Paper 17 - Strategic Performance Management

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Time Allowed: 3 Hours   Full Marks: 100

Sec-A: Question No 1 which is compulsory and carries 20 Marks

1(a). The cost function is C=100+q, where the product is sold at ₹ 5 per unit. Determine break even sales and profit when 125 units are sold.   4

Answer:
Let, Total Revenue (TR) = Pq = 5q   [where, P = selling price per unit of the product

And, q = Quantity of the product]

And C = 100 + q

For Break even TR = C $\Rightarrow$ 5q = 100+q $\Rightarrow$ q = 25

For Break even sales = 5 x 25   = ₹ 125

Again, say that Profit = π

Now π = TR - C = 5q – 100 – q =4q – 100.

As per question, q = 125, π = 4 x125 – 100 = 400

So, Break Even sales is ₹ 125 and Break even profit is ₹ 400.

1(b). ABC Ltd has two divisions A and B. A division is currently operating at full capacity. It has been asked to supply its product to division B. Division A sells its product to its regular customers for ₹ 30 each. Division B (Currently operating at 50 per cent capacity) is willing to pay ₹ 20 each for the components produced by division A (this represents the full absorption cost per component at divisions A). The components will be used by division B in supplementing its main product to conform to the need of special order. As per the contract terms of sale, the buyer calls for of full cost to division B, plus 10 percent. Division A has a variable cost of ₹ 17 per component. The cost per unit of divisions B subsequent to the buying part form division A is estimated as follows:

Particulars	Amount (₹)
Purchased parts – outside vendors	90.00
Purchased part – division A	20.00
Other variable costs	50.00
Fixed overheads and administration	40.00
	200.00

Required:
(i)   As manager of division A would you recommend sales of your output to division B at the stipulated price of ₹ 20?
(ii)   Would it be in the overall interest of the company for division A to sell its output to division B?
(iii) Suggest an alternative transfer price and show how could it lead to goal congruence?   [2+1+1]

Answer:
(i) As manager of division A, I would not recommend sales at ₹ 20 per unit to division B. The division is already operating at its full capacity and the market is presumably absorbing all its output at ₹ 30 per unit. The internal transfer made to division B, hence, would reduce its

profit (by ₹ 10 per unit) as well as the ROI.

(ii) Decision Analysis (whether to transfer part from division A to division B at ₹20 per unit or not).

Particulars	Sold externally	Transferred to division
Sale price (division A)	30.00	
Sale price (division. B) (₹ 200 + 10%)		220.00
Less relevant/incremental cost: For part of division A	17.00	17.00
Purchased parts from outside		90.00
Other variable costs		50.00
Profit per unit	13.00	63.00

Yes it will be in the overall interest of the company that transfer takes place, as it would augment the company's profit by ₹ 50 per unit.

(iii) Dual price basis of effecting transfer is the most appropriate. In this case, the relevant transfer price will be ₹30.00 (sale) so far as division A is concerned, and ₹ 20 (purchase) so far as division B is concerned. It will keep the profits of division unaffected and will facilitate the utilization of the idle capacity of division B, as also increase its profit:

Particulars	₹
Sale price (₹ 210 + 10 per cent)	231.00
Less: costs (₹ 90 + ₹ 30 + ₹ 50)	170.00
	61.00

1(c). Describe the objectives of Performance Appraisal. **4**

Answer:
Objectives of Performance Appraisal:

(i)	To review the performance of the employees over a given period of time.
(ii)	To judge the gap between the actual and the desired performance.
(iii)	To help the management in exercising organizational control.
(iv)	Helps to strengthen the relationship and communication between superior – subordinates and management – employees. subordinates and management – employees.
(v)	To diagnose the strengths and weaknesses of the individuals so as to identify the training and development needs of the future.
(vi)	To provide feedback to the employees regarding their past performance.
(vii)	Provide information to assist in the other personal decisions in the organization.
(viii)	Provide clarity of the expectations and responsibilities of the functions to be performed by the employees.
(ix)	To judge the effectiveness of the other human resource functions of the organization such as recruitment, selection, training and development.
(x)	To reduce the grievances of the employees.

1(d). Describe Recurrent Artificial Neural Network. **4**

Answer:
Recurrent Artificial Neural Network:
Artificial neural network with the recurrent topology is called Recurrent Artificial neural network. It is similar to feed-forward neural network with no limitations regarding back-loops. In these cases information is no longer transmitted only in one direction but it is also transmitted backwards. This creates an internal state of the network which allows it to exhibit dynamic temporal behaviour.

Recurrent artificial neural networks can use their internal memory to process any sequence of inputs. The following figure shows small Fully Recurrent artificial neural network and complexity of its artificial neuron interconnections. The most basic topology of recurrent artificial neural network is fully recurrent artificial network where every basic building block (artificial neuron) is directly connected to every other basic building block in all direction. Other recurrent artificial neural networks such as Hopfield, Elman, Jordan, bi-directional and other networks are just special cases of recurrent artificial neural networks.

1(e). Explain about the exchange rate risk and liquidity risk. **4**

Answer:
Exchange Rate Risk: Exchange Rate Risk Management through asset-liability management: At a particular exchange rate assets and liabilities of a financial institution match exactly. As the exchange rate fluctuates this balance gets disturbed. A simple solution to correct this risk is to match assets and liabilities of the same currency. Many financial institutions do not have foreign exchange exposure as all their assets and liabilities are in rupee currency. The risk of foreign exchange borrowings of these institutions are passed on to the lenders through dollar denominator loans. The uncovered loans are hedged at the time of contracting them through forward covers for the entire amount.

Liquidity Risk: It is that portion of an asset's total variability of return which results from price discounts given or sales commissions paid in order to sell the asset without delay. It is a situation wherein it may not be possible to sell the asset. Assets are disposed off at great inconvenience and cost in terms of money and time. Any asset that can be bought or sold quickly is said to be liquid. Failure to realize with minimum discount to its value of an asset is called liquidity risk.

Sec-B: Answer any five questions, each question carries 16 Marks

2(a). Describe the Strategic Decisions which help in Managing Risk. **8**

Answer:
Strategic Decision for Risk Management —

Risk Handling: In ideal risk management, a prioritization process is followed whereby risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability loss are handled later.

Risk Reduction: This strategy is attempted to decrease the quantum of losses arising out of a risky happening e.g. earthquake, storm, flood etc. It involves methods that reduce severity of the loss arising from risk consequences. Risk reduction can be achieved through (i) loss prevention, and (ii) loss control.

Risk Avoidance: This is prevention and a proven strategy. This strategy results in complete elimination of exposure to loss due to a specific risk. It may involve avoidance of an activity, which is risky. It includes deliberate attempt on part of the person taking risk decision not to perform an activity or not to accept a proposal, which is risk prone. This strategy can be approached in two ways: (a) Don't assume risk, and (b) Discontinue of an activity to avoid risk.

Risk Retention: This strategy is adopted when risk cannot be avoided, reduced or transferred. It involves accepting the loss when it occurs by taking risky proposal or risky assignment where there are no other alternatives to avoid risk. It can be a voluntary or involuntary action. When it is voluntary, it is retained through implied agreements. Involuntary retention occurs when the organization is unaware of the risk and faces it when it comes up.

Risk Transfer: It means causing another party to accept the risk, typically by contract. It involves a process of shifting risk responsibility on others. Insurance is one type of risk transfer, which is widely used in common parlance.

Risk Hedging: It is a systematic process of reducing risk associated with an investment proposal or in some other assignments where risk is inevitable i.e. the risk is of such nature that it cannot be avoided altogether.

Risk Diversification: It involves identifying both systematic and unsystematic risks. Systematic risk is inherent and is peculiar to the type of business/firm and can be reduced or diversified through functional level strategy. The unsystematic risk is external to the organization and is termed as 'market risk'. The identification of characteristics of market risk through statistical correlation 'beta, which is a measure of market risk, lends itself for manipulation through portfolio management. This strategy is followed in reduction of risk of single portfolio by investing in shares, debentures, bonds, treasury bills etc. to reduce overall risk of the portfolio.

Risk Sharing: Taking an insurance coverage for the exposure is the common method of sharing risk. By paying insurance premium, the company shares the risk with an insurance company. The insurance company can also share its risk with other insurance companies by doing reinsurance.

Risk Pooling: It is the process of identification of separate risks and put them all together in a single blanket, so that the monitoring, integrating or diversifying risk can be implemented.

2(b). Describe the causes for corporate failure and their examples.   8

Answer:
Causes of Corporate Failure:

Technological causes
Traditional methods of doing work have been turned upside down by the development of new technology. If within an industry, there is failure to exploit information technology and new production technology, the firms can face serious problems and ultimately fail. By using new technology, cost of production can be reduced and if an organization continues to use the old technology and its competitors start using the new technology; this can be detrimental to that organization. Due to high cost of production, it will have to sell its products at higher prices than its competitors and this will consequently reduced its sales and the organization can serious problems. This situation was seen in the case of Mittal Steel Company taking over Arcelor Steel Company. Arcelor Steel Company was using its old technology to make steel while Mittal Steel Company was using the new technology and as a result, Mittal Steel Company was able to sell steel at lower price than Arcelor Steel Company due to its low cost of production. Arcelor Steel Company was approaching corporate failure and luckily, Mittal Steel Company merged with Arcelor Steel Company and became Arcelor Mittal Steel Company, thus preventing Arcelor from failure.

Working capital problems
Organizations also face liquidity problems when they are in financial distress. Poor liquidity becomes apparent through the changes in the working capital of the organization as they have insufficient funds to manage their daily expenses. Businesses, which rely only on one large customer or a few major customers, can face severe problems and this can be detrimental to the businesses. Losing such a customer can cause big problems and have negative impact on the cash flows of the businesses. Besides, if such a customer becomes bankrupt, the situation can even become worst, as the firms will not be able to recover these debts.

Economic distress

A turndown in an economy can lead to corporate failures across a number of businesses. The level of activity will be reduced, thus affecting negatively the performance of firms in several industries. This cannot be avoided by businesses. The recent economic crisis in the USA led to many cases of corporate failures. One of them is the insurance AIG insurance company. It is facing serious problems and it might close its door in the near future.

Mismanagement

Inadequate internal management control or lack of managerial skills and experience is the cause of the majority of company failures. Some managers may lack strategic capability that is to recognize strengths, weaknesses, opportunities and threats of a given business environment. These managers tend to take poor decisions, which may have bad consequences afterwards. Furthermore, managers of different department may not have the ability to work closely together. There are dispersed department objectives, each department will work for their own benefits not towards the goal of the company. This will bring failure in the company. One example can be WorldCom, where the finance and legal functions were scattered over several states and communication between these departments were poor.

Over-expansion and diversification

Research has shown that dominant CEO is driven by the ultimate need to succeed for their own personal benefits. They neglect the objective set for the company and work for their self-interest. They want to achieve rapid growth of the company to increase their status and pay level. They may do so by acquisition and expansion. The situation of over expansion may arise to the point that little focus is given to the core business and this can be harmful as the business may become fragment and unfocused. In addition, the companies may not understand the new business field. Enron and WorldCom can be an example for this situation where the managers did not understand how growing overcapacity would influence its investment and therefore did not comprehend the risks associated with it.

Fraud by management

Management fraud is another factor responsible for corporate collapse. Ambitious managers may be influenced by personal greed. They manipulate financial statements and accounting reports. Managers are only interested in their pay checks and would make large increase in executive pay despite the fact that the company is facing poor financial situation. Dishonest managers will attempt to tamper and falsify business records in order to fool shareholders about the true financial situation of the company. These fraudulent acts or misconduct could indicate a serious lack of control. These frauds can lead to serious consequences: loss of revenue, damage to credibility of the company, increased in operating expenses and decrease in operational efficiency.

Poorly Structured Board

Board of Directors is handpicked by CEO to be docile and they are encouraged by executive pay and generous benefits. These directors often lack the necessary competence and may not control business matters properly. These directors are often intimated by dominant CEO and do not have any say in decision making. Example Enron and WorldCom where poorly structured board was a contributor towards their failure.

Financial distress

Firms that become financially distressed are found to be under- performing relative to the other companies in their industry. Corporate failure is a process rooted in the management defects, resulting in poor decisions, leading to financial deterioration and finally corporate collapse. Financial distresses include the following reasons also low and declining profitability, investment Appraisal, Research and Development and technical insolvency amongst others. A firm may fail,

as its returns are negative or low. A firm that consistently reports operating losses probably experiences a decline in market value. If the firm fails to earn are turn greater than its cost of capital, it can be viewed as having failed. Falling profits have an obvious link with both financial and bankruptcy as the firm finds it is not generating enough money to meet its obligations as they fall due. Another cause that will lead the company to fail is the investment appraisal. Many organizations run into difficulties as they fail to appraise investment projects carefully. The long-term nature of many projects means that outcomes are difficult to forecast and probabilities are usually subjective. "Big project gone wrong" is a common cause of decline. For example, the acquisition of a loser company, this has happen in the case for the failure of Parmalat Co Ltd. of Italy, which made the acquisition of several losses making company where Inappropriate evaluation of the acquired company, its strengths and weaknesses.

3(a). **Amit Ltd. provides the following details on its new product:**
Years 1 and 2: R & D costs: ₹ 2,40,000, Design costs ₹ 1,60,000
Years 3 to 6: Other functional costs:

Function	One-time costs	Costs per unit
Production	₹ 1,00,000	₹ 25
Marketing	₹ 70,000	₹ 24
Distribution	₹ 50,000	₹ 16
Customer service	₹ 80,000	₹ 30

The sale quantities during the product Life Cycle at various selling prices are:

Selling price per unit (₹)	400	480	600
Sale Quantity in units	5,000	4,000	2,500

Ignoring time value of money, compute the Net incomes generated over the product Life Cycle of various prices. Which price should the company select? **10**

Answer:

Income Statement

Particulars	Option I	Option II	Option III
1. Life Cycle Sales Quantity	5,000 units	4,000 units	2,500 units
2. Life Cycle Selling Price p. u.	₹400	₹480	₹600
3. Life Cycle Sales Revenue (1x2)	₹ 20,00,000	₹ 19,20,000	₹ 15,00,000
4. Life Cycle Functional Costs			
(i) Research and Development	₹ 2,40,000	₹ 2,40,000	₹ 2,40,000
(ii) Design	₹ 1,60,000	₹ 1,60,000	₹ 1,60,000
(iii) Production One Time	₹ 1,00,000	₹ 1,00,000	₹ 1,00,000
Variable	5000 x ₹ 25 = ₹1,25,000	4000 x ₹25 = ₹1,00,000	2500 x ₹25 = ₹62,500
(iv) Marketing One Time	₹ 70,000	₹ 70,000	₹ 70,000
Variable	5000 x ₹ 24 = ₹1,20,000	4000 x ₹ 24 = ₹96,000	2500 x ₹24 = ₹60,000
(v) Distribution One Time	₹ 50,000	₹ 50,000	₹ 50,000
Variable	5000 x ₹ 16 = ₹ 80,000	4000 x ₹ 16 = ₹ 64,000	2500 x ₹16 = ₹ 40,000
(vi) Customer Service One Time	₹ 80,000	₹ 80,000	₹ 80,000
Variable	5000 x ₹ 30 = ₹1,50,000	4000 x ₹30 = ₹1,20,000	2500 x ₹30 = ₹75,000
Life Cycle Total Costs	₹ 11,75,000	₹ 10,80,000	₹ 9,37,500
5. Life Cycle Net Income	₹ 8,25,000	₹ 8,40,000	₹ 5,62,500

Conclusion: The Company may select Price of ₹ 480 to maximize Profits. Assumed that R&D Costs and Design Costs represent Total Costs incurred in 2 Years.

3(b). The price (P) per unit at which company can sell all that it produces is given by the function p(x) = 300-4x. The cost function is 500+28x, where 'x' is the number of units, find x, so that profit is maximum. **6**

Answer:
$P = 300 – 4x$
$R = P(x) = 300x – 4x^2$
$C = 500 + 28x$
$P = R – C$
Profit $= 300x – 4x^2 – 500 – 28x$
$= –4x^2 + 272x – 500$
$\dfrac{dp}{dx} = – 8x + 272 = 0$
$X = 272/8 = 34$
$\dfrac{d^2p}{dx^2} = – 8$, which is Negative

Profit is maximum at x = 34 units.

4(a). A Finance Manager is considering drilling a well. In the past, only 70% of wells drilled were successful at 20 meters depth in that area. Moreover, on finding no water at 20 meters, some persons in that area drilled it further up to 25 meters but only 20% struck water at that level. The prevailing cost of drilling is ₹ 500 per meters. The finance manager estimated that in case he does not get water in his own well, he will have to pay ₹ 15,000 to buy water from outside for the same period of getting water from the well. The following decisions are considered:
(i) Do not drill any well;
(ii) Drill up to 20 meters, and
(iii) If no water is found at 20 meters, drill further up to 25 meters.
Draw an appropriate decision tree and determine the Finance Manager's optimal strategy.
12

Answer:
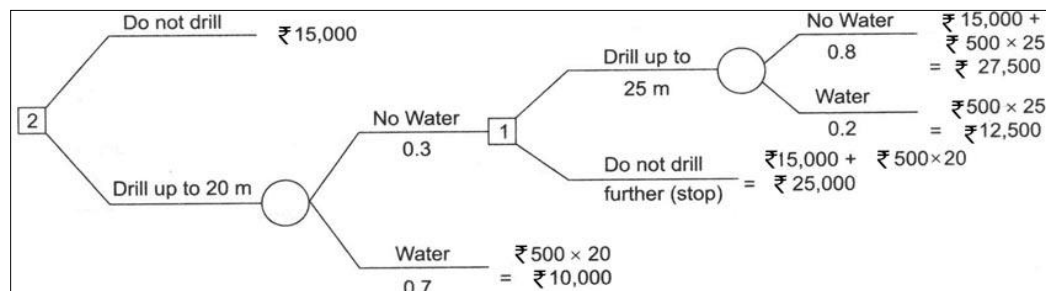
Analysis Table: Decision Tree

Decision Node	Options	Expected Cost	Decision
1	Drill up to 25 metres Stop	0.8 x 27,500 + 0.2 x 12,500 = ₹24,500 ₹ 25,000	Drill up to 25 metres
2	Do not drill Drill up to 20 metres	₹ 15,000 0.3 x 24,500 + 0.7 x 10,000 = ₹14,350	Drill up to 20 metres

From the analysis table, it may be observed that decision at node 2 implies that if it is decided to drill up to 20 metres and water is not found, then drilling up to 25 metres should be done. At

node 1, the decision taken is to drill up to 20 metres as it involved lower expected cost. Thus, the optimal strategy is to drill up to 20 metres and if water is not struck then drill further to 25 metres.

4(b). Explain the role of the Management Accountant in Value Chain Analysis.   **4**

Answer:
Role of the Management Accountant in Value Chain Analysis —
Management Accountants should recognize that the traditional, functional, internally oriented information m is inadequate or the Firm engaged in global competition. In order to facilitate Value Chain Analysis, should be a change in focus for Management Accounting. The Management Accountant's role will be scant in the following areas-

(i) Need for education, training and awareness:
Management Accountants should bring the importance of customer value to the forefront of Management's strategic thinking. They should take the initiative to bring the Value Chain message to major players in the Firm through seminars, articles, Value Chain examples and Company-specific applications.

(ii) Exploring for information:
VCA requires expertise in internal operations and information and also remands a great deal of external information. Management Accountants must seek relevant financial and non-financial information from sources outside the Firm.

(iii) Creativity:
Management Accountants must integrate databases and potential sources of timely information on competitive forces confronting the business. This calls for innovation and creativity in gathering and analyzing information for management decisions.

(iv) System design:
Designing internal and external information systems to assist managers in planning, monitoring and improving value-creating processes is another challenge facing Management Accountants.

(v) Cooperation:
Management Accountants should solicit support from all senior managers for allocating resources to develop and improve Value Chain-oriented Information Systems. The Management Accountant should ensure that the Top Management is committed to Value Chain Analysis and the organizational changes necessary for its successful implementation.

5(a). List the steps to start of Total Productivity Management.   **8**

Answer:
Total Productivity Management: Total Productive Management (TPM) provides a system for coordinating all the various improvement activities for the company so that they contribute to the achievement of corporate objective. Starting with a corporate vision and broad goals, these activities are developed into supporting objectives, or targets, throughout the organization. The targets are specifically and quantitatively defined. This seminar therefore emphases how to improve the competitiveness of products and services in quality, price, cost and customer responsiveness, thereby increasing the profitability, market share, and return on investment in human, material, capital, and technology resources.

Steps to start TPM are:
- Identifying the key people
- Management should learn the philosophy.

- Management must promote the philosophy.
- Training for all the employees.
- Identify the areas where improvements are needed.
- Make an implementation plan.
- Form an autonomous group.

5(b). Explain technical and operational factors of E-Commerce. 8

Answer:
Technical and Operational Factors of E-commerce —

(i) Protocol (Standards) Making Process:
A well-established telecommunications and Internet infrastructure provides many of the necessary building blocks for development of a successful and vibrant e-commerce marketplace.

(ii) Delivery Infrastructure:
Successful e-commerce requires a reliable system to deliver goods to the business or private customer.

(iii) Availability of Payment Mechanisms:
Secure forms of payment in e-commerce transactions include credit cards, checks, debit cards, wire transfer and cash on delivery.

(iv) General Business Laws:
The application of general business laws to the Internet will serve to promote consumer protection by insuring the average consumer that the Internet is not a place where the consumer is a helpless victim.

(v) Public Attitude to E-commerce:
The public attitude toward using e-commerce in daily life is a significant factor in the success of ecommerce.

(vi) Business Attitude to E-commerce:
The willingness of companies to move away from traditional ways of doing business and develop methods and models that include e-commerce is essential.

6(a). Discuss the steps to be taken for preventing the Corporate Failures. 8

Answer:
It is a fact that some companies perform well and that some underperform and some fails. In many, if not most cases, these companies are led by executives that are quite experienced. Below are some recommendations that can help to reduce the risk of failures of organizations:

(i) Appointment of non-executive directors:
The non-executive directors will bring their special expertise and knowledge on strategies, innovative ideas and business planning of the organization. They will monitor the work of the executive management and will help to resolve situations where conflict of interest arises. Overall, the non-executive directors will act as a Cross Check.

(ii) Audit committees:
Very often, there is occurrence of fraud in management and financial reporting. The presence of the audit committees will help to resolve this problem. Audit committees have the potential to

reduce the occurrence of fraud by creating an environment where there is both discipline and control.

(iii) Development of environment learning mechanism:
Some organizations fail because they lose touch with their environment. Therefore, to counter this problem, there is a need to develop the environmental learning mechanism. Through it, new information can be brought on continuous basis. This is mainly done by carrying customer-feedback surveys. In this way, the organization can realign itself with the new needs and challenges.

(iv) Focus on research and development:
Organizations can generate new knowledge by investing and focusing more on research and development. Thus, there will be more ideas how to make the products much better than that of their competitors. It can be deducted that a director has a big responsibility that he has to assume there commendations mentioned above can help directors to reduce corporate failure, provided that the directors abide. Proper planning also is critical to the success of a business.

6(b). Discuss Altman's Model and Explain the Five Z-Score constituent Ratios. **8**

Answer:
The Altman Model: Z-Score
The Z-Score model is a quantitative model developed by Edward Altman in 1968, to predict bankruptcy or financial distress of a business. The Z-score is a multi variate formula that measures the financial health of a company and predicts the probability of bankruptcy within 2years. This model involves the use of a specified set of financial ratios and a statistical method known as a Multiple Discriminant Analysis. (MDA). The real world application of the Altman score successfully predicted 72% of bankruptcies two years prior to their failure. The model of Altman is based on a linear analysis in which five measures are objectively weighted and summed to arrive at an overall score that then becomes the basis for classification of companies into one of the two a priori groupings that is bankrupt or non-bankrupt. These five indicators were then used to derive a Z-Score. These ratios can be obtained from corporations' financial statements.

The Five Z-Score Constituent Ratios are:
• **Working Capital/Total Assets (WC/TA):-** a firm with negative working capital is likely to experience problems meeting its short-term obligations.

• **Retained Earnings/Total Assets (RE/TA): -** Companies with this ratio high probably have a history of profitability and the ability to stand up to a bad year of losses.

• **Earnings before Interest & Tax/ Total Assets (EBIT/TA): -** An effective way of assessing a firm's ability to profit from its assets before things like interest and tax are deducted.

• **Market Value of Equity/ Total Liabilities (MVE/TL): -** A ratio that shows, if a firm were to become insolvent, how much the company market value would declines before liabilities exceed assets.

• **Sales/Total Assets (SL/TA): -** A measure of how management handles competition and how efficiently the firm uses assets to generate sales.

Based on the Multiple Discriminant Analysis, the general model can be described in the following form: Z = 1.2WC/TA + 1.4 RE/TA + 3.3 EBIT/TA + 0.6 MVE/TL + 1.0 SL/TA.

7(a). **Mention the benefits of adopting a Balanced Score Card approach to the Performance Management.**   **8**

Answer:
The benefits of adopting a Balanced Scorecard approach to performance management may include:
(i) Wholistic approach: It brings strategy and vision as the centre of Management focus. It helps firms to assess overall performance, improve operational processes and enable Management to develop better plans for improvements. It provides Management with a comprehensive picture of business operations.

(ii) Overall Agenda: It brings together in a single Management Report, various aspects like customer orientation, shortening the response time, improving quality, etc. of a competitive agenda.

(iii) Objectivity: It emphasizes the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased manner.

(iv) Management by Objectives: The methodology of BSC facilitates communication and understanding of business goals and strategies at all levels of the Firm. Thus it enables Management by Objective.

(v) Feedback and Learning: It provides strategic feedback and learning. BSC guards against sub-ordination. It emphasizes an integrated combination of traditional and non-traditional performance measures.

(vi) System Approach: It helps Senior Managers to consider all the important performance measures together, and allows them to see whether an improvement in one area has been achieved at the expense of another.

7(b). Describe the objectives of Management Information Systems.   **8**

Answer:
Management Information System (MIS) is a systematic process of providing relevant information in right time in right format to all levels of users in the organization for effective decision making. MIS is also defined to be system of collection, processing, retrieving and transmission of data to meet the information requirement of different levels of managers in an organization.

According to CIMA- 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.

Objectives of MIS:
- To provide the managers at all levels with timely and accurate information for control of business activities
- To highlight the critical factors in the operation of the business for appropriate decision making
- To develop a systematic and regular process of communication within the organization on performance in different functional areas
- To use the tools and techniques available under the system for programmed decision making

- To provide best services to customers
- To gain competitive advantage
- To provide information support for business planning for future.

8. Answer any four questions below: [4×4]
    (a) Discuss the rule of dominance of the Game Theory.
    (b) Discuss about the price Discrimination under the demand oriented pricing.
    (c) Discuss Data Availability.
    (d) Discuss the needs for implementation of ERM.
    (e) Discuss the characteristics of Data Warehouse.

Answer:
(a) Rule of Dominance
This rule is applicable to a zero-sum game between two persons, with any number of strategies. For a pay-off matrix of large size, the rule of dominance can be applied to reduce the size by carefully eliminating rows and/or column prior to final analysis to determine the optimum strategy selection for each person.

In general the following rules are adopted:
(i) In a pay-off matrix if all the elements of any row (say ith) are less than or equal (i.e., <) to the corresponding elements of any other row (say jth), then the ith strategy is dominated by jth row; in other words the player (or person) A will ignore or reject the ith row. Thus the pay-off matrix is reduced.

(ii) In a pay-off matrix if all the elements of any column (say rth) arc greater than or equal to (i.e. >) to the corresponding elements of any other column (say sth) then the rth strategy is dominated by s-th strategy; in other words the player B will ignore or reject the r-th strategy, hence again the pay-off matrix is reduced.

(iii) A pure strategy may be dominated if it is inferior to the average of two or more other pure strategies.

(b) There are many bases on which the open price discrimination is practiced. These are discussed below:

(i) Time Price Differentials: It is a general practice to use the expression "the demand for a product or service", but it is important to note that demand also has a time dimension. The demand may shift in fairly short-time intervals. For example, demand for telephone facilities is more in the day time rather than at night.

(ii) Use Price differentials: Different buyers have different uses of a product or a service. For example railways can be used for long-haul or short-haul freight traffic. Railways can also be used for transporting different types of commodities. Electricity can similarly, be used for industrial or residential purposes.

(iii) Quality price Differentials: If the product caters to that group of consumers who are concerned about its quality, then the quality becomes a significant determinant of demand elasticity. The seller has, therefore, to crate differences in quality to sell his product. It must be emphasized here that the differences in quality basically depend upon the buyers' understanding of the quality. Sellers use many devices to create quality differences.

Quantity Differentials: When the seller discriminates on the basis of the quantity of purchase, it is known as quantity differentials. Quantity discounts are price concessions based on the size of the lot purchased at one time and delivered at one location. These discounts are thus related to size of a single purchase. The size of the lot purchased is measured in terms of either physical units or monetary units. Sometimes, discounts are according to the trade status, i.e., wholesaler, retailer, jobber, etc.

(c) Data Availability

Data availability is a term used by some computer storage manufacturers and storage service providers (SSPs) to describe products and services that ensure that data continues to be available at a required level of performance in situations ranging from normal through "disastrous." In general, data availability is achieved through redundancy involving where the data is stored and how it can be reached. Some vendors describe the need to have a data center and a storage-centric rather than a server-centric philosophy and environment.

In large enterprise computer systems, computers typically access data over high-speed optical fiber connection to storage devices. Among the best-known systems for access are ESCON and Fibre Channel. Storage devices often are controlled as a Redundant Array of Independent Disks (RAID). Flexibility for adding and reconfiguring a storage system as well as automatically switching to a backup or failover environment is provided by a programmable or manually-controlled switch generally known as a director.

Two increasingly popular approaches to providing data availability are the Storage Area Network (SAN) and Network-Attached Storage (NAS). Data availability can be measured in terms of how often the data is available (one vendor promises 99.999 per cent availability) and how much data can flow at a time (the same vendor promises 3200 megabytes per second).

(d) Need for Implementation of ERM —
ERM needs to be implemented for the following reasons:
   • Reduce unacceptable performance variability.
   • Align and integrate varying views of risk management.
   • Build confidence of investment community and stakeholders.
   • Enhance corporate governance.
   • Successfully respond to a changing business environment.
   • Align strategy and corporate culture.

(e) The Data Warehouse is a collection of integrated, subject-oriented databases designed to support the Decision-Support Functions (DSF), where each unit of data is relevant to some moment in time. A Data Warehouse includes the following categories of data, where the classification is accommodated to the time-dependent data sources:
(i) Old detail data
(ii) Current (new) detail data
(iii) Lightly summarized data
(iv) Highly summarized data
(v) Metadata (the data directory or guide).

To prepare these five types of elementary or derived data in a Data Warehouse, the fundamental types of data transformation are standardized. There are four main types of transformations, and each has its own characteristics:

(i) Simple Transformations - These transformations are the building blocks of all other more complex transformations. This category includes manipulation of data that is focused on one field at a time, without taking into account its values in related fields. Examples include changing the data type of a field or replacing an encoded field value with a decoded value.

(ii) Cleansing and Scrubbing - These transformations ensure consistent formatting and usage of a field, or of related groups of fields. This can include a proper formatting of address information, for example. This class of transformations also includes checks for valid values in a particular field, usually checking the range or choosing from an enumerated list.

(iii) Integration - This is a process of taking operational data from one or more sources and mapping it, field by field, onto a new data structure in the data warehouse. The common identifier problem is one of the most difficult integration issues in building a data warehouse. Essentially, this situation occurs when there are multiple system sources for the same entities and there is no clear way to identify those entities as the same. This is a challenging problem, and in many cases it cannot be solved in an automated fashion. It frequently requires sophisticated algorithms to pair up probable matches. Another complex data-integration scenario occurs when there are multiple sources for the same data element. In reality, it is common that some of these values are contradictory, and resolving a conflict is not a straightforward process. Just as difficult as having conflicting values is having no value for a data element in a warehouse. All these problems and corresponding automatic or semiautomatic solutions are always domain-dependent.

(iv) Aggregation and Summarization - These are methods of condensing instances of data found in the operational environment into fewer instances in the warehouse environment. Although the terms aggregation and summarization are often used interchangeably in the literature, we believe that they do have slightly different meanings in the data-warehouse context. Summarization is a simple addition of values along one or more data dimensions; e.g., adding up daily sales to produce monthly sales. Aggregation refers to the addition of different business elements into a common total; it is highly domain-dependent. For example, aggregation is adding daily product sales and monthly consulting sales to get the combined, monthly total.