P-17 – Strategic Performance Management

Section – A

Question No.1

1 Read the following case let and answer the following questions:

The Royal Bank of Canada (RBC) is one of Canada's largest banks as measured by assets and market capitalization, and is among the largest 20 banks globally by market capitalization. RBC provides personal and commercial banking, wealth management services, insurance, corporate, investment banking and transaction processing services on a global basis. The bank currently employs some 74,000 full- and part-time employees who serve more than 15 million personal, businesses, public sector and institutional clients through offices in Canada, the US and 56 other countries. RBC holds strong market positions in the following business segments: Canadian Banking, Wealth Management, International Banking, Capital Markets and Insurance. RBC has long been regarded as a leading pioneer and best-practice exemplar in CRM.

RBC's business philosophy focuses on always earning the right to be its clients' first choice. In the competitive world of financial services, RBC knew that it needed to have a vision and methodology to drive its customer first mission and meet the ever-changing business needs of its customers. When it was looking at methods for improving customer experience, RBC focused on making it easier for clients to get rapid and predictable responses to their inquiries and requests.

This initiative focused on increasing the productivity and improving the efficiency of RBC's inquiry management processes. Client requests arrive in RBC's service centers through multiple channels, including phone, branch, fax, e-mail and mail. Within RBC's Canadian Operations, requests are sent in from staff in eight different geographic regions to 14 different service fulfillment groups. Each group uses different systems and processes to manage its work, which raises the question of 'which operations team do I need to contact to help resolve this issue and how do I best engage them for a quick turnaround?' With such a complex web of fulfillment options, customer service representatives were challenged to find the right path for specific client inquiries, how to accurately set client expectations on response times, and provide updates on existing requests.

A key business issue for RBC was that its large, diverse customer support staff, distributed over diverse geographies, had to address the high service experience demands of its customers. This needed to be achieved while reducing operational costs, increasing organizational transparency and complying with regulatory mandates

Management is using the CRM system tools. RBC identified Smart BPM as the key technology to deliver an end-to-end rebuild of their client inquiry and problem resolution process, creating a single system across channels and lines of business. Smart BPM would serve as the backbone for their 'new client action and request tool' (CART).

This was delivered so successfully that when the system was first rolled out there was no need for any formalized end-user training. The field service staffs were able to click on the 'create a new client request' button and successfully drive the process through to resolution. Additionally, it helped to determine that many cases were requests that could be resolved right at the point of contact and also avoided doubling effort. Once requests were captured into, the system, the process automation capabilities of the Smart BPM start it's servicing. This involved:

- Automatically looking up supporting customer information to enrich the request with required data to help resolve it;

- Automatically determining the correct support group, location and even individual for routing and presentation;
- Automatically generating supporting forms and correspondence as well as receiving inbound materials supplied by the customer or other support groups.

Required:
  (a)Define the Customer Relationship Management.
  (b)What are the steps taken by the Bank to face the challenge?
  (c)If you are appointed as a CEO of this Bank, would you agree to the implementation of the systems?
  (d)Mention the objectives of using the CRM applications.

Answer:
(a) There are as many definitions for CRM and opinions, at its more formal definition. CRM is a business strategy comprised of process, organizational and technical change whereby a company seeks to better manage its enterprise around its customer behaviors. It entails acquiring and deploying knowledge about customers and using this information across the various customers touch points to increase revenue and achieve cost reduction through operational efficiencies.
CRM is often thought of as a business strategy that enables businesses to:

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

CRM is an integrated approach to identifying, acquiring and retaining customers. By enabling organizations to manage and coordinate customer interactions across multiple channels, departments, lines of business and geographies, CRM helps organizations maximize the value of every customer interaction and drive superior corporate performance.

(b) RBC identified Smart BPM as the key technology to deliver an end-to-end rebuild of their client inquiry and problem resolution process, creating a single system across channels and lines of business. Smart BPM would serve as the backbone for their 'new client action and request tool' (CART).
This was delivered so successfully that when the system was first rolled out there was no need for any formalized end-user training. The field service staffs were able to click on the 'create a new client request' button and successfully drive the process through to resolution. Additionally, it helped to determine that many cases were requests that could be resolved right at the point of contact and also avoided doubling effort. Once requests were captured into, the system, the process automation capabilities of the Smart BPM servicing backbone drove higher rates of straight-through-processing. Once requests were captured into, the system, the process automation capabilities of the Smart BPM start it's servicing.
This involved:
- Automatically looking up supporting customer information to enrich the request with required data to help resolve it;
- Automatically determining the correct support group, location and even individual for routing and presentation;
- Automatically generating supporting forms and correspondence as well as receiving inbound materials supplied by the customer or other support groups.

(c) As a C.E.O, I agree with the changes. Before, Customer request are processing in manual and began prone to error. It gives the benefits of:

significant reduction in time to resolution of basic inquiries; predictable, accurate and consistent client service commitments at point of service and reduction in user training time, With the automated processes in place, the support staffs were able to focus their time, on just the steps that required their skills and judgment, not the menial tasks that added little value to the process. As a result, reduction in total elapsed time to resolve core processes, reduce headcount in the support organization.

(d) Objectives for using CRM applications
   (i)   To support the customer services
   (ii)   To increase the effectiveness of direct sales force.
   (iii) To support of business to business activities.
   (iv)   To support of business to consumer activities.
   (v)   To manage the call center.
   (vi)   To operate the In- bound call centre.
   (vii) To operate the Out - bound call centre.

Question no. 2

(a) Describe the Role of the Management Accountants actively involved in introducing a Competitive Intelligence.

Answer:
Management Accountants may be actively involved in introducing a competitive intelligence process in several ways:
- Identifying the need for a new or improved competitive intelligence process;
- Educating top management and other senior managers about that need;
- Developing a plan along with cross-functional team members for designing, developing and implementing the new, improved competitive intelligence practice, including its underlying architectures;
- identifying the appropriate tools and techniques for conducting competitor analysis;
- providing financial input, analysis and expertise to the competitive intelligence effort;
- contributing to and using competitive intelligence in target costing;
- ensuring that the competitive intelligence efforts are tied to the firm's goals, strategies, objectives and internal processes, as appropriate; and,
- Continually assessing the new, improved competitive intelligence process and its implications for the organization and continually improving the process.

(b) List the significance of Financial Performance Analysis.

Answer:
Interest of various related groups is affected by the financial performance of a firm. Therefore, these groups analyze the financial performance of the firm. The type of analysis varies according to the specific interest of the party involved.

- **Trade creditors:** interested in the liquidity of the firm (appraisal of firm's liquidity)
- **Bond holders:** interested in the cash-flow ability of the firm (appraisal of firm's capital structure, the major sources and uses of funds, profitability over time, and projection of future profitability)
- **Investors:** interested in present and expected future earnings as well as stability of these earnings (appraisal of firm's profitability and financial condition)
- **Management:** interested in internal control, better financial condition and better performance (appraisal of firm's present financial condition, evaluation of opportunities in relation to this current position, return on investment provided by various assets of the company, etc).

(c) Define Process Analysis and its objectives.

Answer:
A process can be defined as "a logical series of related transactions that converts input to results or output". The process we are considering is a "business process," which can be defined as "a chain of logically connected, repetitive activities that utilizes the organization's resources to refine an object for the purpose of achieving specified and measurable results or products for internal or external customers."

Objectives:
The objectives of analyzing the process include:
(i) Identify what makes maps difficult to understand and use
(ii) Evaluate completeness
(iii) Isolate bottlenecks
(iv) Find redundancies
(v) Examine resources allocation
(vi) Measure process times

Question no. 3
Read the following case study and answer the following questions:
Satish was a Sales Manager for Industrial Products Company in City branch. A week ago, he was promoted and shifted to Head Office as Deputy Manager - Product Management for a division of products which he was not very familiar with. Three days ago, the company VP - Mr. George, convened a meeting of all Product Managers. Satish's new boss (Product Manager Ketan) was not able to attend due to some other preoccupation. Hence, the Marketing Director, Preet - asked Satish to attend the meeting as this would give him an exposure into his new role.

At the beginning of the meeting, Preet introduced Satish very briefly to the VP. The meeting started with an address from the VP and soon it got into a series of questions from him to every Product Manager. George, of course, was pretty thorough with every single product of the company and he was known to be pushy and a blunt veteran in the field. Most of the Product Managers were very clear of George's ways of working and had thoroughly prepared for the meeting and were giving to the point answers. George then started with Satish. Satish being new to the product, was quite confused and fared miserably.

Preet immediately understood that George had possibly failed to remember that Satish was new to the job. He thought of interrupting George's questioning and giving a discrete reminder that Satish was new. But by that time, George who was pretty upset with the lack of preparation by Satish made a public statement "Gentlemen, you are witnessing here an example of sloppy work and this can't be excused".

Now Preet was in two minds - should he interrupt George and tell him that Satish is new in that position OR should he wait till the end of the meeting and tell George privately. Preet chose the second option.

Satish was visibly angry at the treatment meted out by George but he also chose to keep mum. George quickly closed the meeting saying that he found in general, lack of planning in the department and asked Preet to stay back in the room for further discussions.

Before Preet could give any explanation on Satish, George asked him "Tell me openly, Preet, was I too rough with that boy?" Preet said "Yes, you were. In fact, I was about to remind you that Satish is new to the job". George explained that the fact that Satish was new to the job didn't quite register with him during the meeting. George admitted that he had made a mistake and asked his secretary to get Satish report to the room immediately.

A perplexed and uneasy Satish reported to George's room after few minutes.

George looking Satish straight into his eyes said "I have done something which I should have never even thought of and I want to apologise to you. It is my mistake that I did not recollect that you were new to the job when I was questioning you".

Satish was left speechless.

George continued "I would like to state few things clearly to you. Your job is to make sure that people like me and your bosses do not make stupid decisions. We have good confidence in your abilities and that is why we have brought you to the Head Office. For everybody, time is required for learning. I will expect you to know all the nuances of your product in three months time. Until then you have my complete confidence". George closed the conversation with a big reassuring handshake with Satish.

Required:

(a) Was it at all necessary for George to apologise to such a junior employee like Satish?
(b) Was George correct in saying that Satish is there to correct the "stupid mistake" of his boss and George?
(c) As an HR man, how would you define the character of George - bullying but later regretting? Does his attitude need to be corrected?
(d) Would you be happy to have George/Preet as your boss?

Answer:

(a) Yes, it was necessary for George to apologise to Satish. Even though Satish is new to the Head Office and is much junior to George, in order to keep up the morale of Satish, George should apologise. This will not only reassure Satish's attachment towards the company but also motivate him in learning things faster.

(b) The word 'stupid mistake' creates confusion. George only meant that Satish should not make the top-authorities feel that they have made a wrong decision by promoting Satish. What George wanted was Satish's support. Hence, the bosses expect Satish to work according to the policy (both written and unwritten) of the company.

(c) George is a natural task-oriented leader. He becomes people - oriented only when stimulated. When he is into a task he does it with full dedication. He is a trustworthy person. He has to enhance his soft-skills by making himself an equally task-oriented and people-oriented leader.

(d) Yes, I would be happy to have George or Preet as my boss.
A general comment: Satish's boss should have familiarized Satish with the formalities of the meeting with George.
When a person goes up in a career ladder, he has to have an overall view of the people and the processes. He has to understand that it is people who do the processes. He has to understand the importance of HR Management. At the same time, he should be uncompromising in the processes and quality. This would make a leader a class apart.

Question no. 4
(a) Explain the limitations of Financial Performance Measures.

Answer:
Financial performance measures are generally based on short-term measurement periods and this can encourage managers to become short-term oriented. For example, relying on short-term measurement periods may encourage managers to reject positive NPV investments that have an initial adverse impact on the divisional performance measure but have high payoffs in later periods. Financial performance measures are also 'lagging indicators'. They determine the outcomes of management's actions after a period of time. Therefore, it is difficult to establish a relationship between managers' actions and the

reported financial results. Financial performance measures are also subject to the limitation that they deal with only the current reporting period, whereas managerial performance measures should focus on future results that can be expected because of present actions. Ideally, divisional performance should be evaluated on the basis of economic income by estimating future cash flows and discounting them to their present value. This calculation could be made for a division at the beginning and the end of a measurement period. The difference between the beginning and end values represents the estimate of economic income. The main problem with using estimates of economic income to evaluate performance is that it lacks precision and objectivity and that the best estimates of future outcomes are likely to be derived from divisional managers.

According to Johnson and Kaplan (1987), companies tend to rely on financial accounting-based information for internal performance measurement. This information may be appropriate for external reporting but it is questionable for internal performance measurement and evaluation. The major problem is that profit measures derived from using GAAP are based on the historical cost concept and thus tend to be poor estimates of economic performance. In particular, using GAAP requires that discretionary expenses are treated as period costs, resulting in managers having to bear the full cost in the period in which they are incurred. A possible reason for the use of GAAP for divisional performance evaluation is to ensure that performance measures are consistent with external financial accounting information that is used by financial markets to evaluate the performance of the company as a whole. This may arise because of the preference of corporate management for divisional managers to focus on the same financial reporting measures.

(b) XYZ company has three divisions whose income statements and balance sheet are summarized below:

Particulars	Division X	Division Y	Division Z
Sales (₹)	5,00,000	?	?
Operating Income (₹)	25,000	30,000	?
Operating Assets (₹)	1,00,000	?	2,50,000
Turnover	?	?	0.4
Margin	?	0.4%	5%
ROI	?	2%	?

Required:
  (i) Supply by the missing data in the Table above and summarized the results.
  (ii) Comment on the relative performance of each division.

Answer:

(i) Return on Investment (ROI) is

$$\frac{\text{Operating Income}}{\text{Operating Assets}} = \frac{\text{Operating Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Operating Assets}}$$

$$= \text{Margin} \times \text{Turnover}$$

❖ Division X Turnover $= \dfrac{\text{Sales}}{\text{Operating Assets}} = \dfrac{5,00,000}{1,00,000} = 5 \text{ times}$

❖ Division X Margin $= \dfrac{\text{Operating Income}}{\text{Sales}} \times 100 = \dfrac{25,000}{5,00,000} \times 100 = 5\%$

❖ Division X ROI = Turnover × Margin = 5 times × 5% = 25%

- ❖ Division Y Sales

  Margin = 0.4% = 0.004 = $\dfrac{30,000}{\text{Sales}}$ = ₹ 75,00,0000

- ❖ Division Y operating Assets

  ROI = $\dfrac{\text{Operating Income}}{\text{Operating Assets}}$

  Or, 0.02 = $\dfrac{30,000}{0.02}$ = ₹ 15,00,000

- ❖ Division Y Turnover

  $\dfrac{\text{Sales}}{\text{Operating Assets}} = \dfrac{75,00,000}{15,00,000}$ = 5 times

- ❖ Division Z Sales

  Turnover = $\dfrac{\text{Sales}}{\text{Operating Assets}}$

  0.4 = $\dfrac{\text{Sales}}{2,50,000}$

  Or, Sales = 2,50,000 × 0.4 = ₹ 1,00,000

- ❖ Division z operating Income

  Margin = $\dfrac{\text{Operating Income}}{\text{Sales}}$

  5% = $\dfrac{\text{Operating Income}}{1,00,000}$

  Or, Operating Income = ₹ 5,000

- ❖ ROI of Division Z = Turnover × Margin
  $$= 0.4 \times 5\%$$
  $$= 2\%$$

Summarizing the results:

Particulars	Div X	Div Y	Div Z
Turnover	5 times	5 times	0.4 times
Margin	5%	0.4%	5%
ROI	25%	2%	2%

(ii) Comment:
Division X performed best. It appears that Div Y and Z are in trouble. Div Y turns over its assets as often as Div X, but Y's margin on sales is much lower. Thus, Div Y must work on improving its margin.

Division Z, on the other hand, does just as well as Div X in terms of profit margin – both divisions earn 5% on sales. But Division Z has a much lower turnover of capital than Division X. Therefore, Division Z should take a close look at its investments.

(C) Explain about the Return on Capital Employed.

Answer:
A financial ratio that measures a company's profitability and the efficiency with which its capital is employed. Return on Capital Employed (ROCE) is calculated as:

ROCE = Earnings before Income and Tax (EBIT) / Capital Employed

"Capital Employed" as shown in the denominator is the sum of shareholders' equity and debt liabilities; it can be simplified as (Total Assets – Current Liabilities). Instead of using capital employed at an arbitrary point in time, analysts and investors often calculate ROCE based on "Average Capital Employed," which takes the average of opening and closing capital employed for the time period.
A higher ROCE indicates more efficient use of capital. ROCE should be higher than the company's capital cost; otherwise it indicates that the company is not employing its capital effectively and is not generating shareholder value.

ROCE is a useful metric for comparing profitability across companies based on the amount of capital they use. Consider two companies, Alpha and Beta, which operate in the same industry sector. Alpha has EBIT of ₹5 million on sales of ₹100 million in a given year, while Beta has EBIT of ₹7.5 million on sales of ₹100 million in the same year. On the face, it may appear that Beta should be the superior investment, since it has an EBIT margin of 7.5% compared with 5% for Alpha. But before making an investment decision, look at the capital employed by both companies. Let's assume that Alpha has total capital of ₹25 million and Beta has total capital of ₹50 million. In this case, Alpha's ROCE of 20% is superior to Beta's ROCE of 15%, which means that Alpha does a better job of deploying its capital than Beta.
ROCE is especially useful when comparing the performance of companies in capital-intensive sectors such as utilities and telecoms. This is because unlike return on equity (ROE), which only analyzes profitability related to a company's common equity, ROCE considers debt and other liabilities as well. This provides a better indication of financial performance for companies with significant debt.

Adjustments may sometimes be required to get a truer depiction of ROCE. A company may occasionally have an inordinate amount of cash on hand, but since such cash is not actively employed in the business, it may need to be subtracted from the "Capital Employed" figure to get a more accurate measure of ROCE.

For a company, the ROCE trend over the years is also an important indicator of performance. In general, investors tend to favor companies with stable and rising ROCE numbers over companies where ROCE is volatile and bounces around from one year to the next.

Question No.5
(a)Explain the component of supply chain management.

Answer:
There are five basic components of Supply Chain Management. These are showing in the diagram:
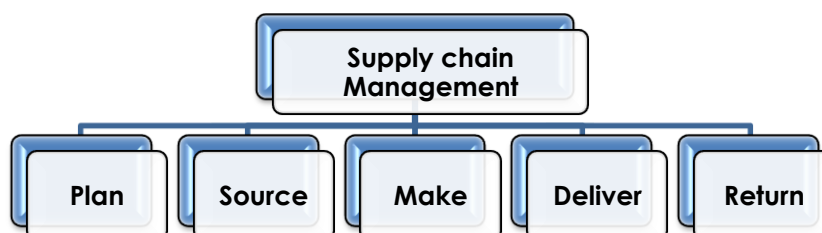
  (i) Plan: This is the strategic portion of SCM. You need a strategy for managing all the resources that go toward the meeting customer demand for your product and services.

(ii) **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.

(iii) **Make:** This is the manufacturing step. Schedule the activities necessary for production, testing, packaging and preparation for delivery.

(iv) **Deliver:** This is the part that many insiders refer to as logistics. Coordinate the receipt of orders from customers, develop a network of warehouses, pick carriers to get products to customers and set up an invoicing system to receive payments.

(v) **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.

(b) Describe the benefits and advantages of Customer Relationship Management.

Answer:

The basic advantages and benefits of CRM are these:
- Satisfied customer does not consider leaving
- Product development can be defined according to current customer needs
- A rapid increase in quality of products and services
- The ability to sell more products
- Optimization of communication costs
- Proper selection of marketing tools (communication)
- Trouble-free run of business processes
- Greater number of individual contacts with customers
- More time for customer
- Differentiation from com petition
- Real time access to information
- Fast and reliable predictions
- Communication between marketing, sales and services
- Increase in effectiveness of teamwork
- Increase in staff motivation

(c) "A bottleneck in a process occurs when input comes in faster than the next step can use it to create output." – Explain

Answer:

A bottleneck in a process occurs when input comes in faster than the next step can use it to create output. The term compares assets (information, materials, products, man-hours) with water. When water is poured out of a bottle, it has to pass through the bottle's neck, or opening. The wider the bottle's neck, the more water (input/assets) you can pour out. The smaller or narrower, the bottle's neck, the less you can pour out – and you end up with a back-up, or "bottleneck."

There are two main types of bottlenecks:

(i) **Short-term bottlenecks** – These are caused by temporary problems. A good example is when key team members become ill or go on vacation. No one else is qualified to take over their projects, which causes a backlog in their work until they return.

(ii) **Long-term bottlenecks** – These occur all the time. An example would be when a company's month-end reporting process is delayed every month, because one person has to complete a series of time-consuming tasks – and he can't even start until he has the final month-end figures.

Identifying and fixing bottlenecks is highly important. They can cause a lot of problems in terms of lost revenue, dissatisfied customers, wasted time, poor-quality products or services, and high stress in team members and all **Process Analysis Methods** take bottlenecks as the obstacles and tries to abolish the same.

Question No.6:

(a) Alpha Co. provides you with the following information:

Equity	₹ 100 lakhs
8% Secured Loans	₹ 20 lakhs
10% unsecured Loans	₹ 30 lakhs
Profit after Tax	₹15,83,000
Rate of Tax (say)	40%
Normal Bank Rate	12%

You are required to calculate EVA for Alpha Co.

Answer:

Calculation of NOPAT

EBIT (₹ 15,83,000 / 0.60)		₹26,38,333
Add: Interest		
- Secured (20,00,0000×8%)	1,60,000	
- Unsecured (30,00,000 × 10%)	3,00,000	4,60,000
		30,98,333
Less: Tax (40%)		12,39,333
NOPAT		**18,59,000**

Calculation of Operating Capital

Equity Share Capital	₹ 1,00,00,000
Secured Loans	₹ 20,00,000
Unsecured Loans	₹ 30,00,000
Operating Capital	₹1,50,00,000

Calculation of WACC

$$K_d = \frac{10\% \ (1- 0.4) \ 30,00,000 + 8\% \ (1 - 0.40) \ 20,00,000}{1,50,00,000} \times 100 = 1.84\%$$

K_e = 12% (Assured 12 % is cost of capital)

$$= \frac{12\%}{150} \times 100 = 8\%$$

WACC = (1.84+8) % = 9.84%

EVA

= NOPAT – (WACC × Operating Capital)

= 18,59,000 – (9.84% × 1,50,00,000)

= 18,59,000 – 14,76,000

= 3,83,000

(b) The Best Industries Ltd has two divisions, A and B. Division A manufactures product X which it sells in outside market as well as to division B which processes it to manufacture Z. The manager of division B has expressed the opinion that the transfer price is too high.
The two divisional managers are about to enter into discussions to resolve the conflict, and the manager of division to supply him with some information prior to the discussions.
Division A has been selling 40,000 units to outsiders and 10,000 units to division B, all at ₹20 per unit. It is not anticipated that these demand will change. The variable cost is ₹12 per unit and the fixed costs are ₹2 lakh.
The manager of division A anticipates that division B will want a transfer price of ₹ 18. If he does not sell to division B ₹30,000 of fixed costs and ₹1,75,000 of assets can be avoided. The manager of division A would have no control over the proceeds from the sale of the assets and is judged primarily on his rate of return.
(i) Should the manager of division A transfer its products at ₹ 18 to division B?
(ii) What is the lowest price that the division A should accept? Support your decision.

Answer:

(i) Comparative Statement of Profit of Division A

Particulars	Alternative Situations		
	Sell at ₹20	Transfer at ₹18	Do not Transfer
Sales Revenue:			
Market Sales (40,000 × ₹ 20)	8,00,000	8,00,000	8,00,000
Transfer to Division B	2,00,000	1,80,000	-
Total (a)	**10,00,000**	**9,80,000**	**8,00,000**
Variable cost ₹ 12 per unit	6,00,000	6,00,000	4,80,000
Fixed Cost	2,00,000	2,00,000	1,70,000
Total (b)	**8,00,000**	**8,00,000**	**6,50,000**
Total profit (a-b)	**2,00,000**	**1,80,000**	**1,50,000**
Total Assets	**8,00,000**	**8,00,000**	**6,25,000**
ROI (percentage)	**25%**	**22.5%**	**24%**

The manager of division A should not agree to sell at ₹ 18 per unit as it lowers down its rate of return.

(ii) The lowest transfer price acceptable to division A is one, which maintains its rate of return of 24% (the ROI without selling to division B):

= (Total sales revenue – Total cost)/ Total assets

= (8,00,000 + 10,000 TP – 8,00,000)/8,00,000 = 0.24

Where TP is transfer price per unit
10,000 TP = 1,92,000
TP = ₹19.20
The lowest transfer price acceptable to division A is ₹ 19.20 per unit.

(c) Explain the term "Contractual " in the context of Transfer Pricing

Answer:
Contractual arrangements are the starting point for determining which party to a transaction bears the risk associated with it. Accordingly, it would be a good practice for associated enterprises to document in writing their decisions to allocate or transfer significant risks before the transactions with respect to which the risks will be borne or transferred occur, and to document the evaluation of the consequences on profit potential of significant risk reallocations. Where no written terms exist, the contractual relationships of the parties must be deduced from their conduct and the economic principles that generally govern relationships between independent enterprises.

A tax administration is entitled to challenge the purported contractual allocation of risk between associated enterprises if it is not consistent with the economic substance of the transaction. Therefore, in examining the risk allocation between associated enterprises and its transfer pricing consequences, it is important to review not only the contractual terms but also the following additional questions:

❖ Whether the conduct of the associated enterprises conforms to the contractual allocation of risks,

❖ Whether the allocation of risks in the controlled transaction is arm's length, and

❖ What the consequences of the risk allocation are.

Question No.7

In 1990 Chrysler Corporation found itself in a very unhappy financial situation. Profits were down, cash flow was tight, and the stock was trading at a low price of $10 per share. The Japanese auto industry posed a serious threat. Despite a strong Yen, they had captured and continued to preserve a healthy share of the U.S. auto market. Chrysler management decided it was time to change their approach to new car design. They adopted a competitive weapon that the Japanese auto industry had used for many years called target costing. Chrysler conducted extensive research on college and other young professional who buy small cars. Through competitive analysis Chrysler determined what other car companies were offering. For example, the Ford Fiesta was one of the key products Chrysler viewed as a competitive product. The potential and current buyers of cars such as Ford Fiesta were chosen as target customers. The initial product concept was developed based on two key customer requirements -- "fun to drive" and "safe" car. Detailed product features were developed based on detailed and refined understanding of customer requirements. For example, a "neon key" that shines in the dark was designed to meet a customer requirement about being able to find car keys in a dark parking lot. Market price was established using the Ford fiesta as an initial benchmark and adjusted for feature differentials between the two cars. A required profit margin was subtracted from this price based on industry norms and Chrysler's desired return to set an allowable cost for the car. Target costing was applied to all product development efforts in the Company including the NEON, a new small car developed for the lower price range. A price and profit target was set for the car and it was then designed to meet that profit without sacrificing major customer requirements. The results of using target costing on the NEON were impressive. The NEON:

- Provided dual airbags and a powerful engine for a small car.
- Was named" Auto of the Year" in 1994.
- Had a relatively short development time going from product concept to market in 31 months.
- Came in below its project development and investment budget.
- Is one of a handful of small cars made in the USA that makes a positive return?
- Is environmentally friendly built using a recyclable facia and non-toxic materials?

Since the introduction of target costing, Chrysler's profits have increased significantly. Its share price went up from $10 per share in 1990 to $54 per share in 1995. This project was developed under the target costing approach rather than the traditional cost-plus approach. The manufacturing cost gap between the initial estimate and the target cost was approximately several thousand dollars. This gap was reduced by value engineering the car in several ways. The chassis was designed of lighter material, the cab design was simplified, and suppliers were brought in early in the design and offered cost reduction suggestions for their components.

A number of behavioral changes occurred at Chrysler as a result of target costing. People who were functional specialists worked on cross-functional teams. This caused initial problems for people who were not used to working as generalists. Team work rather individual output was rewarded. This created some motivational problems for people who were used to being

rewarded for their work. The culture changed to encourage people to be customer oriented and to meet customer needs. Giving suppliers more power reduced the power of procurement staff that traditionally ran this operation.

Required:
(a) Identify the seven steps in the establishment phase of target costing.
(b) Discuss how Chrysler could design costs out or reduce costs through design improvements.
(c) List some behavioral problems that may occur when target costing is used.

Answer:
(a) The seven steps in establishing target costs used by Chrysler are:
  - Chrysler conducted extensive research on college and other young professional who buy small cars
  - Through competitive analysis Chrysler determined what other car companies were offering. For example, the Ford Fiesta was one of the key products Chrysler viewed as a competitive product.
  - The potential and current buyers of cars such as Ford Fiesta were chosen as target customers.
  - The initial product concept was developed based on two key customer requirements -- "fun to drive" and "safe" car.
  - Detailed product features were developed based on detailed and refined understanding of customer requirements. For example, a "neon key" that shines in the dark was designed to meet a customer requirement about being able to find car keys in a dark parking lot.
  - Market price was established using the Ford fiesta as an initial benchmark and adjusted for feature differentials between the two cars.
  - A required profit margin was subtracted from this price based on industry norms and Chrysler's desired return to set an allowable cost for the car.

(b) The manufacturing cost gap between the initial estimate and the target cost was approximately several thousand dollars. This gap was reduced by value engineering the car in several ways. The chassis was designed of lighter material, the cab design was simplified, suppliers were brought in early in the design and offered cost reduction suggestions for their components.

(c) A number of behavioral changes occurred at Chrysler as a result of target costing. People who were functional specialists worked on cross-functional teams. This caused initial problems for people who were not used to working as generalists. Team work rather individual output was rewarded. This created some motivational problems for people who were used to being rewarded for their work. The culture changed to encourage people to be customer oriented and to meet customer needs. Giving suppliers more power reduced the power of procurement staff that traditionally ran this operation.

Question No.8
(a) Explain about the Certainty Equivalent.

Answer:
A risk-averse individual or company always wants to gauge the degree of risk and compute a return correspondingly as a compensation for the additional risk. Normally, a risk-free rate of return is available to any individual on a safe deposit of monies with the Government for a minimum return. Any reinvestment of such monies with a higher degree of risk would have to compensate for the incremental risk. This is known as a risk premium and is defined as the minimum differential that an investor requires to part with his stake. The certainty equivalent is the guaranteed compensation and it is the amount of expected 'pay-off less risk premium'.

As per the dictionary certainty equivalent has been defined as the amount of payoff, such as money or utility that an individual would have to receive to be indifferent between that pay off and a given gamble. For a risk-averse person, the certainty equivalent is less than the expected value of the gamble as the individual prefers to reduce uncertainty.

Applying the risk premium concept to the two types of securities, namely, equity and debt, the definitions are given below:

- In a stock market, risk premium is the difference between the expected returns from a stock minus the risk free rate.
- The return from equity is a combination of dividend yield and capital gains. A stock market always takes into consideration the two factors and reflects the risk premium to a corresponding prevalent risk free rate.
- In the case of debt, the risk premium is the difference between bond interest rate and risk-free rate and sometimes it is also referred to as credit spread.

This method has application not only in regard to the investments in securities but also in relation to risks involved in individual projects, and in comparison of different projects for ranking purposes. A certain probability coefficient is attached to each outcome and the net present value is computed for each outcome. The value of certainty equivalent coefficient is a summation of such coefficients with the respective weightage of each probability. The value of this certainty equivalent coefficient ranges between zero and one. A value of one indicates absolute certainty and as such the risk is neutral. Certainty equivalent coefficient varies with the different types of investments and is inversely proportional to risk. Higher the risk, the certainty coefficient is lower. For instance, certainty equivalent coefficient is higher for a replacement investment as against a new product investment.

(b) Describe about the Risk Adjusted Discount Rate Method.

Answer:
This method is very much akin to certainty equivalent method that is more popular. This is due to the fact that quantification of the risk premium is more concrete in this method. Normally when new investments have the same risk as existing operations, the discount rate applied is the average cost of capital of the operations. If the risk of the new project is greater, then a formula is applied for the computation of the risk adjusted discount rate, as follows:

$r_p = r_f + n + d_p$

Where,

r_p = Risk adjusted discount rate for project 'p'

r_f = Risk free rate of interest

n = Premium for normal risk

d_p = Premium for additional risk differential for project 'p'

The risk premium so computed is based on the perception regarding the project risk and risk-return preference. Such premiums are normally calculated by comparing the returns obtained from different investments currently. The risk premium, normally varies between one per cent to 10 per cent, based on the risk assessment of such investments.

The offshoot of this method is the Risk Adjusted Return on Capital (RAROC). This computation is a risk-based profitability measurement framework for understanding the risk adjusted financial performance and providing an appropriate view. This concept was developed by Dan Borge in the late seventies. The RAROC can be represented as follows:

RAROC = Expected return/Economic capital or

RAROC = Expected return/Value at risk

(c)Pay offs of three acts A, B and C and states of nature X, Y and Z are given below :

Payoff (in ₹)

Acts → State of Nature ↓	A	B	C
X	-20	-50	200
Y	200	-100	-50
Z	400	600	300

The probabilities of the states of nature are 0.3, 0.4 and 0.3.

Calculate the Expected Monetary Value (EMV), for the above data and select the best act. Also find the EVPI.

Answer:

Let us find the Expected Monetary Value (EMV) of each act.

Act A = (-20 x 0.3) + 200 x 0.4 +400 x 0.3 = ₹ 194

Act B = (-50 x0.3)+(-100 x 0.4) + 600 x 0.3 = ₹ 125

Act C = 200 x 0.3 - 50 x 0.4 + 300 x 0.3 = ₹ 130

EMV of Act A is highest as seen in the table, so it should be selected.

State of nature	Prob	A	B	C	Max for state of nature	Max pay off × Prob.
X	0.3	-20	-50	200	200	200 × 0.3 = 60
Y	0.4	200	-100	-50	200	200 × 0.4 = 80
Z	0.3	400	600	300	600	600 × 0.3 = 180
Total						320

EVPI = Expected pay-off with perfect information (EPPI) - EVI = 320-194 = ₹ 126

Question No.9

(a) Discuss about the competitive benchmarking.

Answer:
Competitive Benchmarking

"A Measure of organizational performance compared against competing organization; studies the target specific product designs, process capabilities or administrative methods used by a company's direct competitors".

Competitive Benchmarking moved beyond product oriented comparisons to include comparisons of process with those of competitors. In this benchmarking, the process studied may include marketing, finance, human resource, R & D etc. A typical example would be the classical study the Rank Xerox performed with those of Canon and other photo copier manufacturers when it faced heightened competition from US and Japanese companies. By benchmarking Rank Xerox achieved significant performance improvements as given below:

❖ Unit manufacturing cost reduced to half; comparable to 1980 product costs

❖ Machine defects have improved by over 90%

(b) Discuss the objectives of Business Process Re- Engineering (BPR).

Answer:
Objectives of BPR
When applying the BPR management technique to a business organization the implementation team effort is focused on the following objectives:

❖ **Customer focus**: Customer service oriented processes aiming to eliminate customer complaints.
❖ **Speed**: Dramatic compression of the time it takes to complete a task for key business processes. For instance, if process before BPR had an average cycle time 5 hours, after BPR the average cycle time should be cut down to half an hour.
❖ **Compression**: Cutting major tasks of cost and capital, throughout the value chain. Organizing the processes a company develops transparency throughout the operational level reducing cost. For instance the decision to buy a large amount of raw material at 50% discount is connected to eleven cross checkings in the organizational structure from cash flow, inventory, to production planning and marketing. These checkings become easily implemented within the cross-functional teams, optimizing the decision making and cutting operational cost.
❖ **Flexibility**: Adaptive processes and structures to changing conditions and competition. Being closer to the customer the company can develop the awareness mechanisms to rapidly spot the weak points and adapt to new requirements of the market.
❖ **Quality**: Obsession with the superior service and value to the customers. The level of quality is always the same controlled and monitored by the processes, and does not depend mainly on the person, who servicing the customer.
❖ **Innovation**: Leadership through imaginative change providing to organization competitive advantage.
❖ **Productivity**: Improve drastically effectiveness and efficiency.

In order to achieve the above mentioned adjectives the following BPR project methodology is proposed.

(c) IGF Ltd. supports the concept of the tero technology or life cycle costing for new investment decisions covering its engineering activities.
The company is to replace a number of its machines and the Production Manager is to run between the 'X' machine, a more expensive machine with a life of 12 years, and the 'W' machine with an estimated life of 6 years. If the 'W' machines chosen it are likely that it would be replaced at the end of 6 years by another 'W' machine. The pattern of maintenance and running costs differs between the two types of machine and relevant data are shown below:

(₹ in '000)

Particulars	X	W
Purchase Price	7,600	5,200
Trade in Value	1,200	1,200
Annual Repair Cost	800	1,040
Estimated Financing costs averaged over machine life (P.a.)	10%	10%

You are required to recommend, with supporting figures, which machine to purchases, stating any assumptions made.
Answer:
Machine X : Life 12 years

Particulars	Year	Cost (₹)	Discount factor	Discounted Cost (₹)
Purchase Price	0	7,600	1.00	7,600
Trade in Value	12	(1,200)	0.32	(384)
Annual Repair Cost	1-12	800	6.81	5,448
				12,664

Annual Equalized Cost: 12,664 / 6.81 = ₹1,860

Machine W : Life 6 years

Particulars	Year	Cost (₹)	Discount factor	Discounted Cost (₹)
Purchase Price	0	5,200	1.00	5,200
Trade in Value	6	(1,200)	0.56	(672)
Annual Repair Cost	1-6	1,040	4.36	4,534
				9,062

Annual Equalized Cost: 9,062 / 4.36 = ₹2,078

Recommendation: Purchase Machine 'X'

Assumptions:
(a) Same performance, capacity and speed.
(b) No inflation.
(c) 12 year-estimates are as accurate as 6-year estimates.
(d) Cash flow at the year end.

Question No.10

Formulate the following game as an LLP and obtain its solution:

B's Strategy

		b_1	b_2	b_3
A's Strategy	a_1	8	9	3
	a_2	2	5	6
	a_3	4	1	7

Answer:

The given problem can be formulated as an LLP from A's and B's point of view as follows:
Let x_1, x_2, and x_3 be the probabilities with which A chooses respectively the strategies a_1, a_2, and a_3, and y_1, y_2, and y_3 be the probabilities in respect of B choosing b_1, b_2, and b_3.

From A's point for view, we have to
Thus, the problem is

Minimise $\quad \dfrac{1}{U} = X_1 + X_2 + X_3$

Subject to $\quad 8X_1 + 2X_2 + 4X_3 \geq 1$

$\qquad\qquad 9X_1 + 5X_2 + X_3 \geq 1$

$\qquad\qquad 3X_1 + 6X_2 + 7X_3 \geq 1$

$\qquad\qquad\qquad X_1, X_2, X_3 \geq 0$

Where U represents the value of the game, and $X_i = x_i/U$. We have to determine the values of U, x_1, x_2, and x_3.

From B's point of view, we have to

Maximise $\quad \dfrac{1}{V} = Y_1 + Y_2 + Y_3$

Subject to $\quad 8Y_1 + 9Y_2 + 3Y_3 \leq 1$

$\qquad\qquad 2Y_1 + 5Y_2 + 6Y_3 \leq 1$

$$4Y_1 + Y_2 + 7Y_3 \leq 1$$

$$Y_1, Y_2, Y_3 \geq 0$$

Where V is the game value and $Y_i = y_i/V$.

To obtain the required values we can solve either of these LPPs, and read the solution to the other from it as each one is the dual of the other. We shall solve the game from B's point of view.

Introducing the slack variables, we have

Maximise $\dfrac{1}{V} = Y_1 + Y_2 + Y_3 + 0S_1 + 0S_2 + 0S_3$

Subject to $8Y_1 + 9Y_2 + 3Y_3 + S_1 = 1$

$$2Y_1 + 5Y_2 + 6Y_3 + S_2 = 1$$

$$4Y_1 + Y_2 + 7Y_3 + S_3 = 1$$

$$Y_i \geq 0, S_i \geq 0, i = 1, 2, 3$$

Simplex Tableau 1: Non-optimal Solution

Basis		Y_1	Y_2	Y_3	S_1	S_2	S_3	b_i	b_i/a_{ij}
S_1	0	8*	9	3	1	0	0	1	1/8 ← Outgoing variable
S_2	0	2	5	6	0	1	0	1	½
S_3	0	4	1	7	0	0	1	1	1/4
C_j		1	1	1	0	0	0		
Solution		0	0	0	1	1	1		
Δ_j		1	1	1	0	0	0		
		↑							
		Incoming variable							

Simplex Tableau 2: Non-optimal Solution

Basis		Y_1	Y_2	Y_3	S_1	S_2	S_3	b_i	b_i/a_{ij}
Y_1	1	1	9/8	3/8	1/8	0	0	1/8	1/3
S_2	0	0	11/4	21/4	-1/4	1	0	3/4	1/7
S_3	0	0	-7/2	11/2*	-1/2	0	1	1/2	1/11 ← Outgoing variable
C_j		1	1	1	0	0	0		
Solution		1/8	0	0	0	3/4	1/2		
Δ_j		0	-1/8	5/8	-1/8	0	0		
			↑						
			Incoming variable						

Simplex Tableau 3: Non-optimal Solution

Basis		Y_1	Y_2	Y_3	S_1	S_2	S_3	b_i	b_i/a_{ij}
Y_1	1	1	15/11	0	7/44	0	-3/44	1/11	1/15
S_2	0	0	67/11*	0	5/22	1	-21/22	3/11	3/67 ← Outgoing variable
Y_3	1	0	-7/11	1	-1/11	0	2/11	1/11	-1/67
C_j		1	1	1	0	0	0		

Solution	1/11	0	1/11	0	3/11	0		
Δ_j	0	3/11	0	-3/44	0	-5/44		
		↑						
		Incoming variable						

Simplex Tableau 4: Optimal Solution

Basis		Y₁	Y₂	Y₃	S₁	S₂	S₃	b_i
Y₁	1	1	0	0	29/268	-15/67	39/268	2/67
Y₂	1	0	1	0	5/134	11/67	-21/134	3/67
Y₃	1	0	0	1	-9/134	7/67	11/134	8/67
C_j		1	1	1	0	0	0	
Solution		2/67	3/67	8/67	0	0	0	
Δ_j		0	0	0	-21/268	-12/268	-19/268	

Substituting the values of Y_1, Y_2 and Y_3 in the objective function, we have,

$$\frac{1}{V} = \frac{2}{67} + \frac{3}{67} + \frac{8}{67} = \frac{13}{67}$$

Therefore V, the game value = 67/13.

Since $Y_i = y_i/V$, we have $y_i = Y_i \times V$. Thus,

$$y_1 = \frac{2}{67} \times \frac{67}{13} = \frac{2}{13}; \qquad y_2 = \frac{3}{67} \times \frac{67}{13} = \frac{3}{13}; \qquad \text{and} \qquad y_3 = \frac{8}{67} \times \frac{67}{13} = \frac{8}{13}.$$

We can read the values of the dual variables X_1, X_2 and X_3 from the Δ_j row of the Table 15.4. These are, respectively, 21/268, 12/268, and 19/268. From these,

$$\frac{1}{U} = \frac{21}{268} + \frac{12}{268} + \frac{19}{268} = \frac{52}{268} = \frac{13}{67}$$

Thus, U = 67/13 (same as shown earlier).

Now, we have

$$x_1 = \frac{21}{268} \times \frac{67}{13} = \frac{21}{52}; \qquad x_2 = \frac{12}{268} \times \frac{67}{13} = \frac{12}{52}; \qquad \text{and} \qquad x_3 = \frac{19}{268} \times \frac{67}{13} = \frac{19}{52}.$$

Thus, the optimal strategy for A is (21/52, 12/52, 19/52); for B it is (2/13, 3/13, 8/13) while the game value is 67/13.

Question No.11
(a) Explain the benefits of Lean Management.

Answer:
(i) Improved quality and fewer defects: When batching and lot production are eliminated, there is less opportunity to manufacture defects. Since the batch size will be just 1, there will not be mountains of inventory to count, move, store and pick.
Furthermore, single piece flow ensures that if there is a quality problem, we know that the defect has affected only that single part. We do not need to dedicate hours isolating and testing other material in the same production run to determine if it meets quality standards. Of course, if a defect is caught in a single piece flow environment, this should not mean that we do not take the appropriate corrective actions to ensure that the problem will not reoccur. In this case, the manager or supervisor must determine if standard work was

followed and if so, what changes need to be made to the standard in order to ensure that the problem will never resurface again.

(ii) Reduced Inventory: Implementing single piece flow will require each operation to only produce what is needed by the next operation (in Lean jargon, we call this individual the *surgeon*). When followed properly, the process will eliminate any opportunity to build ahead. Consequently, inventories will not be allowed to build up.

(iii) Requires less space: As inventory levels are reduced, less space and manpower will be required to manage (receive, count, stock, store, pick and deliver) it. In addition, single piece flow usually results in manufacturing cells which squeeze machines close together so that a single operator can oversee many pieces of equipment with the least amount of walking motion.

(iv) Enhances overall manufacturing flexibility: We know from our value steam maps that the less inventory in a value steam, the shorter the lead-time will be from customer order to product delivery. In a single piece flow environment, since we operate with less inventory, lead-times will also drop, thereby giving us more time to react to customer orders (unless the strategic decision is made to pass off the lead-time gains to the customer in order to beat competitors!).

(v) Makes identifying future Kaizen simpler: We have already discussed that in a single piece flow environment, defects and WIP inventories fall. As this happens, the shop floor will open up and it will become easier to see production problems. For example, if a particular process cannot keep up with take time and WIP is not allowed to be incurred, it will quickly become apparent to even the casual observer that something is wrong. In this case, it will be easy to decide where to focus the next improvement activity.

(vi) Ensures a safer work environment: Fewer inventories means less clutter, more light in the darkest corners of the factory and the opportunity to better lay out equipment and tools. Also, since manufacturing cells are occupied by a set number of employees who each know their repeating tasks (as defined by standard work), there is less opportunity for unexpected movements, which increase the chances of accidents.

(vii) Improves employee morale: Since single piece flow results in production problems being identified and (hopefully) solved right away, team members will receive immediate feedback on their work. This in turn will give everybody more ownership in their production area. Also, provided they lead problem solving efforts by focusing on processes and not individuals, more trust will be gained in managers.

(b) Explain the Role of the Management Accountant in the Activity Based Management.

Answer:
The Management Accountant plays a central role in creating and maintaining activity-based cost information to support activity-based management. Serving as the financial expert on cross functional work teams, Management Accountants support analysis of current performance, identification of improvement efforts, and prioritization of potential projects. The role of Management Accountants in ABM efforts comprises the following activities:

- ❖ Creation of the ABC database;
- ❖ Maintenance of the ABM data warehouse;
- ❖ Assurance and monitoring of data integrity within the warehouse;
- ❖ Analysis of the costs and benefits of improvement projects;
- ❖ Ongoing audit and analysis of project performance against goals;
- ❖ Creation and support of management reporting structures;
- ❖ Provision of cost estimates and reports to meet management's decision-making needs;
- ❖ Participation on cross-functional teams at all levels of the organization;
- ❖ Education of line managers on the economics of business within process settings;

❖ Participation in the development of desktop decision support tools for line managers;

❖ Creation and revision of cost estimates as process changes are made;

❖ Target and life-cycle cost and profit analysis;

❖ Strategic and operational budget and planning support; and

❖ Tracking the results/benefits of the ABC/ABM initiative.

(c) List the few Business Applications of ABM

(i) Cost Reduction: ABM helps the Firm to identify opportunities in order to streamline or reduce the costs or eliminate the entire activity, especially NVA activities. It is useful in identifying and quantifying process waste, leading to continuous process improvement through continuous cost reduction.

(ii) Activity Based Budgeting (ABB): ABB analyses the resource input or cost for each activity. It provides a framework for estimating the amount of resources required in accordance with the budgeted level of activity. Actual results can be compared with budgeted results to highlight (both in financial and non-financial terms) those activities with major discrepancies for potential reduction in supply of resources. It is a planning and control system, which supports continuous improvement.

(iii) Business Process Re-Engineering (BPR): BPR is the analysis and re-design of workflows and processes in a Firm, to achieve dramatic improvement in performance, and operational excellence. A Business Process consists of linked set of activities, e.g. purchase of materials is a business process consisting of activities like Purchase Requisition, Identifying Suppliers, preparing Purchase Orders, mailing Purchase Orders and follow up. The process can be re-engineered by sending the Production Schedule directly to the Suppliers and entering into contractual agreement to deliver materials according to the Production Schedule.

(iv) Benchmarking: It involves comparing the Firm's products, services or activities with other best performing organizations, either internal or external to the Firm. The objective is to find out how the product, service or activity can be improved, and ensure that the improvements are implemented.

(v) Performance measurement: Activity performance measures consist of measures relating to costs, time quality and innovation. For achieving product quality, some illustrative performance measures are -

Area	Measures
Quality of Purchased Components	Zero Defects
Quality of Output	Percentage Yield
Customer awareness	Number of Orders, Number of Complaints

Question No.12
(a) "Purpose of sensitivity analysis is to identify the critical variable in the Project analysis" - Discuss it.

Answer:
This technique is the one most adopted by analysts, both for short-term and long-term purposes. The approach of sensitivity analysis is based on the study of the impact of certain identified parameters on core performance over a period, either short-term or long-term.

In a budgetary exercise, which is essentially a short-term one, capacity utilization, price demand, etc., are taken separately as well as together to measure the impact of the variation in the parameter on profits/performance. For instance, when the break-even point (point of sales where no loss/profit occurs) is exceeded, all fixed costs are fully absorbed and contribution, namely selling price minus variable costs becomes profit. In other words, because the contribution is much higher than the profit margin, any increase in sales/ production beyond the break-even point increases the profit exponentially. Therefore, the

variation in capacity utilization beyond the breakeven point needs to be fully analysed to augment profits. In the same manner, price elasticity and demand elasticity are factors that affect marginal costs and marginal profits. We need to understand the sensitivity of both.

In the long-term, sensitivity analysis identifies/focuses on such parameters that are sensitive to the passage of time, such as assumptions relating to statutory decisions, technological obsolescence, and product life cycles. In the case of statutory decisions such as control or decontrol of product prices, the sensitivity of strategic performance to such a change becomes an important factor of risk. For example, in the sugar industry that is partially controlled and is included as an essential commodity by the Government, any change in the Government's decision relating to price control becomes a risk and needs to be fully-understood. For this, sensitivity analysis portrays the impact of variation in the amount of price control on strategic performance of the company on a calibrated basis. Besides this, the impact of technological obsolescence, which again occurs due to the passage of time during which another technology is likely to emerge, will have to be assessed as a risk. In this case, sensitivity analysis measures the impact of risk on the basis of such obsolescence occurring in a time frame work calibrated for a particular purpose, say a major project.

Sensitivity analysis has also been extensively used to ascertain risk in terms of value relating the same to risk-adjusted expected value.

(b)A company has developed a new product in its R&D laboratory. The company has the option of setting up production facility to market this product straight away. If the product is successful, then over the three years expected product life, the returns will be ₹ 120 lakh with a probability of 0.70. If the market does not respond favourable, then the returns will be only₹15 lakh with probability of 0.30.

The company is considering whether it should test market this product building a small pilot plant. The chance that the test market will yield favourable response is 0.80. If the test market gives favourable response, then the chance of successful total market improves to 0.85.

If the test market gives poor response then the chance of success in the total market is only 0.30. As before, the returns from a successful market will be ₹120 lakh and from an unsuccessful market only ₹ 15 lakh. The installation cost to produce for the total market is ₹ 40 lakh and the cost of the test marketing pilot plant is ₹5 lakh. Using decision-tree analysis, draw a decision-tree diagram, carry out necessary analysis to determine the optimal decisions.

Answer:
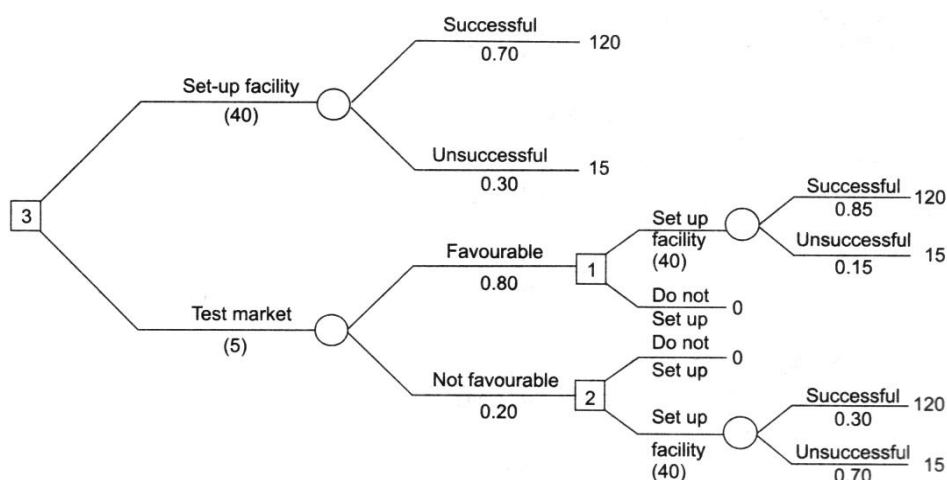
The decision tree is analyzed below:

Decision Node	Options	EMV (₹ in lakh)	Decisions
1	Set up facility Do not set - up	(0.85 ×120+0.15×15 - 40) = 64.25 0	Set - up facility
2	Set up facility Do not set - up	(0.30 ×120+0.70×15 - 40) = 6.50 0	Set - up facility
3	Set up facility Test Market	(0.70 ×120+0.30×15 - 40) = 48.5 (0.80 ×64.25+0.2×6.50 - 5) = 47.7	Set - up facility

Thus, the company should set - up production facility straight way and not undertake test market.

(c) Write a brief note Decision Tree Analysis.

Answer:
This is yet another technique used for 'go' or 'no go' decisions when certain risks are encountered. A decision tree is essentially a support tool for making decisions and utilizes a tree-like model. The possible consequences including probability of event outcomes and resource utility can be computed under this technique. This technique is commonly used in strategic management, projects, and operations research. It assists identification of the strategy most preferred for achieving a goal. In risk analysis, decision trees can be applied as a descriptive means for computing conditional probabilities. A decision tree uses three types of nodes, as follows:

Decision nodes — represented by squares

Chance nodes — represented by circles

End nodes — represented by triangles

A decision tree has splitting and not converging paths. Therefore, it grows with more alternatives and probabilities into a tree with several branches.

Question No. 13
(a) Discuss the Factor influencing the price of product.

Answer:
Generally, marketers consider the following factors in setting price:

(i) Target customers: Price of product depends on the capacity of buyers to buy at various prices, in other words, influence of price elasticity of demand will be examined.
(ii) Cost of the product: Pricing is primarily based on, how much it costs to produce and market the product, i.e., both the production and distribution cost.
(iii) Competition: Severe competition may indicate a lower price than when there is monopoly or little competition.
(iv) The law: Government authorities place numerous restrictions on pricing activities.
(v) Social responsibility: Pricing affects many parties, including employees, shareholders and the public at large. These should be considered in pricing.
(vi) Market position of the firm: The position of the market may also influence the pricing decision of the firm. It is only why the different producers of identical products sell their products at different prices.
(vii) Distribution channel policy: The prices of products will also depend upon the policy regarding distribution channel. The longer the channel, the higher would be the distribution costs and consequently higher the prices.
(viii)Price elasticity of Demand: Price elasticity refers to consequential change in demand due to change in price of the commodity. It is the relative responsiveness to the changes

in price. As there an inverse relationship between price and demand for product, the demand will increase with fall in price.

(ix) Economic environment: In recession, prices are reduced to a sizeable extent to maintain the level of turnover. On the other hand, prices are charged higher in boom period to cover the increasing cost of production and distribution.

**(b) Explain about the term "Normal Profit" and "Supernormal Profit".**

Answer:
Normal Profit

It refers to that amount of earnings which is just sufficient to induce the firm to stay in the industry. Normal profit is, thus, the minimum reasonable level of profit which the entrepreneur must get in the long run, so that he is induced to continue the employment of his resources in its present form.

Normal profit is the opportunity cost of entrepreneurship. It is equivalent to the transfer earnings of the entrepreneur. That means, if the entrepreneur fails to earn the normal rate of profit in the long run, he will close down the operation of his firm and quit the industry in order to shift his resources elsewhere.

Normal profit is considered as the least possible reward which in the long run must be earned by the entrepreneur, as compensation for his organizational services as well as for bearing the insurable business risks.
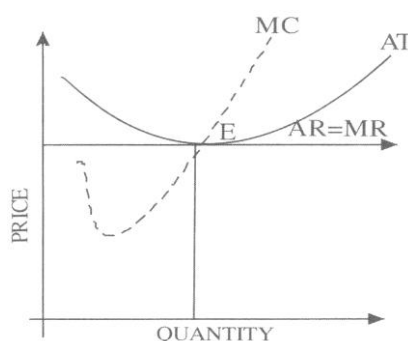

Supernormal Profit

Profits in excess of normal profit are considered as supernormal. Since normal profit is included in the cost of production, supernormal profit is obtained when total revenue exceeds total costs (i.e., TR > TC). It is also called pure business profit or "excess profit."

Supernormal profit depends on the demand conditions in the businesses, which are uncertain and unpredictable. Thus, supernormal profit is the reward for bearing uncertainties and unpredictable risks of business. Sometimes, in a competitive market, supernormal profit is also earned due to extraordinary efficiency on the part of the entrepreneur.

When the existing firms earn supernormal profit, new entries will be attracted to the industry, so the equilibrium of the industry is threatened.
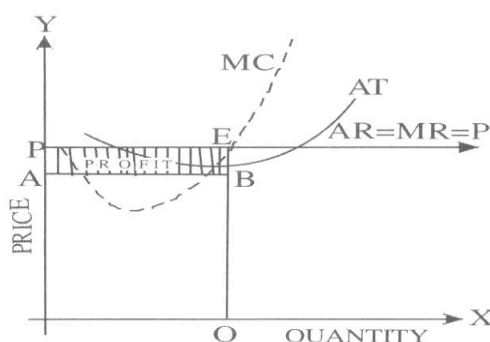
(c) Explain the Role of Demand in pricing Decisions.

Answer:
The Role of Demand in Pricing Decisions
How a business firm's buyers respond to a change in price is an important consideration, for the eventual effect on sales volume and revenue is determined by the degree of buyer's demand sensitivity to price changes. However, price –setters of ten miss the following four points:

(i) Market Vs Firm Elasticity:
Price elasticity of demand is a measure of the degree to which buyers are sensitive to price changes. In any market characterized by several functionally substitutable products, there are actually two demand schedules: 1) demand for the general product (primary demand) and 2) demand for the firm's specific offering (secondary demand). In general, secondary demand is found to be more price elastic. But a seller may sometimes mistake relatively inelastic market or primary demand as elastic secondary demand.

(ii) Demand for buyer's Output:
The Market for buyer's products may actually be price-elastic. So a reduction in price by a firm would raise demand for its product. Hence, manufacturers selling to such buyers, and whose product represents a significant portion of these buyers product costs may curtail sales opportunities by eliminating discounts or low margin products.

(iii) Likelihood of Competitive Entry:
K.B. Monroe has pointed out that "an emphasis on high-price strategies may encourage the entry of competitors when entry barriers are minor and when demand is actually price-elastic. Moreover, high prices or rapidly increasing prices may force buyers to reconsider their need and, perhaps, actively seek out competitive substitutes.

(iv)   Demand Consequences of a Product Line:
Most firms sell a wide variety of products requiring a variety of different marketing strategies. Within a product line there are usually some products that are functional substitutes for each other and some products that are functionally complementary. For example, a photographic product line includes such items like cameras, films, flash bulbs, projectors, screens and other accessories. Because of the demand interrelationships and because there are usually several price-market targets, the product line pricing problem throws a major challenge before the marketing executives.

Question No. 14
Discuss the twelve productivity improvement techniques.

Answer:
Twelve productivity improvement techniques are explained as follows:

(i)   Value Engineering (VE) : Value Engineering (VE) is the process of improving the value of a product at every stage of the product life cycle. At the development stage, VE improves the value of a product by reducing the cost without reducing quality. At the maturity stage, VE reduces the cost by replacing the costly components (parts) by cheaper components. VE also tries to improve the value and quality of the product. Value is the satisfaction which the consumer gets by using the product. VE tries to give maximum value for a lowest price.

(ii) Quality Circles (QC): The concept of Quality Circles (QC) was introduced in **1960** in **Japan**. QC is a small group of employees who meet regularly to identify, analyze, and solve problems in their department. The QC members advise the management to implement new methods to solve work-related problems. QC increases the productivity.

(iii) Financial and Non-Financial Incentives: The organization must motivate the employees by providing financial and non-financial incentives. The financial incentives include better wages and salaries, bonus, etc. The non-financial incentives include better working conditions, welfare facilities, worker's participation in management, etc.

(iv) Operations Research (OR): Operations Research (OR) uses mathematical and scientific methods to solve management problems, including problems of productivity. QR technique uses a scientific method to study the alternative courses of actions and to select the best alternative. OR uses techniques such as linear programming, game theory, etc., to make the right decision. Thus, QR helps to improve productivity.

(v) Training: Training is a process of increasing the knowledge and skills of the employees. Training is a must, for new employees and experienced employees. Training increases the efficiency of the employee. Thus, training results in high productivity.

(vi) Job Enlargement: Job Enlargement is a horizontal expansion of a job. It is done to make jobs more interesting and satisfying. It involves increasing the variety of duties. For e.g. a typist may be given the job of accounts writing in addition to the typing work. This technique is used for lower level jobs.

(vii) Job Enrichment: Job Enrichment is a vertical expansion of a job. It makes routine jobs more meaningful and satisfying. It involves providing more challenging tasks, and responsibilities. For e.g. a manager who prepares performance reports is asked to make plans for his department. Job Enrichment technique is used for higher-level jobs.

(viii) Inventory Control: There must be a proper level of inventory. Overstocking and under stocking of inventories must be avoided. Overstocking of inventories will result in blocking of funds and there are chances of spoilage or misuse of materials. Under stocking of inventories will result in shortages. This will block the smooth flow of production, and so the delivery schedules will be affected.

(ix) Materials' management: Materials' management deals with optimum utilisation of materials in the manufacturing process. It involves scientific purchasing, systematic store keeping, proper inventory control, etc. The main objective of materials' management is to purchase the right quantity and quality materials, at the right prices, at the right time, to maintain favourable relations with suppliers, to reduce the cost of production, etc.

(x) Quality Control: The main objective of quality control is to produce good quality goods at reasonable prices, to reduce wastages, to locate causes of quality deviation and to correct such deviations, to make the employees quality conscious, etc.

(xi) Job Evaluation: Job Evaluation is a process of fixing the value of each job in the organization. It is done to fix the wage rate for each job. A proper job evaluation increases the moral of the employees. This increases the productivity.

(xii) Human factor engineering: Human factor engineering refers to the man-machine relationship. It is designed to match the technology to a human requirement. The term **Ergonomics** has originated from the Greek word 'ergos' meaning 'Work' and 'nomikos' meaning 'Law'. So, it means 'Law of Work'. It tells us how to fit a job to a man's psychological and physiological characteristics to increase human efficiency and well-being.

Question No. 15

(a) Let the demand curve be $P = \dfrac{10}{q}$ & $C = 5 + 2q + 5q^2$. If the objective of the firm is profit maximization only, will the firm produce?

Answer:

Here $P = \dfrac{10}{q} \Rightarrow TR = pq = 10 \Rightarrow MR = $ zero

Again, $C = 5 + 2q + 5q^2 \Rightarrow MC = 2 + 10q$.

At equilibrium, $MR = MC \Rightarrow 0 = 2 + 10q$

$\Rightarrow q = -\dfrac{1}{5} < 0.$

(b) A monopolist faces the demand curve $P = 100 - \frac{1}{2}q$ and he produces the same product in 2 plants. The cost functions for these plants are $C_1 = 10q_1$, $C_2 = 0.25q_2^2$.

    (i) How much will he allocate in both the markets?
    (ii) How large are the profits?

Answer:

(i) This problem relates to the multiple plant monopolists where at equilibrium $MR = MC_1 = MC_2$.

As $P = 100 - \frac{1}{2}q, MR = 100 - q = 100 - (q_1 + q_2)$

As $q = q_1 + q_2$

Now $MC_1 = \frac{d}{dq_1}(TC_1) = 10$ and $MC_2 = \frac{d}{dq_2}(TC_2) = \frac{1}{2}q_2$.

$\therefore MR = MC_1 \Rightarrow 100 - q_1 - q_2 = 10 \Rightarrow q_1 + q_2 = 90 ....(1)$

$MR = MC_2 \Rightarrow 100 - q_1 - q_2 = \frac{1}{2}q_2 \Rightarrow + q_1 + 1.5q_2 = 100 ....(2)$

Solving equation (1) and (2) we get, $q_1 = 70$ and $q_2 = 20$ which is the optimal allocation.

(i) We observe $P = 100 - \frac{1}{2}q$

$\Rightarrow P = 100 - \frac{1}{2}(q_1 + q_2) = 55.$

$\therefore \pi = TR - TC_1 - TC_2 = pq - 10q_1 - 0.25q_2$

$= 55 \times 90 - 10 \times 70 - 0.25(20)^2 \quad [\text{as } q = q_2 + q_2 = 90]$

$= 4150.$

(c) For a monopolist, the demand curve is q = 100 - 2q and total cost (c) = 0.05q² + 2q + 300. Find profit maximizing output and price.

Answer:

We have $q = 100 - 2q \Rightarrow p = 50 - \frac{1}{2}q \Rightarrow MR = 50 - q.$

Also $MC = \frac{dc}{dq} = 0.1q + 2$

At equilibrium, $MR = MC \Rightarrow 50 - q = 0.1q + 2$

$\Rightarrow q = 43.6 \& p = 50 - \frac{1}{2}(43.6) = 28.2.$

Question No. 16
(a) Explain about the Accounting Profits and Economic profits.

Answer:
Accounting Profits (Net Income)

Accounting profit is the profit of a business that includes all revenue and expense items mandated under an accounting framework, such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS). Thus, if total recorded revenues exceed total recorded expenses, the remainder is an accounting profit. Conversely, if total recorded revenues are less than total recorded expenses, the remainder is an accounting loss.

The accounting profit equation is:

Revenue per GAAP or IFRS - Expenses per GAAP or IFRS) = Accounting profit/loss.

Economic Profit

Economic profit is a measure of cost beyond accounting profit. Accounting profit is the money made after all expenses have been paid. It accounts only for actual money earned and spent. Economic profit, by contrast, adds to the equation the cost of options not taken. These options are known as opportunity cost. They include, for example, foregone salary from a job not taken, foregone interest from an investment not made and foregone returns from ventures passed over. Subtracting opportunity cost from an accounting profit can result in an economic loss. This loss, however, does not diminish the money the firm has made.

(b) Kitchen King Company makes a high-end kitchen range hood "Maharaja". The Company presents the following data for the Year 1 and 2.

	Particulars	Year 1	Year 2
1	Units of Maharaja produced and sold (in units)	40,000	42,000
2	Selling Price per unit	₹ 1,000	₹ 1,100
3	Total Direct Material (square feet)	1,20,000	1,23,000
4	Direct Material Cost per square feet	₹ 100	₹ 110
5	Manufacturing Capacity (in units)	50,000	50,000
6	Total Conversion Cost	₹ 1,00,00,000	₹ 1,10,00,000
7	Conversion Cost per unit of Capacity (5) ÷ (6)	₹ 200	₹ 220
8	Selling and Customer Service Capacity	300 customers	290 customers
9	Total Selling and Customer Service Cost	₹ 72,00,000	₹ 72,50,000
10	Cost per customer of Selling and Customer Service Capacity (9) ÷ (8)	₹ 24,000	₹ 25,000

- **Kitchen King produces no defective units, but it reduces Direct Material Used per unit in Year 2.**

- **Conversion Cost in each year depends on production capacity defined in terms of Maharaja units and can be produced.**

- **Selling and Customer Service Cost depends on the number of customers that the Selling and Service functions are designed to support. Kitchen King has 230 customers in Year 1 and 250 customers in Year 2.**

Required:

(i) Describe, the key elements that would be included in Kitchen King's Balanced Score Card.

(ii) Calculate the Operating Income for the Years Year 1 and Year 2.

(iii) Calculate the Productivity Components that explain the change in Operating Income from Year 1 to Year 2.

(iv) Was the Company successful in implementing its strategy? Comment.

Answer:
(i) The key elements that would be included in Kitchen King's Balanced Score Card are as under -

(a)	Financial Perspective	Increase in Operating Income (Profits) by virtue of higher prices & lower costs.
(b)	Customer	Increase in Market Share of high-end kitchen range products,

		perspective	customer satisfaction & loyalty.
(c)		Internal Business Perspective	Increased Quality of products, value addition/additional features of products, on-time delivery of products.
(d)		Learning and Growth perspective	Development time for new end-product version, improvement in manufacturing processes, simplification of processing activities and elimination of NVA activities.

(ii). Computation of Operating Income and Changes therein

	Particulars	Year 1	Year 2	Change
(a)	Production and Sales (in units)	40,000 units	42,000 units	+2,000 units
(b)	Sale Revenue at ₹1,000 and ₹1,100 p.u.	₹ 4,00,00,000	₹ 4,62,00,000	+₹ 62,00,000
(c)	Cost: (i) Materials	₹ 1,20,00,000	₹ 1,35,30,000	- ₹ 15,30,000
	(ii) Conversion	₹ 1,00,00,000	₹ 1,10,00,000	-₹ 10,00,000
	(iii) Selling and Customer Service	₹ 72,00,000	₹ 72,50,000	-₹ 50,000
	Total Costs	₹ 2,92,00,000	₹ 3,17,80,000	-₹ 25,80,000
(d)	Operating Income (b – c)	₹ 1,08,00,000	₹ 1,44,20,000	+₹ 36,20,000

(iii). Computation of Cost Effect of Productivity Component

Particulars	Computation	₹
Cost Effect		
(a) Direct Material	=(Standard Inputs for Year 2 – Actual Inputs for Year 2) × Costs of Year 2 = (1,26,000 – 1,23,000) sq ft × ₹ 110 per sq. ft	3,30,000 F
(b) Conversion Cost	= (50,000 – 50,000) units × ₹ 200 p.u.	Nil
(c) Customer Service	= (300 – 290 customers) × ₹ 25,000 per customer	2,50,000F
	Cost Effect of Productivity Component	**5,80,000 F**

Standard Input of Year 2 = [1,20,000 × 42,000/40,000] = 1,26,000

(iv) Comment: The above analysis shows that the Company was able to successfully implement its Product Differentiation Strategy, since Operating Income has substantially increased due to that factor. The Company was able to increase its market share. It has also been able to increase its Operating Income by improving its productivity.

Question No. 17
(a) Explain the role of Costs in Pricing Decisions.

Answer:
The Role of Costs in Pricing Decisions
Costs play an important role in pricing. Given the selling objectives of a firm, the demand variable provides an upper limit on the pricing discretion the firm enjoys. This limit is the willingness of buyers to purchase a commodity at a stated price. On the contrary, the other variable affecting profits is cost, which sets a floor to a firm's pricing discretion. If prices are too low in comparison with costs, volume may be high but profit will be almost nil.
In the words of Monroe, "objective cost data are essential for deciding what price to set. Only by determining the difference between costs and price under consideration, and then balancing that margin against the capacity necessary to produce the estimated volume, can the seller determine the value of the product in terms of its contribution to recovering the seller's initial investment". True, the cost aspect of a pricing decision is mainly concerned with ascertaining what costs are relevant to the decision. When cost-plus methods of pricing are

used, and the cost portion of the formula is arbitrarily determined, the resultant price is erroneous in that the pricing formula does not allow for demand or for competition.

It is important for the seller to know the determinants and behaviour of product costs for four major reasons:

* ❖ In order to know when to accelerate cost recovery;
* ❖ In order to know how to evaluate a change in selling price;
* ❖ In order to take decision on how to profitably segment a market; and
* ❖ In order to take decision on when to add products or to eliminate products from the product line. Even so, costs play a limited role in pricing. It is because they indicate "whether the product can be made and sold profitably at any price, but they do not indicate the amount of mark-up or mark-down on cost buyers will accept. Proper costs serve to guide management in the selection of a profitable product mix and to determine how much cost can be incurred without sacrificing profit".

Costs for pricing must deal with the future. Product costs must be based on expected purchase costs of raw materials, wage rates and other expenses to be incurred. In addition, information about development, promotion, and distribution costs is needed. Information on product costs should be regularly gathered to determine whether changes have occurred that may affect the relative profitability of the company. It is planned costs that are relevant, not past costs, since profit planning necessarily deals with the future.

(b) "Price affects how much of your product is sold, to whom it is sold, what services must go with it and ultimately how much profit you make." - Discuss it.

Answer:
This statement relates to Pricing Strategy.
If you are currently developing a new product or service you will know that setting a price can be one of the most difficult decisions you make in business. On the other hand, you may be in a position that having set a price, it is now difficult to make necessary adjustments without sending the wrong signals to your market. When pricing is handled sensitively it can have a dramatic effect on the profitability of your firm.

These are some of the strategic factors you need to consider regarding your pricing.

Positioning:
You know the old saying, "You get what you pay for." Your price affects the perception of your product in the market. For example, you could position yourself as the low cost leader, like Wal-Mart has done with their "price rollback" promotions and their new slogan: "Save money. Live better." By contrast, consider Acura's recent "Excuses" campaign: "There are excuses for spending money on luxury, and then there are reasons." On an exclusive luxury product, a low price may signal lower quality.

Cost:
You're in business to make a profit, and you probably have a good idea just how much profit you'd like to make on your investment. If you have outside investors, they certainly do. Calculate the variable cost per sale and the fixed overhead costs. What price do you need to be at in order to achieve your desired profitability based on your sales projections? Be sure to combine this with your demand curve data, i.e., keep in mind that changing your price will change your sales forecast.

Environmental Factors:
Are there any external constraints that could affect pricing? For example, most cities set a standard rate for taxicabs. In the medical field, insurance companies and government programs will only reimburse a certain price. Also, consider how your competitors may react to your pricing. Will too low a price from you trigger a price war, or at least a new price point that may reduce your competitive differentiation?

Demand Curve:

Generally speaking, all other things being equal, a lower price will increase demand and a higher price will reduce demand. Any time you change pricing, track the demand changes closely. In most industries, you can't be constantly changing pricing, but you will still, over time, gain insights that will allow you to optimize your profitability. You can supplement this with market research, asking research participants if they would buy the product or service at various price points.

Market Control:

A good demand curve model can help you optimize your pricing for maximum profitability, but that may not always be your best strategy. For example, lower prices when you first launch may be critical to help you gain market share against established competitors. And higher revenues at a slim profit, or even a loss, signal that the company will likely reach profitability later by achieving economies of scale, volume discounts from suppliers, or upsells to existing customers of higher-profit products. Consider Amazon.com, which was posting record-breaking revenues, but took six years to achieve profitability because they had held their prices low in order to achieve market penetration. On the flip side, lower prices can be used by an established business to hedge against competitive threats from newcomers.

Psychological Factors

Even if you don't have any direct competition, customers will have a concept of what constitutes a fair price based on other things they are familiar with. For example, I wonder if peanut butter and jelly would have been so successful if one cost five times what the other did. Remember that you're not only competing against your direct competitors, but potentially against everything else they can spend their money on. Also, there are often key price points that will make a significant different in people's willingness to buy. For example, whenever a consumer electronics product breaks the ₹100 or ₹50 price point, there's usually a surge in sales. And yes, ".99" pricing really does seem to work (typically about 10 percent more buyers), even though logically it shouldn't.

Value

What is your product worth to your customers? Does it make or save them money? If so, its value should significantly exceed its price. If it does, you can base your pricing more on its value to them than what it costs you to produce it. If it doesn't, you probably need to rethink your offering.

As you've probably realized by now, because there are so many different competing factors, there are a lot of different ways to calculate the actual number for your price.

(c) "Everything and Everyone is a Brand" - Discuss it.

Answer:

If you get down to the detail, everything is a brand, because we build our understanding of the world by creating associations about everything. A tree has an implied promise of beauty and shade. Even words are brands. When I say 'speed', you will conjure up images of fast cars, etc.

People are brands, too. When people see you, or even hear your name, they will recall the image they have of you, (which is something you can actively manage or 'let happen'). In a company where people are visible to customers, such as a service business, the people are very much a part the brand.

The American Marketing Association (AMA) defines a brand as a "name, term, sign, symbol or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of other sellers.

Therefore it makes sense to understand that branding is not about getting your target market to choose you over the competition, but it is about getting your prospects to see you as the only one that provides a solution to their problem.

The objectives that a good brand will achieve include:

• Delivers the message clearly
• Confirms your credibility
• Connects your target prospects emotionally
• Motivates the buyer
• Concretes User Loyalty

To succeed in branding you must understand the needs and wants of your customers and prospects. You do this by integrating your brand strategies through your company at every point of public contact.

Your brand resides within the hearts and minds of customers, clients, and prospects. It is the sum total of their experiences and perceptions, some of which you can influence, and some that you cannot.

A strong brand is invaluable as the battle for customers intensifies day by day. It's important to spend time investing in researching, defining, and building your brand. After your entire brand is the source of a promise to your consumer. It's a foundational piece in your marketing communication and one you do not want to be without.

Branding is a process, a strategy and an orientation.

• Branding is the process by which a marketer tries to build long term relationship with the customers by learning their needs and wants so that the offering (brand) could satisfy their mutual aspirations.

• Branding can be viewed as a tool to position a product or a service with a consistent image of quality and value for money to ensure the development of a recurring preference by the consumer.

• Branding is used as a differentiation strategy when the product cannot be easily distinguished in terms of tangible dimensions (which invariably happen in case of many non-durables, services and even durables) or in products which are perceived as a commodity (e.g. cement, fertilizer, salt, potato chips etc.).

• Brand building is a conscious customer-satisfaction orientation process. The brand owner tries to retain customers to its fold by a mix of hardware and software because when a customer feels satisfied he/she develops a kind of loyalty for the same.

Question No. 18
(a) Discuss the objectives of profit - seeking organizations

Answer:

The objectives of profit-seeking organisations

Proponents of financial performance measures argue that they are necessary because of the primary objectives of companies.

Maximizing shareholder wealth

• The primary objective of a profit seeking organization is to maximize shareholder wealth.

• This is based on the argument that shareholders are the legal owners of a company and so their interests should be prioritized.

• Shareholders are generally concerned with the following:

   o current earnings
   o future earnings
   o dividend policy
   o Relative risk of their investment.

All of these are driven by financial performance.

Survival and growth

The objective of wealth maximization is usually expanded into three sub-objectives:

• To make a **profit**
• To continue in existence (**survival**) - survival is the ultimate measure of success of a business. Without survival obviously there will be no fulfillment of other objectives. In order to survive in the long-term a business must be financially successful.
• To maintain **growth** and development - growth is generally seen as a sign of success, provided it results in improvements in financial performance.

Growth can be identified in a number of ways both financial and non-financial.

Financial:

• Profitability

• Revenue

• Return on investment (ROI)

• Cash flow.

Non-financial:

• Market share

• Number of employees

• Number of products.

(b) List the Advantages and Disadvantages of Earnings per share (EPS).

Answer:

Advantages
• Easily understood by shareholders.
• Calculation is precisely defined IFRS 22 (IAS 33) avoiding ambiguity
• Figures are readily available.
• Often used as a performance measure between companies, sectors, periods within the same organization.

Disadvantages
• Research shows a poor correlation between EPS and Growth and shareholder value.
• Accounting treatment may cause ratios to be distorted.

(c) Discuss the relationship between Profits and Shareholder Value.

Answer:
Rather than focusing on achieving higher profit levels, companies are under increasing pressure to look at the long-term value of the business. This is due to the following factors.

• Research has suggested a poor correlation between shareholder return and profits

• Investors are increasingly looking at long-term value

• Reported profits may not be comparable between companies.

While these issues have been known for some time, they have come into sharp focus due to the performance of new age companies.

Section – B

Question no. 19

(a) " Govt. can play an important role in examining the economic and social impact of e-commerce technologies and in promoting understanding and application of these technologies throughout Indian Industries and communities" - Discuss it.

Answer:
Government can, however, play an important role in examining the economic and social impact of ecommerce technologies and in promoting understanding and application of these technologies throughout Indian industries and communities.

(i) Facilitating market access and business opportunities, especially for small, medium, and micro enterprises (SMMEs), on a national and global scale.

(ii) Providing educational and skills development resources.

(iii) Supporting the rapid deployment of necessary infrastructure.

(iv) Facilitating the development of MPCCs as vibrant seeding points for community knowledge and wealth creation, above and beyond the provision of the latest ICTs.

(v) Developing "model use" programmes for the dissemination of government information and services using e-commerce platforms, e.g., for electronic tender processes.

(vi) Supporting necessary transitions in the labor force due to technological and industrial transformation.

(vii) Ensuring equity in the availability of opportunities and benefits, in the context of the overall development of Indian rural community.

(b) List the advantages and disadvantages Data Envelopment Analysis [DEA].

Answer:
Some of the Advantages of DEA are:
• No need to explicitly specify a mathematical form for the production function.
•Proven to be useful in uncovering relationships that remain hidden for other methodologies.
• Capable of handling multiple inputs and outputs.
• Capable of being used with any input-output measurement.
• The sources of inefficiency can be analyzed and quantified for every evaluated unit.

Some of the Disadvantages of DEA are:
• Results are sensitive to the selection of inputs and outputs.
• You cannot test for the best specification.
• The number of efficient firms on the frontier tends to increase with the number of inputs and output variables.

(c) Describe the models of E- Commerce.

Answer:
E-commerce Market Models
(i) Business to Business (B2B)
   Business to Business or B2B refers to e-commerce activities between businesses. These transactions are usually carried out through Electronic Data Interchange or EDI. This allows more transparency among business involved; therefore business can run more efficiently.
(ii) Business to Customer (B2C)
   Business to Customer or B2C refers to e-commerce activities that are focused on consumers rather than on businesses.

(iii) Customer to Business (C2B)

Customer to Business or C2B refers to e-commerce activities, which uses reverse pricing models where the customer determines the prices of the product or services. There is increased emphasis on customer empowerment.

(iv) Customer to Customer (C2C)

Customer to Customer or C2C refers to e-commerce activities, which uses an auction style model. This model consists of person-to-person a transaction that completely excludes businesses from the equation.

Question no. 20
(a) Discuss the Process of Data- Mining.

Answer:
Without trying to cover all possible approaches and all different views about data mining as a discipline, let us start with one possible, sufficiently broad definition of data mining:

Data Mining is a process of discovering various models, summaries, and derived values from a given collection of data.

The word "process" is very important here. Even in some professional environments there is a belief that data mining simply consists of picking and applying a computer-based tool to match the presented problem and automatically obtaining a solution. This is a misconception based on an artificial idealization of the world. There are several reasons why this is incorrect. One reason is that data mining is not simply a collection of isolated tools, each completely different from the other, and waiting to be matched to the problem. A second reason lies in the notion of matching a problem to a technique. Only very rarely is a research question stated sufficiently precisely that a single and simple application of the method will suffice. In fact, what happens in practice is that data mining becomes an iterative process. One studies the data, examines it using some analytic technique, decides to look at it another way, perhaps modifying it, and then goes back to the beginning and applies another data-analysis tool, reaching either better or different results. This can go round and round many times; each technique is used to probe slightly different aspects of data—to ask a slightly different question of the data. What is essentially being described here is a voyage of discovery that makes modern data mining exciting. Still, data mining is not a random application of statistical, machine learning, and other methods and tools. It is not a random walk through the space of analytic techniques but a carefully planned and considered process of deciding what will be most useful, promising, and revealing.

(b) Describe the characteristics of different types of Data Transformations.

Answer:
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.

(c) **"It may be useful for development organizations to consider the many issues involved before embarking on an e-commerce initiative, in relation to the organization's mandate, development goals, and organizational structure. The primary issues involved would include: (i) Resource Expansion, (ii) Capital Costs, (iii) Marketing, (iv) Staff/ Training,(v) Types of products offered for sale online, (vi)Purchasing patterns of online customers etc" – Discuss the points.**

Answer:
It may be useful for development organizations to consider the many issues involved before embarking on an e-commerce initiative, in relation to the organization's mandate, development goals, and organizational structure. The primary issues involved would include:

(i) Resource Expansion – Is the main goal of selling goods and services online the generation of revenue to offset operational costs? If so, how much revenue does the organization expect/wish to generate? These strategic questions will allow the organization to assess how much funding will go toward e-commerce activities. If the organization is approaching e-commerce as a means of covering not only the costs of producing the goods and services and disseminating development-focused products, but wishes to expand its revenue base to support other project costs, then it may want to develop an e-commerce platform and strategy that can attract customers. The organization may have to approach e-commerce as a resource expansion activity that uses business strategies and a full marketing approach. This leads to the question of whether this fits in with the development mandate of the organization and its charitable organization status. Will e-commerce activities distort the tax-free status of the development organization? Is the organization liable in the case of legal conflicts? Most development organizations have already faced these questions if they sell publications and other products by "traditional" means.

(ii) Capital Costs – How much funding is the organization willing to put into e-commerce activities? E-commerce platforms can be high priced, depending on the level of sophistication. A development organization undertaking e-commerce activities should consider whether it wants to incur higher costs, with the possibility of cost recovery from an expected higher level of sales. What are the possibilities of receiving financial assistance from donor agencies or partner organizations for this activity? Development organizations pursuing e-commerce activities may have to decide between varieties of options for their online selling activities, depending on their financial capacities. These options can be divided into 1) technical hardware and 2) site design and maintenance. The organization

will have to decide whether it wants to invest in setting up its own in-house server, depending on the organization's size and computing requirements, or find a third party that is willing to host the site on its server. Is the third party another development-focused organization, or is it a private company/ISP? Regarding design and maintenance of the e-commerce site, is the organization able to hire in-house technical personnel to handle design, development, and maintenance, or is it more cost effective to hire an outside party to handle these tasks? Developing an e-commerce site that generates high levels of revenue will have to respond to the changes in e-commerce platforms in the commercial sector. The development organization may want to consider using security encryption software for credit card payment, increasing costs to an extent yet benefiting from increasing customer confidence in the transaction process. Will the site be eye-catching, with the hope of attracting customers, possibly increasing site development costs for higher level graphics and design? Pan Partners currently do not have to bear all of the above-mentioned capital costs, but may one day have to consider them when they initiate an e-commerce site on their own.

(iii) Marketing – As evident from the discussion above, a good marketing strategy forms the basis of the operational strategy, in order to attract customers to the e-commerce site and ensure a steady pattern of sales. Development organizations often need not employ capital-intensive marketing programs in order to have a successful marketing campaign. The marketing strategy can be divided into two main categories: 1) online markets and 2) offline markets.

- **Online markets** include those customers that have already used, or are able to use, e-commerce for purchasing products. The Internet can be used as a tool in itself in order to capture online markets. Techniques include identifying other sites that would be willing to link to the organization's e-commerce site, or cross selling on these sites. These sites include organization partners and sites that offer links to development information and online resources. Another technique includes identifying target markets that would be interested in purchasing the specific development- focused products that the organization is selling online. Once the target markets are identified, potential customers can be identified and a personalized e-mail sent, providing a description of the products being offered and why they might be of interest to the potential customer. As well, individuals and organizations that have already been in contact with the organization can be contacted by e-mail with a similar message. In this way, the development organization is targeting markets that it knows will be interested in the products it offers.

- **Offline markets** include those individuals and organizations that have access to the Internet, but have never used e-commerce or are unlikely to do so. In these cases, "traditional" means of marketing can be employed to attract the potential customer to the e-commerce site. This includes advertisements in publications, newsletters, announcements at conferences and events, mailings to members, and supporters. Other innovative means of marketing can be employed, such as advertising promotional offers (e.g., "buy one, get one free," or announcements of discounted items) on the home page of the development organization's website.

(iv) Staffing/Training -- Along with the capital costs comes the assessment of whether the organization has trained staff that can maintain an e-commerce site, including both the technical staff mentioned above, and the administrative staff that can process and fulfill the orders. Is the current staff able and willing to take on these activities? Will capacities be taken away from other projects and activities? Will the organization have to employ new staff to concentrate on e-commerce? Would it be cheaper/more effective to hire an outside company to do this? Can the organization afford these costs? Will the staff have to receive training? All of the above questions are important, not only for the success of the e-commerce initiative, but also to ensure that capacities are not taken away from other development activities. Once the above-mentioned issues are addressed, it is possible to move on to the operational strategy. The operational strategy

addresses the issues highlighted in the examples above. These issues are important to address because of their impact on the overall expected sales patterns of development organizations.

(v) Types of Products Offered for Sale Online -- As previously noted, the products that are produced by development organizations primarily serve the purpose of disseminating information on a specific development topic or issue. These are products that are not often produced for mass markets, but for particular groups with an interest in the development sector. Should development organizations wish to broaden their market sector, they can develop products that have a wider appeal, while still maintaining a focus on the dissemination of information on development issues. These products could include general information and educational publications on a particular development theme (e.g., a survey of regional environmental issues). Such products could draw in new markets, such as schools and libraries. Development organizations could also look at innovative ways of using the Internet to create Web-based products for sale. For example, electronic versions of books and journals can provide a low-cost means of both producing these products and distributing them. Text can be digitized and offered for sale online. The product can then be sent to the customer electronically, cutting down on the cost of printing the text and sending the item by post. Other products could include digitized audio and video materials and electronic greeting cards. One such initiative is E-cards, an online greeting card company that supports the World Wildlife Fund (WWF). The virtual cards contain photographs of endangered animals and habitats. The site is sponsored by advertisers and for every greeting card sent, E-cards donates a significant portion of the revenue to the WWF. It also assists by sending Web traffic to the WWF website and, as an extension, drawing attention to the cause of endangered species and the environment. Another possibility that development organizations could pursue is allowing charitable donations and contributions to be made online. This would allow individuals that would like to support the efforts of a particular organization to submit their contribution in the form of an online transaction. This may increase overall contributions, as it provides a convenient way for individuals with access to the Internet to donate.

(vi) Purchasing Patterns of Online Customers -- The frequency of updating new products can impact the number of items purchased by customers and the number of returning customers. In order to encourage customers to purchase more than one item at a time, it is important to offer a (wide) variety of products. Returning to the marketing strategies, development organizations can offer sales promotions mentioned above. This can increase the per-customer volume of sales, increasing overall revenue. Development organizations can consider organizing a schedule for updating their e-commerce site, adding new products and promotional offers on a regular basis. This way, previous customers will see that new products are available for sale and may be attracted to purchasing a second or third time. It may be useful to form a general profile of who the organization's likely customers might be, and what their purchasing patterns could be. Are they individuals, companies, research institutes, universities, donors, libraries, or governments? Further research on e-commerce customers could provide a useful tool for assessing online purchasing patterns. Developing an e-commerce strategy can allow development organizations to approach this initiative with an understanding of what they want to achieve and how to achieve it. This can encourage strategic thinking of how to attract potential customers to the site and how to keep them returning. In order for e-commerce initiatives to be successful, whether generating revenue to offset production costs or increasing overall revenue to offset operational costs, development organizations can often use business strategies to more effectively achieve their overall goals.

Question no. 21

(a) Describe about the Fuzzy Sets and discuss the role of Fuzzy sets in HR Management.

Answer:

Fuzzy sets are sets whose elements have degrees of membership. Fuzzy sets were introduced by Lotfi A. Zadeh and Dieter Klauain 1965 as an extension of the classical notion of set. At the same time, Salii (1965) defined a more general kind of structures called L-relations, which were studied by him in an abstract algebraic context.

In classical set theory, the membership of elements in a set is assessed in binary terms according to a bivalent condition — an element either belongs or does not belong to the set. In fuzzy set theory, classical bivalent sets are usually called crisp sets. The fuzzy set theory can be used in a wide range of domains in which information is incomplete or imprecise, such as bioinformatics.

Fuzzy sets can be applied, for example, to the field of genealogical research. When an individual is searching in vital records such as birth records for possible ancestors, the researcher must contend with a number of issues that could be encapsulated in a membership function.

Fuzzy Sets in HR Management

This project specializes in the implementation of the Microsoft Dynamics NAV information system. The evaluation of employees is based on multiple criteria evaluations .The criteria are derived from typical competencies of the employees. A competency model has been created for any given role with different normalized weights assigned to various competencies. The evaluation proceeds in the following manner:

• The appointed evaluators fill in a questionnaire indicating to what extent, in their view, the tested employee meets his/her competencies.

• These evaluations are expressed using fuzzy scales.

• Normalized weights assigned to the evaluators of any given employee are set based on the intensity of cooperation between the employee and his/her evaluators.

• The level of fulfillment of each competency by the given employee is calculated as a weighted average of the fuzzy evaluations, conducted by each of his/her evaluators.

• Then, the overall fulfillment level of the employee's working role, again as a weighted average of fuzzy numbers, is calculated according to a specified model. This produces an overall evaluation of the employee.

The evaluation process is followed by an interview where the employee is informed of his/her evaluation results, the employees gaps are discussed, and possibilities for improvement are proposed.

(b) Describe the problems which supply chain management should address.

Answer:

Supply chain management must address the following problems:

• **Distribution Network Configuration**: number, location and network missions of suppliers, production facilities, distribution centers, warehouses, cross-docks and customers.

• **Distribution Strategy**: questions of operating control (centralized, decentralized or shared); delivery scheme, e.g., direct shipment, pool point shipping, cross docking, direct store delivery (DSD), closed loop shipping; mode of transportation, e.g., motor carrier, including truckload, Less than truckload (LTL), parcel; railroad; intermodal transport, including trailer on flatcar (TOFC) and container on flatcar (COFC); ocean freight; airfreight; replenishment strategy (e.g., pull, push or hybrid); and transportation control (e.g., owner-operated, private carrier, common carrier, contract carrier, or third-party logistics (3PL)).

• **Trade-Offs in Logistical Activities**: The above activities must be well coordinated in order to achieve the lowest total logistics cost. Trade-offs may increase the total cost if only one of the activities is optimized. For example, full truckload (FTL) rates are more economical on a cost per pallet basis than LTL shipments. If, however, a full truckload of a product is ordered to reduce transportation costs, there will be an increase in inventory

holding costs which may increase total logistics costs. It is therefore imperative to take a systems approach when planning logistical activities. These trade-offs are key to developing the most efficient and effective Logistics and SCM strategy.

- **Information**: Integration of processes through the supply chain to share valuable information, including demand signals, forecasts, inventory, transportation, potential collaboration, etc.
- **Inventory Management**: Quantity and location of inventory, including raw materials, work-in-process (WIP) and finished goods.
- **Cash-Flow**: Arranging the payment terms and methodologies for exchanging funds across entities within the supply chain.

(c) Describe about the Elman and Jordon Neural Networks.

Answer:
Elman and Jordan Artificial Neural Networks

Elman network also referred as Simple Recurrent Network is special case of recurrent artificial neural networks. It differs from conventional two-layer networks in that the first layer has a recurrent connection. It is a simple three-layer artificial neural network that has back-loop from hidden layer to input layer trough so called context unit. This type of artificial neural network has memory that allowing it to both detect and generate time-varying patterns.

The Elman artificial neural network has typically sigmoid artificial neurons in its hidden layer, and linear artificial neurons in its output layer. This combination of artificial neurons transfer functions can approximate any function with arbitrary accuracy if only there is enough artificial neurons in hidden layer. Being able to store information Elman artificial neural network is capable of generating temporal patterns as well as spatial patterns and responding on them. Jordan network is similar to Elman network. The only difference is that context units are fed from the output layer instead of the hidden layer.
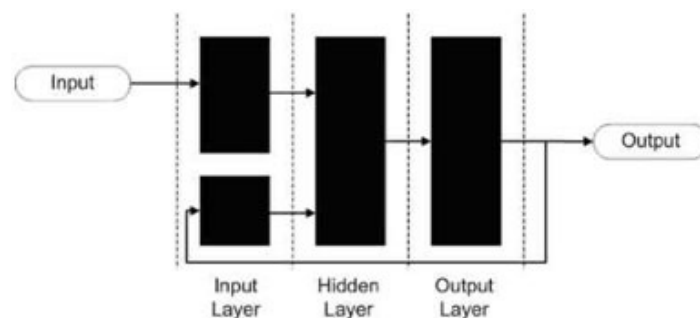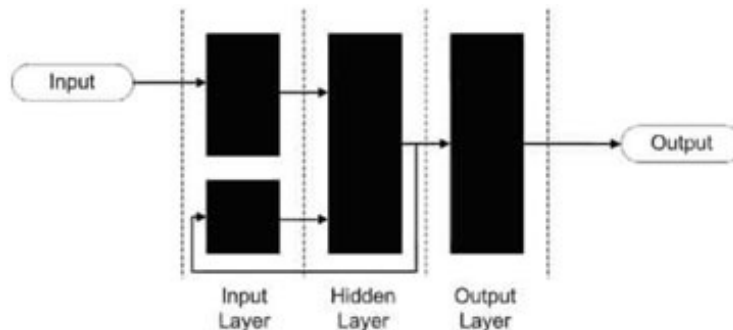
Question no. 22

(a) "Business Intelligence (BI) is the ways in which we store and use business information. It encompasses the technologies, applications, and means for collecting, integrating, analyzing, and presenting business data."- Discuss the above statement and how would choose the right business solution. Discuss the 7 layer Business Intelligence Stack.

Answer:

Business Intelligence (BI)

Business Intelligence (BI) is the ways in which we store and use business information. It encompasses the technologies, applications, and means for collecting, integrating, analyzing, and presenting business data. Using data that has been stored in a data warehouse, software applications are able to use this data to report past business information as well as predict future business information, including trends, threats, opportunities and patterns. Popular BI applications are very complex and experts in this field are in high demand.

Business Intelligence is becoming a critically important tool that can allow your company to better understand your customers and suppliers, or measure the efficiency of your own internal operations.

Choosing the Right BI Solution

BI tools offer functionality ranging from simple reports to drill-down analytical solutions targeted at specific industries and operational environments. When choosing a Business Intelligence solution, firms need to ask two key questions:

(i) What kind of data needs to be analyzed and where does it come from? Many packaged application and database vendors include some BI functionality in their core product, and if you plan to source all of your data from the same application or database, you may not need to buy additional products. However, this strategy may also limit the analytical range.

(ii) Who will be doing the analysis and how do they need to receive the results? Historically, report or analysis requests would be sent to the IT department, which would then code and generate the report. Today, BI is on the front lines of business and the tools may well be used by executives or sales and marketing professionals. As a result, firms need to know the technical capabilities of the end user upfront.

The Business Intelligence Technology Stack

To build a Business Intelligence solution, enterprises will need to consider new investments and upgrades to current technology to build out the BI technology stack. Starting from the bottom, this seven-layer stack includes:

    (i) Storage and computing hardware: To implement BI, firms will need to invest or upgrade their data storage infrastructure. This includes Storage Area Networks (SAN), Network Attached Storage (NAS), Hierarchical Storage Management (HSM), and silo-style tape libraries. The trend over the next five years is for storage resources to be amalgamated into a single, policy-managed, enterprise-wide storage pool.

    (ii) Applications and data sources: To develop an effective BI solution, source data will need to be scrubbed and organized. The challenge is that source data can come from any number of applications, most using proprietary data formats and application-specific data structures. Customer Relationship Management (CRM), Supply Chain Management (SCM), and Enterprise Resource Planning (ERP) systems and other applications are the common sources of data. The trend over the next five years will be for applications to standardize the data format using extensible Markup Language (XML) schema and leverage BI specific standards like XML for Analysis.

    (iii) Data integration: Middleware allows different systems supporting different communication protocols, interfaces, object models, and data formats to communicate. Firms will need to invest in these "connectors" to allow data from source

applications to be integrated with the BI repository. Extraction, transformation and loading (ETL) tools pull data from multiple sources, and load the data into a data warehouse. Again, the trend in data integration and Enterprise Application Integration, in general, is toward standardization through XML and web services.

(iv) Relational databases and data warehouses: Firms will need a data warehouse to store and organize tactical or historical information in a relational database. Organizing data in this way allows the user to extract and assemble specific data elements from a complete dataset to perform a variety of analyses.

(v) OLAP applications and analytic engines: Online analytic processing (OLAP) applications provide a layer of separation between the storage repository and the end user's analytic application of choice. Its role is to perform special analytical functions that require high-performance processing power and more specialized analytical skills.

(vi) Analytic applications: Analytic applications are the programs used to run queries against the data to perform either "slide-and-dice" analysis of historical data or more predictive analyses, often referred to as "drill-down" analysis. For example, a customer intelligence application might enable a historical analysis of customer orders and payment history. Alternatively, users could drill down to understand how changing a price might affect future sales in a specific region.

(vii)Information presentation and delivery products: The results of a query can be returned to the user in a variety of ways. Many tools provide presentation through the analytic application itself and offer dashboard formats to aggregate multiple queries. Also, enterprises can purchase packaged or custom reporting products, such as Crystal Reports. An important trend in BI presentation is leveraging XML to deliver analyses through a portal or any other Internet-enabled interface, such as a personal digital assistant (PDA).

(b) Describe the different benefits of Decision Support Systems that can provide to a company.

Answer:
Decision Support Systems (DSS):
In a world of constant flux, informed and thoughtful decision-making is the cornerstone of business success. As a manager, one must make decisions that affect his business every day, some critical and some, not so critical. DSS allow faster decision-making, identification of negative trends and better allocation of business resources all to the benefit of the organization.

DSS are a specific class of computer-based information systems that support one's decision making activities. A DSS analyzes business data and provide inter-active information support to managers and business professionals during the decision-making process, from problem recognition to implementing the decision. DSS use:
- ❖ Analytical models
- ❖ Specialized data bases
- ❖ A Decision maker's own insights and judgments and
- ❖ An interactive, computer-based modeling process to support semi-structured business decisions.

A key component to any DSS is Business Intelligence Reporting tools, processes and methodologies. These provide us with rich reporting, monitoring and data analysis, which are necessary for effective and fast decision-making.
DSS helps to support Business Decision Making. It helps the firm to gain competitive advantage.

Benefits of DSS:
- ❖ DSS speeds up the process of Decision-making.
- ❖ Helps in increasing organizational control.
- ❖ Speeds up problem-solving
- ❖ Helps to automate managerial processes
- ❖ improves personal efficiency
- ❖ Eliminates value chain activities.

(c) Discuss the objectives of MIS.

Answer:
Objectives of MIS
(i) To provide the managers at all levels with timely and accurate information for control of business activities
(ii) To highlight the critical factors in the operation of the business for appropriate decision making
(iii) To develop a systematic and regular process of communication within the organization on performance in different functional areas
(iv) To use the tools and techniques available under the system for programmed decision making
(v) To provide best services to customers
(vi) To gain competitive advantage
(vii) To provide information support for business planning for future

Question no. 23
Define the following term in the context of Supply Chain Management:
(a)Capacity Utilization, (b) In source vs Outsource, (c) Logistics Management, (d) Strategic Alliance (e) Supplier Performance Evaluation, (f) Capacity Strategy,(g) Lead Time/ Cycle Time, (h) Preventative Maintenance , (i) Specifications.

Answer:
(i) Capacity Utilization
This is a measure (usually expressed as a percentage) of how intensively a resource is being used to produce a good or service. Utilization compares actual time used to available time. Traditionally, utilization is the ratio of direct time charged (run time plus setup time) to the clock time available.

(ii) In source vs Outsource
The act of deciding whether to produce an item internally or buy it from an outside supplier. Factors to consider in the decision include costs, capacity availability, proprietary and/or specialized knowledge, quality considerations, skill requirements, volume, and timing.

(iii) Logistics Management
Logistics management is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such as way that current and future profitability are maximized through the cost-effective fulfillment of orders.

(iv) Strategic Alliance
A relationship formed by two or more organizations that share (proprietary), participate in joint investments, and develop linked and common processes to increase the performance of both companies. Many organizations form strategic alliances to increase the performance of their common supply chain.

(v) Supplier Performance Evaluation
The main objective of the supplier evaluation process is to reduce purchase risk and maximize the overall value of the purchaser. It typically involves evaluating, at a minimum, supplier quality, cost competitiveness, potential delivery performance and technological capability. Some of the other criteria used in the preliminary evaluation of suppliers include financial risk analysis, evaluation of previous performance, and evaluation of supplier provided information.

(vi) Capacity Strategy:
This is one of the strategic choices that a firm must make as part of its manufacturing strategy. There are three commonly recognized capacity strategies: lead, lag, and tracking. A lead capacity strategy adds capacity in anticipation of increasing demand. A lag strategy does not add capacity until the firm is operating at or beyond full capacity. A tracking strategy adds capacity in small amounts to attempt to respond to changing demand in the marketplace.

(vii) Lead Time/Cycle Time:
1) A span of time required to perform a process (or series of operations). 2) In a logistics context, the time between recognition of the need for an order and the receipt of goods. Individual components of lead time can include order preparation time, queue time, processing time, move or transportation time, and receiving and inspection time.

(viii)Preventive Maintenance
The activities, including adjustments, replacements, and basic cleanliness, that forestall machine breakdowns. The purpose is to ensure that production quality is maintained and that delivery schedules are met. In addition, a machine that is well cared for will last longer and cause fewer problems.

(ix) Specifications
Specifications are the most detailed method of describing requirements. Various types of design specifications are the detailed descriptions of the materials, parts, and components to be used in making a product. Hence, they are the descriptions that tell the seller exactly what the buyer wants to purchase.

Question No. 24
(a)Explain about the Dashboard and comparison with the Scorecard.

Answer:
Dashboard
In information technology, a dashboard is a user interface that, somewhat resembling an automobile's dashboard, organizes and presents information in a way that is easy to read. However, a computer dashboard is more likely to be interactive than an automobile dashboard (unless it is also computer- based). To some extent, most graphical user interfaces (GUIs) resemble a dashboard. However, some product developers consciously employ this metaphor (and sometimes the term) so that the user instantly recognizes the similarity.

Some products that aim to integrate information from multiple components into a unified display refer to themselves as dashboards. For example, a product might obtain information from the local operating system in a computer, from one or more applications that may be running, and from one or more remote sites on the Web and present it as though it all came from the same source. Hewlett Packard developed the first such product, which began as a tool for customizing Windows desktops. Called Dashboard, the HP product was subsequently acquired by Borland and then a company called Starfish. Microsoft's Digital Dashboard tool incorporates Web-based elements (such as news, stock quotes, and so on) and corporate elements (such as e-mail, applications, and so on) into Outlook. Dashboards may be customized in a multitude of ways and named accordingly, generally, for example as a general corporate or enterprise dashboard, or more specifically, as a CIO or CEO dashboard.

Comparison between Scorecard and Dashboard

The two terms – scorecards and dashboards – have a tendency to confuse, or rather get used interchangeably, but each brings a different set of capabilities. The sources of the confusion are:

- Both represent a way to track results.
- Both use traffic lights, dials, sliders and other visual aids.
- Both have targets, thresholds and alert messages.
- Both provide linkage or drill down to other metrics and reports.

The difference comes from the context in how they are applied. To provide some history, as busy executives and managers struggled to keep up with the amount of information being thrust at them, the concept of traffic lighting were applied to virtually any and all types of reporting. As technology has improved, more bells and whistles were added – the ability to link to other reports and to drill down to finer levels of detail. The common denominator was the speed of being able to focus on something that required action or further investigation. The terminology evolved to reflect how technology vendors described the widgets that provided this capability – dashboards. As a consequence, both dashboard and scorecard terms are being used interchangeably.

Some refer to dashboards as "dumb" reporting and scorecards as "intelligent" reporting. The reason is dashboards are primarily for data visualization; they display what is happening during a time period. Most organizations begin with identifying what they are already measuring and construct a dashboard dial from there. However, dashboards do not communicate why something matters, why someone should care about the reported measure or what the impact may be if an undesirable declining measure continues. In short, dashboards report what you can measure.

(b) State the Technological and Operational factors of E-commerce.

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.

(c)"Data quality management incorporates a virtuous cycle in which continuous analysis, observation, and improvement lead to overall improvement in the quality of organizational information across the board. This virtuous cycle incorporates five fundamental data quality management practices, which are ultimately implemented using a combination of core data services." – Discuss the five fundamentals.

Answer:
The objective of this cycle is to transition from being an organization in which the data stewards react to acute data failures into an organization that proactively controls and limits the introduction of data flaws into the environment.

 ❖ Data quality assessment, as a way for the practitioner to understand the scope of how poor data quality affects the ways that the business processes are intended to run, and to develop a business case for data quality management;
 ❖ Data quality measurement, in which the data quality analysts synthesize the results assessment and concentrate on the data elements that are deemed critical based on the selected business users' needs. This leads to the definition of performance metrics that feed management reporting via data quality scorecards;

 ❖ Integrating data quality into the application infrastructure, by way of integrating data requirements analysis across the organization and by engineering data quality into the system development life cycle;
 ❖ Operational data quality improvement, where data stewardship procedures are used to manage identified data quality rules, conformance to acceptability thresholds, supported by
 ❖ Data quality incident management, which allows the data quality analysts to review the degree to which the data does or does not meet the levels of acceptability, report, log, and track issues, and document the processes for remediation and improvement.
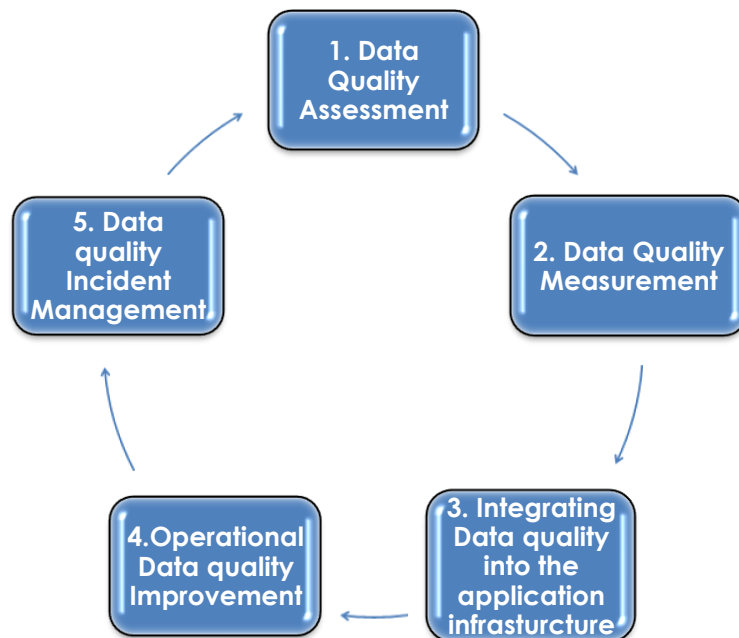
Section – C

Question no. 25
Using Altman's Model, compute the value of Z from the provided data:

Equity & Liabilities	₹	Assets	₹
(1) Shareholder Fund:		(1) Non – Current Assets	
(a)Share Capital (@ ₹ 10 each)		(a) Fixed Assets	4,20,000
- Equity Share Capital	2,00,000		
(b)Reserves & Surplus	60,000	(2) Current Assets	
		(a) Inventory	1,80,000
(2) Non – Current Liabilities:	3,00,000	(b) Book Debts	70,000
- 10% Debentures			
(3) Current Liabilities	80,000	(c) Loans &	20,000
(a)Trade Payable - Sundry Creditors		Advances	
(b) Outstanding Expenses	60,000		
		(d) Cash at Bank	10,000
Total	7,00,000	Total	7,00,000

Additional Information
   (i)   Market value per share ₹ 12.50.
   (ii) Operating Profit (20% on sales) ₹ 1,40,000.

Answer:

As per Altman's Model (1968) of Corporate Distress Prediction

Z-score = $1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$

Here, the five variables are as follows:

X_1 = Working Capital to Total Assets = $\dfrac{1,40,000^1}{7,00,000^2}$ = 0.20.

X_2 = Retained Earnings to Total Assets = $\dfrac{60,000^3}{7,00,000^2}$ = 0.0857

X_3 = EBIT to Total Assets = $\dfrac{1,40,000^4}{7,00,000^2}$ = 0.20.

X_4 = Market Value of Equity to Book Value of Total Debt = $\dfrac{2,50,000^5}{4,40,000^6}$ = 0.568

X_5 = Sales to Total Assets = $\dfrac{7,00,000^7}{7,00,000^2}$ = 1

Hence, Z-score = (1.2 × 0.20) + (1.4 × 0.0857) + (3.3 × 0.20) + (0.6 × 0.568) + (1 × 1)

= 0.24 + 0.11998 + 0.66 + 0.3408 + 1 = 2.36078

Working Notes:

(i) Calculation of Working Capital
Working Capital = Current Assets – Current Liabilities

Here, Working Capital = (Inventory + Book Debts + Loans & Advances + Cash at Bank) – (Sundry Creditors + Outstanding Expenses)

= (1,80,000 + 70,000 + 20,000 + 10,000) – (80,000 + 60,000)

= ₹ 1,40,000

(ii) Calculation of Total Assets

Total Assets = Fixed Assets + Current Assets

Here, Total Assets = 4,20,000 + (1,80,000 + 70,000 + 20,000 + 10,000) = ₹ 7,00,000.

(iii) Calculation of Retained Earnings

Retained Earnings = Reserves & Surplus = ₹ 60,000.

(iv) Calculation of Earnings before Interest & Tax (EBIT)

EBIT = Operating Profit = ₹ 1,40,000

(v) Calculation of market Value of Equity

Market Value of Equity Shares = 20,000 Shares × ₹ 12.50 = ₹ 2,50,000.

(vi) Calculation of Book Value of Total Debts

Book Value of Total Debts = Long – term Debts + Current Liabilities

Here, Book Value of Total Debts =10% Debentures + (Sundry Creditors + Outstanding Expenses)

= 3,00,000 + (80,000 + 60,000) = ₹ 4,40,000

(vii) Calculation of Sales

Here, Operating Profit = 20% on Sales = ₹ 1,40,000.

Hence, Sales = $\frac{100}{20} \times$ ₹ 1,40,000 = ₹ 7,00,000.

Comments:

As the calculated value of Z-score lies between 1.81 and 2.99, which is marked as Grey Area, it is predicted that the company consists of both bankrupt elements (i.e., a mixture of failed & non-failed elements) and, therefore, required further investigation to determine its conclusive solvency status.

Question no. 26
(a) Explain about the Risk Pooling.

Answer:
Risk Pooling:
One of the forms of risk management mostly practiced by insurance companies is Risk Pool. Under this system, insurance companies come together to form a pool, which can provide protection to insurance companies against catastrophic risks such as floods, earthquakes etc. The term is also used to describe the pooling of similar risks that underlies the concept of insurance. While risk pooling is necessary for insurance to work, not all risks can be effectively pooled. In particular, it is difficult to pool dissimilar risks in a voluntary insurance market, unless there is a subsidy available to encourage participation.

Risk pooling is an important concept in supply chain management. Risk pooling suggests that demand variability is reduced if one aggregates demand across locations because as demand is aggregated across different locations, it becomes more likely that high demand from one customer will be offset by low demand from another. This reduction in variability allows a decrease in safety stock and therefore reduces average inventory.

The three critical points to risk pooling are:

(i) Centralized inventory saves safety stock and average inventory in the system.

(ii) When demands from markets are negatively correlated, the higher the coefficient of variation, the greater the benefit obtained from centralized systems i.e., the greater the benefit from risk pooling.

(iii) The benefits from risk pooling depend directly on the relative market behaviour. If we compare two markets and when demand from both markets is more or less than the average demand, we say that the demands from the market are positively correlated. Thus the benefits derived from risk pooling decreases as the correlation between demands from the two markets becomes more positive.

The basis for the concept of risk pooling is to share or reduce risks that no single member could absorb on their own. Hence, risk pooling reduces a person or fim's exposure to financial loss by spreading the risk among many members or companies. Actuarial concepts used in risk pooling include:

- Statistical variation.

- The law of averages.

- The law of large numbers.

- The laws of probability.

(b) Describe about the Value at Risk.

Answer:
Value at Risk
Value at Risk (VaR) is one of the popular methods of measuring financial risks. There are different types of VaR—long-term VaR, marginal VaR, factor VaR etc. VaR is also defined as the threshold value such that the probability of a portfolio making a market to a market loss over a specific time horizon exceeds this value. For example, if a portfolio stock has a one day 3 per cent VaR of ₹10 million, there is 0.03 probability that the portfolio may face a reduction in value by more than ₹10 million over a specific time period. This is on assuming that normal market operations and there is no trading. A loss which exceeds VaR threshold is known as 'VaR break'. VaR has applications in financial risk management, risk measurement, control and reporting. It can also be used in calculating regulatory capital.

VaR essentially identifies the boundary between normal days and extreme occurrences. The probability level is specified as 1 minus probability of a VaR Break. Normally VaR parameters are 1 per cent and 5 per cent probabilities and 1 day and 2 week horizons. While VaR represents loss, a negative VaR would indicate that a portfolio has a high probability for making profits.

There are two types of VaR—one is applied primarily in risk management and the other in risk measurement. For a manager who is managing financial risk, VaR is essentially a system and not just a number as it runs periodically and is compared with the movement of computed prices in opening positions over the particular time horizon. An interesting application of VaR is the governance of endowments, trusts and pension plans. VaR utilized for this purpose is to monitor risk.

VaR has the advantage of a structured methodology for critically analyzing a risk that is available as part of management function. Daily publication of a number on time and with particular statistical data enables an organization to maintain a high objective standard. However, robust backup systems and assumptions regarding default need to be established. A quotation runs thus, 'risk taking institution that does not compute VaR might escape disaster but an institution that cannot compute VaR will not' according to Aaaron Brown.

Another advantage of VaR is that it differentiates risks into two regimes, that is, normal days and extreme occurrences. Inside the VaR limit, application of the conventional statistical methods is reliable. Out VaR limit risk should be analyzed with stress testing on the basis of data available on the long-term and in the broad market. Distribution losses beyond VaR

point are both impossible and useless. As such the finance manager should concentrate on developing plans to limit the loss if possible or to survive the loss.

VaR as a risk measurement is usually reported with other risk measurements such as standard deviation, expected shortfall, partial derivatives of portfolio value, etc.

Application of VaR is to segregate extreme occurrences in a systematic way. They can be studied over the long-term in a qualitative manner on the basis of day-to-day movement of prices, both quantitatively and qualitatively. As VaR can at best be utilized to define risk as a market to market loss on a fixed portfolio over a fixed time horizon in normal markets, it is not useful in abnormal situations.

There has been criticism against VaR. It is said that this concept has led to excessive risk taking and leveraging by financial institutions. Again VaR is not sub-additive which means that VaR of a combined portfolio can be larger than the sum of the VaRs of its components.

(c)"To be effective, any Enterprise Risk Management (ERM) implementations should be integrated with strategy-setting". Do you agree? Give your views bringing out the basic elements of ERM and the reasons why ERM is implemented.

Answer:
"To be effective, any Enterprise Risk Management (ERM) implementations should be integrated with strategy-setting". To my mind, this statement is true.
In today's challenging business environment, opportunities and risks are constantly changing, giving rise to the need for identifying, assessing, managing and monitoring the organization's business opportunities and risks.
This, in turn, necessitates establishing the linkage between the opportunities and risk while managing the business. This requirement is addressed by ERM, which redefines the value proposition of risk management by elevating its focus from the 'tactical' to the strategic."
ERM is about designing and implementing capabilities for managing the risks that matter. In the light of this, the statement is correct and therefore acceptable.

Basic Elements of ERM:
The following are the basic element of ERM:
(i)   A process, ongoing and flowing through an entity.
(ii)   Effected by people at every level of an organization.
(iii)   Applied in strategy setting.
(iv)   Applied across the enterprise, at every level and unit and includes taking an entry-level view of risk.
(v)   Designed to identify potential events affecting the entity and manage risk within the risk appetite.
(vi)   Able to provide reasonable assurance to an entity's management.
(vii)   Geared to the achievement of objectives in one or more separate but overlapping categories. It is 'a means to an end, not an end in itself.

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

Question no. 27
(a)Explain the L. C. Gupta Model under the Predictions of Corporate Failure.

Answer:
Dr. L.C. Gupta's Sickness Prediction Model
Dr. L.C. Gupta made an attempt to distinguish between sick and non-sick companies on the basis of financial ratios. He used a simple non-parametric test for measuring the relative predicting power of different financial ratios. A mixed sample of sick and non-sick companies was made and the companies in the sample were arranged in a single ordered sequence from the smallest to the largest, according to the financial ratio that is tested for its predictive power. Let [profit after tax ÷ Net worth] is a financial ratio that is to be tested for its predictive power. The companies in the sample are arranged in increasing order of this particular ratio. Let the sick companies be denoted by the letter 'S' and the non-sick ones by the letter 'N'. Let us assume that 8 sick companies and 8 non-sick companies are taken for building up the sample. When arranged in a sequential order as stated above, the sequence may result in any pattern as shown below:
(A) S -N-S-N-S-S-N-S-N-N-S-N-S-N-S-N
(B) S -S-S-S-S-S-S-S-N-N-N-N-N-N-N-N
(C) S -S-S-S-N-N-N-N-N-N-N-N-S-S-S-S
(D) S -S-S-N-S-S-N-N-S-S-N-N-S-N-N-N

Observing the pattern of occurrence of 'S' and 'N' a cutoff point is chosen to separate the sick group from the non-sick group. Companies that fall to the left of the cutoff point lie in the sick group while companies that fall to the right of the cutoff point lie in the non-sick group. The cutoff point is so chosen that the number of misclassifications is minimized. The ratio that showed the least percentage classification error at the earliest possible time is deemed to have the highest predicative power. Referring to the four patterns shown above, the pattern of sequence shown in (B) is the most accurate one since the cutoff point will be located exactly midway in the sample group and the percentage of classification error will be zero since there are no misclassifications. Pattern shown in (C) is bound to have a higher error since the sick companies are concentrated on both the extreme ends.
Dr. L.C. Gupta used Indian data on a sample of 41 textile companies of which 20 were sick companies and 21 were non-sick companies. He studied the predictive power of 63 financial ratios and observed that the following two ratios have comparatively better predictive power.
(i) (Earnings before Interest and Taxes) ÷ Sales
and
(ii) (Operating cash flow) ÷ Sales
[Note: Operating cash flow = profit after tax + depreciation]

(b) "Just as diseases are identified by certain symptoms, industrial sickness can be identified by the following symptoms. These symptoms act as leading indicators of sickness" – Do you agree with the statement.

Answer:
"Just as diseases are identified by certain symptoms, industrial sickness can be identified by the following symptoms. These symptoms act as leading indicators of sickness". The statement is true.
If immediate remedial actions are not taken, the sickness will grow to the extent that the organization will find its natural death.

There are the following leading indicators of sickness:
• Continuous reduction in turnover.
• Piling up of inventory,
• Continuous reduction of net profit to sales ratio.

- Short term borrowings M high interest rate,
- Continuous cash losses leading to erosion of tangible net worth,
- Default in payment of interest on borrowings and default in repayment of term loan installments.
- The 'sundry debtors' as well as the 'sundry creditors' keep growing and reaching a disproportionately high level.
- Approaching the banker for temporary overdraft at frequent intervals.
- High turnover of personnel, especially at senior levels,
- Change in accounting procedure with to view to window dressing.
- Delay in finalization of accounts

(c) List the objectives of Generally Accepted Cost Accounting Principles [GACAP].

Answer:
The objectives of GACAP are:
(i) To codify the GACAP as applied in the Indian industry;
(ii) To narrow down diversities in cost accounting practices facilitating the process of development of cost accounting standards;
(iii) To provide a reference source to industry and practitioners in preparation and attestation of Cost Statements, where specific cost accounting standards are yet to be issued;
(iv) To provide a reference source to all the stakeholders in the understanding and interpreting the cost statement;
(v) To provide a base for monitoring the evolution of new concepts and practices in cost accounting and to codify them as and when they become generally accepted;

Question no. 28
(a) State the different Strategic Decision for Risk Management.

Answer:
Strategic Decision for Risk Management:
The following are the different Strategic decisions 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.,
➢ **Risk Avoidance**: 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.
➢ **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.
➢ **Risk Transfer:** It means causing another party to accept the risk. It involves a process of shifting risk responsibility on others. Insurance is one type of Risk Transfer
➢ **Risk Hedging**: It is a systematic process of reducing risk associated with an investment proposal or in some other assignments, where risk is inevitable.
➢ **Risk Diversification**: It involves identifying both systematic and unsystematic risks.
➢ **Risk Sharing**: Taking an insurance coverage for the exposure is the common method of sharing risk
➢ **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.

(b) **"The important principle to consider in an efficient capital market would be that the investors should not hold all their eggs in one basket; they should hold a well diversified portfolio". Do you agree? If so, why?**

Answer:
I agree with the above statement.
In order to diversify risk for the creation of an efficient portfolio (one that allows the firm to achieve the maximum return for a given level of risk or to minimize risk for a given level of return), the concept of correlation must be understood. Correlation is a statistical measure that indicates the relationship, if any, between series of numbers representing anything from cash flows to test data. If the two-series move together, they are positively correlated; if the series move in opposite directions, they are negatively correlated. The existence of perfectly correlated (especially negatively correlated) projects is quite rare. In order to diversify project risk and thereby reduce the firm's overall risk, the projects that are best combined or added to the existing portfolio of projects are those that have a negative (or low positive) correlation with existing projects. By combining negatively correlated projects, the overall variability of returns or risk can be reduced. It shows that a portfolio is containing the negatively correlated projects A and B, both having the same expected return, E, also has the return E, but less risk (i.e., less variability of return) than either of the projects taken separately. This type of risk is sometimes described as diversifiable or alpha risk. The creation of a portfolio by combining two perfectly correlated projects cannot reduce the portfolio's overall risk below the risk of the least risky project, while the creation of a portfolio combining two projects that are perfectly negatively correlated can reduce the portfolio's total risk to a level below that of either of the component projects, which in certain situations may be zero. Combining projects with correlations falling between perfect positive correlation (i.e., a correlation coefficient of +1) and perfect negative correlation (i.e., a correlation coefficient of-1), can therefore reduce the overall risk of a portfolio.

Benefits of Diversification
The gains in risk reduction from portfolio diversification depend inversely upon the extent to which the returns on securities in a portfolio are positively correlated. Ideally the securities should display negative correlation. This implies that if a pair of securities has a negative correlation of returns, then in circumstances where one of the securities is performing badly the other is likely to be doing well and vice versa in reverse circumstances.

Therefore the 'average' return on holding the two securities is likely to be much 'safer' than investing in one of them alone.

(c) Discuss about the Risk Retention. Describe the guidelines that should be followed for retention of the Risk.

Answer:

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. On the other hand, the risk can be so big that it cannot be transferred or insured. Such risks will have to be phased out when the eventuality occurs. War is an example as also are 'Acts of God' such as earthquakes and floods.

The reasons for risk retention can be cited as follows:
(i) While risk in a business is taken to increase its return, risk retention relates to such risks which have no relation to return but are part of an individual's life or organization or a company operational risk can be cited as such a risk that is inherent and needs to be accepted for retention.

(ii) Sometimes, such risks are so small that they are ignored and/or phased out when they surface.

(iii) This method is also useful when the probability of occurrence is very low and a reserve built within the system over a period can take care of such losses arising out of risk retention. This is normally resorted to in businesses against credit risks that are inherent due to marketing on credit basis.

(iv) In some cases, the subject, who is susceptible to risk, also becomes fully aware of the nature of risk. In these situations, there is a certain amount of preparedness in the system due to risk retention.

Certain guidelines relating to risk retention should be followed:
❖ Determine the risk retention level through proper estimation of risk using sales projections, cash flows, contracts, liquidated damages, and guarantees.
❖ Though there is no precise formula for estimation of risks to be retained, statistical averages of such losses over a period of time give an indication to estimate such losses. For instance, bad debts occurring over a period of time are taken into consideration as an estimate to create a reserve for doubtful debts.
❖ It is also necessary to ascertain the capacity for funding a loss arising out of retained risk that is the measure for transferring the risk beyond that level. Risk retention as an exercise and a strategy is attempted mainly in the case of operational risk in business.

Question no. 29
(a) Mention the causes of Corporate Failure. Give their examples.

Answer:
Causes of Corporate Failure:
(i) 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 reduce its sales and the organization can have 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.

(ii) 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) 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.

(vii) 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.

(viii) 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.

(b) Discuss the steps to be taken for preventing the Corporate Failures.

Answer:
It is a fact that some companies perform well and that some under-perform and some fails. In many cases, these companies are led by executives, who are quite experienced and competent.
The following are some steps that can be taken for preventing the Corporate Failures:

➢ **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.

➢ **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.

➢ **Development of environment teaming 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.

➢ **Focus on Research and Development**: Organizations can generate new knowledge by investing and focusing more on R&D. Thus, there will be more ideas of making the products better than their competitors.

Apart from the above, the following points will help in preventing Corporate Failure:
• Organizations need a fully effective and functioning conscience.
• Directors need to be vigilant at all times.
• Financial irregularities can have an exceptionally high impact.
• Fresh faces may occasionally be needed at the top of the organization

It can be concluded from above that the Directors have a great responsibility in preventing Corporate Failures. Further Proper Planning is also critical for the success of a business.

(c) Describe about the Partial Adjustment Process under the Corporate Bankruptcy Prediction Models.

Answer:
Partial Adjustment Process
Partial adjustment models are a theoretic rationale of famous Koyck approach to estimate distributed-lag models. Application of partial adjustment model in bankruptcy prediction can best be explained by using cash management behaviour of the firms as an example.
According to Laitinen and Laitinen (1998), cash management refers to the management of cash from the time it starts its transit to the firm until it leaves the firm in payments. Failure of the cash management can be defined as an imbalance between cash inflows and outflows. This leads to failure usually defined as the inability of the firm to pay its financial obligations as they mature.
Traditionally, cash management behaviour of a firm is described by different models of demand for money, e.g., the quantity theory of demand for money, which assumes that the demand for money does not differ from the demand for any funds in the firm. The most popular and simple approach to the demand for money in this framework is that followed by the inventory cash management approach, where demand for money by a firm is assumed to depend on the volume of transactions. The idea may be summarized as follows.

The actual cash balance of a firm in period t is a multiplicative function of S and i as follows:

$\ln M(t) = \ln D + e_s \ln S(t) + e_i \ln i(t) + u(t)$..[1]

Where;

ln: natural logarithm

M(t): actual cash balance in period t

D: a scale constant

S(t): the volume of transactions

i(t): the opportunity cost

e_s: the elasticity of cash balance with respect to S

e_i: the elasticity of cash balance with respect to i

u(t): a random error variable with standard autoregressive property

Equation [1] is static in nature whose dynamic version presented in partial adjustment form is as below:

$\ln M(t) = y\{\ln D + e_s \ln S(t) + e_i \ln i(t) + u(t)\} + (1-y)M(t-1) + yu(t)$..................[2]

Where y and (1-y) are the weights representing adjustment rate.

The overall classification and prediction process, in this particular example of partial adjustment model, follows the following criterion:

- For a failing firm, absolute values of the elasticity's of cash balance with respect to the motive factors (volume of transactions and the opportunity cost here) will be smaller than for a similar healthy firm;
- For a failing firm, the rate of adjustment y may be even greater than unity and will certainly exceed the rate for healthy firm;
- Validity of the results can be tested by any appropriate technique like Lachenbruch procedure.

Question no. 30
(a) Describe the benefits of Risk Mapping.

Answer:
Benefits of Risk Mapping
- Promotes awareness of significant risks through priority ranking, facilitating the efficient planning of resources.
- Enables the delivery of solutions and services across the entire risk management value chain.
- Serves as a powerful aid to strategic business planning.
- Aids the development of an action plan for the effective management of significant risks.
- Assigns clear responsibilities to individuals for the management of particular risk areas.
- Provides an opportunity to leverage risk management as a competitive advantage.
- Facilitates the development of a strategic approach to insurance programme design.
- Supports the design of the client's risk financing and insurance programmes, through the development of effective/optimal retention levels and scope of coverage etc.

(b) Describe about the Business Risk and Exchange Risk.

Answer:
Business Risk:
A company's business risk is determined by how it invest its funds i.e., the type of projects which it undertakes, while financial risk is determined by how it finances these investments. A company's competitive position, the industries in which it operates, the company's market share, the rate of growth of the market and the stage of maturity all influence business risk. Business risk relates to volatility of revenues and profits of a particular company due to its

market conditions, product mix, input availability, competitive market condition, labour supply etc. The business risk may be due to external factors or internal conditions of a particular business firm. External business risk arises due to change in operating conditions caused by conditions thrust upon the firm which are beyond its control - such as business cycles, Governmental controls etc. Internal business risk is associated with the efficiency with which a firm conducts its operations within the broader environment imposed upon it.

Exchange Risk:

Since the liability of the borrower of the foreign currency financing remains in the currency in which the borrower obtains loan, so at the time of repayment the rupee liability is determined on the basis of the exchange rate prevailing on the date of repayment. The exchange rate fluctuates widely with the passage of time, so the borrower is subject to exposure to exchange rate fluctuations on the outstanding principal of the foreign currency financing. Further if the borrowing is made at a floating rate of interest, there can be substantial variations in the rate of interest with the passage of time, depends on the variations in the LIBOR.

(c) Discuss the Total Loss Distribution.

Answer:

Total Loss Distribution:

Probability distributions can be very useful tools for evaluating the expected frequency and/or severity of losses due to identified risks. In risk management, two types of probability distribution are used: empirical and theoretical. To form an empirical probability distribution, the risk manager actually observes the events that occur, as explained in the previous section. To create a theoretical probability distribution, a mathematical formula is used. To effectively use such distributions, the risk manager must be reasonably confident that the distribution of the firm's losses is similar to the theoretical distribution chosen.

Three theoretical probability distributions that are widely used in risk management are: the binomial, normal, and Poisson