after merger	Rs. 124.80

(V)

After merger and having synergic gains, the price of HCL share has increased from Rs. 96.00 to Rs. 124.80. It shows that the HCL shareholders will be benefited from the merger.

8. (a) Discuss the relationship between economic value added and market value added. 8

(b) You are the Director of Ram & Company. One of the projects you are considering is the acquisition of Shyam & Company. Shyam, the owner of Shyam & Company, is willing to consider selling his company to Ram & Company if he is offered an all-cash purchase price of Rs. 5 million. The project estimate that the purchase of Shyam & Company will generate the following profit after-tax cash flow :

Year	Cash Flow (in Rs.)
1	10,00,000
2	15,00,000
3	20,00,000
4	25,00,000
5	30,00,000

If you decide to go ahead with this acquisition, it will be funded with Ram's standard mix of debt and equity at the firm's weighted average (after-tax) cost of capital of 9 per cent. Ram's tax rate is 30 per cent. Should you recommend acquiring Shyam & Company to your CEO ? 12

PVF@ 9 per cent is :

Year	1	2	3	4	5
PVF	**0.917**	**0.842**	**0.772**	**0.708**	**0.650**

Answer : 8(a)

The relationship between EVA and MVA is more complicated than the one between EVA and firm value. The market value of a firm reflects not only the expected EVA of assets in place but also the expected EVA from future projects. If the actual EVA is smaller than the expected EVA the market value can decrease even though the EVA is higher. This does not imply that increasing EVA is bade from a corporate finance stand point. In fact, given a choice between delivering a below expectation EVA and no EVA at all, the firm should deliver the below expectation EVA. It does suggest that the correlation between increasing year to year EVA and market value will be weaker for firms with high anticipated growth (and excess returns) than for firms with low or no anticipated growth.

Answer : 8(b)

Year	Cash Flow (Rs.)	PVF (at 9%)	PV of cash flow
1	10,00,000	.917	9,17,000
2	15,00,000	.842	12,63,000
3	20,00,000	.772	15,44,000
4	25,00,000	.708	17,70,000
5	30,00,000	.650	19,50,000
Total value of the project			Rs. 74,44,000 (total of PV cash flow

Since the value of Shyam & Company is Rs. 74,44,000 a figure greater than minimum desired amount of Rs. 50 lakhs to be paid to Shyam & Company, Ram & company can consider buying Shyam & company.