Paper 15 - Business Strategy & Strategic Cost Management

Section A

Question No. 1 & 2 are compulsory. Answer any two questions from the rest.

1. Tangy spices Ltd, the countries' biggest spices marketer has decided to launch a hostile bid for Italy's major spice marketer Chilliano. This is a rare case of an Indian company making an unsolicited hostile bid for a foreign company. The Tangy Spices Ltd. has competencies in Indian spices. The major destination markets for the Tangy spices Ltd. exports have been the Europe and America. The competencies of Chilliano lie in Italian herbs and spices. The Indian company with the takeover wishes to synergies its operations in the world market. It also wants to take advantage of the reach enjoyed by the Italian company in several countries where its products are not being sold presently.

The move of hostile takeover follows Chilliano's rejection to an agreement entered a year back. At that time Chilliano was suffering losses and it offered majority shares at a price of € 2.25. A total of 20% shares were transferred at that time. In one year Chilliano was able to turnaround its operations and the company made handsome profits in the last quarter. The promoters who have residual holding of 35% in the company are reluctant to transfer the shares now. They have rejected the agreement with a plea that the earlier offer price was not sufficient.

Tangy spices Ltd has revised its offer to € 2.95. By this lucrative offer some of the large shareholders of Chilliano reveal their interest for selling their stakes. On the other hand, promoters maintained their position on this matter. Through the process of buying of shares in the market the Tangy spices Ltd. gradually consolidated its holding in Chilliano to 45%. Being a major shareholder they were ready for a takeover. At the same time, Tangy spices Ltd. was trying hard to improve their position so that they do not leave any space for Chilliano's promoters in future.

Read the above case and answer the following questions:
Q (i) What strategic alternative is followed by Tangy spices Ltd? [4]

Answer.
There are different general strategic alternatives which are also known as Grand Strategies.
(1) Stability
(2) Expansion
(3) Retrenchment
(4) Combination
Expansion is the most popular strategy followed by organization. In expansion strategy, organizations can expand their operations through acquisition route. Here Tangy Spicy Limited is following up the expansion strategy by acquiring the Chilliano of Italy.

Q (ii) Is the hostile takeover by an Indian company appropriate? [3]

Answer.
Hostile takeovers are extremely expensive. Acquirer need to be ready to pay extra price than market price of equity. It should be done when a cash rich company sees strategic advantage in that acquisition. Indian companies can do the hostile takeover provided that takeover help them to position much stronger in the market. Additionally, price paid for takeover should be in line with the strengths or values to be achieved from that takeover. For example, Corus acquisition by TATA STEEL is an example of hostile takeover but takeover positioned the TATA as

market leader in steel manufacturing capacity and technologies. So looking at this takeover, it seems if hostile takeover is done with proper long-term strategy than it is quite appropriate for the Indian companies.

Q.(iii) Why the Tangy Spices Ltd. is interested in this takeover? [4]

Answer.
The Tangy Spices Ltd. has competencies in Indian spices. The major destination markets for the Tangy spices Ltd. exports have been the Europe and America. The competencies of Chilliano lie in Italian herbs and spices. Tangy with this takeover will synergies its operations in the world market, particularly in Europe and America—its major exports markets. It also wants to take advantage of the reach enjoyed by the Italian company in several countries where its products are not beng sold presently. Further, rejection of promoters to transfer the shares as agreed in an agreement entered a year back also prompted the Tangy to go for his takeover.

Q.(iv) Why the promoters are reluctant to transfer the shares after the agreement? [4]

Answer.
Around a year back, the promoters of Chilliano had agreed to transfer the equity share to Tangy at € 2.25 per share. But in one year, Chilliano was able to turnaround its operations and the company made handsome profits in the last quarter. The promoters who have residual holding of 35% in the company become reluctant to transfer the shares now. They have rejected the agreement with a plea that the earlier offer price of € 2.25 per share was not sufficient. So, it is a case where promoters either feel that they are not getting right value for their equity or they do not intend sell equity due to increased profitability of company in the recent past.

2. Meters Limited is a company engaged in the designing, manufacturing, and marketing of instruments like speed meters, oil pressure gauges, and so on, that are fitted into two and four wheelers. Their current investment in assets is around ₹ 5 crores and their last year turnover was Rs. 15 crores, just adequate enough to breakeven. The company has been witnessing over the last couple of years, a fall in their market share prices since many customers are switching over to a new range of electronic instruments from the angle of mechanical instruments that have been the mainstay of Meters Limited.

The Company has received a firm offer of cooperation from a competitor who is similarly placed in respect of product range. The offer implied the following:
(i) transfer of the manufacturing line from the competitor to Meters Limited;
(ii) manufacture of mechanical instruments by Meters Limited for the competitor to the latter's specifications and brand name; and
(iii) marketing by the competitor.
The benefits that will accrue to Meters Limited will be better utilization of its installed capacity and appropriate financial compensation for the manufacturing effort. The production manager of Meters Limited has welcomed the proposal and points out that it will enable the company to make profits. The sales manager is doubtful about the same since the demand for mechanical instruments in shrinking. The chief Executive is studying the offer.

Read the above case and answer the following questions:
Q.(i) What is divestment strategy? Do you see it being practised in the given case? Explain. [4]

Answer.
Divestment strategy involves retrenchment of some of the activities in a given business of the company or sell-out of some of the businesses. This strategy is largely followed in the following cases Obsolescence of product/process Business becoming unprofitable High competition Industry overcapacity Retrenchment Strategy also includes turnaround of declining business operations. I don't believe this is being completely followed over here. The company is mainly planning a turnaround of business operation through manufacturing other organization's products in order to better utilize the manufacturing capacity. However, it seems customers are switching from mechanical instruments to electronic instruments, so this strategy should not be viewed as turnaround of business operations or divestment strategy.

Q.(ii) What is stability strategy? Should Meters Limited adopt it? [4]

Answer.
If a firm is opting for stability of business operations by staying in the same business, same product, market and functions, and firm normally maintains same levels of effort as at present, then it is known as stability strategy. The main aim of this strategy is to enhance functional efficiencies, better deployment and utilization of resources. Meters Limited should not adopt the stability strategy. In this strategy, Meters Limited will continue manufacturing the mechanical meters with improved utilization of capacity and reduced costs but w know that market is losing customers base for mechanical meters.

Q(iii) What is expansion strategy? What are the implications for Meters Limited in case it is adopted? [4]

Answer.
Expansion strategy is the most popular strategy and most of the business organizations opt for expansion strategy because this strategy prompts for the growth of business organizations.
There are two key types of expansions strategy
(1) Intensifications
(2) Diversifications
Both of them are growth oriented strategies; the difference lies in the way by which the firm actually pursues the growth.
Intensification involves the following:
Product Development
Market Penetration
Market Development

Diversification involves the following:
Vertically integrated diversification
Horizontally integrated diversification
Concentric diversification
Conglomerate diversification
Yes, company should adopt expansion strategy by adopting intensifications category. In intensification strategy, company can initially focus on product development i.e. developing new electronic instruments and then they can follow market penetration and market development

Q.(iv) What are your suggestions to the Chief Executive? [3]

Answer.
My suggestions to chief executive will be the following: for the time being, till the time new products are developed, we can accept the offer of other organization to manufacture their products for better utilization of capacity but we have to be cautious about competition / sales of products in the same category and that should be properly laid out in the agreement. However, in the long-term, we should focus on new products developments and try to expand product range by including the manufacturing of electronic instruments.

3. (a) What is the difference between the corporate strategy and business strategy ? [2]

Answer.
Corporate strategy is the most general level of strategy in an organisation. In the words of Johnson and Scholes, corporate strategy is concerned with what, type of business, the company as a whole should be in and is therefore concerned with decisions of scope.

Business strategy however relates to how an organisation approaches a particular market, or the activity of a particular business unit.

Accordingly, while corporate strategy states some general level of various strategies, the company would pursue, business strategy contains detailed strategy-at the micro level of the same unit.

(b) Write short note on Merger / Acquisition Strategy. [4]

Answer.

'Merger' is the joining of two separate companies to form a single company. It may be brought about in two ways:

(i) Acquisition of one business unit by another, or

(ii) Creation of a new company by complete consolidation of two or more units.
A Combination of two or more business units in which one acquires the assets and liabilities of the other in exchange for cash or shares and /or debenture, is generally known as 'Merger' through acquisition or absorption. When all the combining units are dissolved and a new company is formed to take over the assets and liabilities of those units against issue of new shares or debentures, it is described as 'amalgamation' or consolidation. Merger by way of acquisition as well as merger by way of amalgamation is widely recognised as desirable strategies of external growth.

Instances of 'Mergers', 'Acquisitions' and 'Amalgamation' are many in India. ACC was formed by an amalgamation of 11 Cement companies.

An example of merger through acquisition is the purchase of the Jamshedpur Bearings Unit of Meta Box Ltd. by TISCO.

Reasons for merger and acquisitions may be

Buyer's motives:

- Increasing the firm's growth rate;.
- Making a good investment;

- Improving the stability of the firm's earnings and sale;
- Balancing product line;
- Diversifying the product line;
- Reducing competition by purchasing a competitor;
- Increasing efficiency and profitability; and
- Tax reasons.

Sellers' motives:

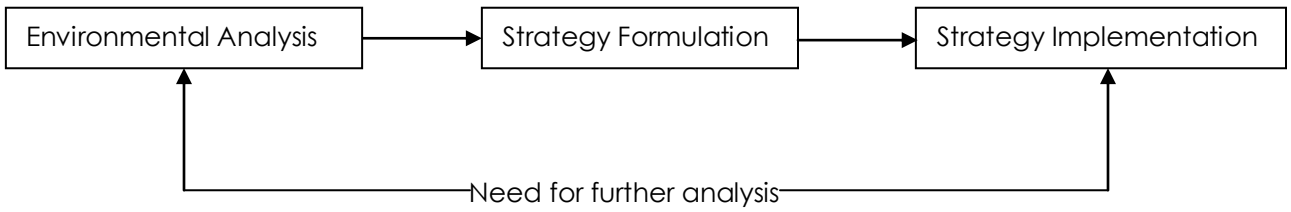
- Increasing the value of owner's stock and investment;
- Acquiring the resources to stabilize operations and make them more efficient;
- Dealing with top management problems;
- Diversifying its owner's family holding beyond a firm and tax reasons.

(c) Explain the linkage between environmental analysis and strategic management.

Answer:
Environmental analysis has three basic goals. First, the analysis should provide an understanding of current and potential changes taking place in the environment. It is important that one must be aware of the existing environment. At the same time one must have a long term perspective too. Second, environmental analysis should provide inputs for strategic decision making. Mere collection of data is not enough. The information collected must be used in strategic decision making.
Third, environmental analysis should facilitate and foster strategic thinking in organisations - typically a rich source of ideas and understanding of the context within which a firm operates. It should challenge the current wisdom by bringing fresh view points into the organisation.

To be specific, the benefits of environmental study are as follows:
(a) Development of broad strategies and long-term policies of the firm.
(b) Development of action plans to deal with technological advancements.
(c) To foresee the impact of socio-economic changes at the national and international levels on the firm's stability.
(d) Analysis of competitor's strategies and formulation of effective counter measures.
(e) To keep one self dynamic.

The following figure shows the linkage between environmental analysis and strategic management.



4. Why Environmental Scanning? Explain in detail. [10]

Answer:
Environmental scanning also referred as the basic monitoring system, is the process of monitoring economic, competitive, technological, socio-cultural, demographic and political setting to determine opportunities for and threats to the firm. Such an analysis involves information compiling, processing and forecasting the above conditions.

Scanning of environmental forces is a stupendous task in view of their rapidly changing character. This is much more different in the case of international environment which is highly complex, turbulent and tumultuous. Even then this exercise is undertaken by every firm and more so by a multinational firm if it has to survive successfully and growamidst highly volatile and dynamic environment. Failure to monitor and evaluate the external environment in today's world can have serious and a very negative consequence.

A multinational firm can set its future directions and targets of performance and formulate the most suitable strategy only when it has been able to visualise and perceive the opportunities and constrain in store for it. Visualisation and perception of business opportunities and threats arising out of developments inside and outside the country are, therefore essential for comprehensive environmental scanning because both the favourable and unfavorable components are inherent in the overall environment.

The environment may offer major profit opportunities due to anticipated economic, sociopolitical and industrial trends and new opportunities in the market/product/customer segments which the company can readily exploit particularly in the case of technological advances. In the same vein, an economic downturn, an adverse social or political condition, structural changes in an industry, market decline or product obsolescence, competitive threats and, above all, tight financial market can pose considerable treats that greatly limit a company's range of choices.

The entire environmental frame work and its component parts, are dynamic and the pace of change is tremendous and such as change affects the market for the firm's present products, the prospects for future and market choices. The environmental changes may threat on the established strategies and call upon the management to be alert to the possibility that the opportunity they have seized will soon expire. They may also provide new opportunities in terms of new market needs which the management can satisfy. No international firm can remain oblivious to these environmental developments which are relevant to its own sphere of operation. It has not to adjust itself in consonance with environmental changes. In order to respond the environment, the management should attempt to predict changes in different environmental forces and discern the opportunities and threats emanating from changes in the environment. It is inevitable because it takes sometime for the enterprise to bring about necessary changes in the organisation. The more energy in international firm devotes to environmental appraisal, the greater is the capacity to survive.

Environmental appraisal enables the firm to get clear idea about the existing competitors, their current operations and future plans. This is inevitable if the firm has to formulate strategy to counteract the competitors'moves. If the competitor is on something, it needs to be investigated, otherwise the competitor's move could lead to his pulling ahead, growing faster and becoming more profitable. Assessment of the foreign competitive situation also is important while considering any foreign environment. Itwill always be in the interest of the international firm to ascertain how many local rivals are there and how good they are, if the rivals are very efficient and their products excellent and their marketing superb, then the situation is much

different than if there are no competitors, or if the firms in the country are inefficient. A multinational firm scanning alternative possibilities might well avoid a country, at least temporarily that offers strong domestic or other foreign competition. This is especially true if the market is relatively small or saturated.

Environment appraisal enables the management to predict future development to make the invisible more visible and, thus, lessen the uncertainty about the future in the face of spectacular, powerful and rapid environmental changes. Those who foresee the critical changes that affect the firm will have a far better chance of being successful than those who will not be able to do so.

Thus, the management has to search the environment to determine which factors pose threat to the firm's present product-market strategy and accomplishment of objectives and which environment forces present opportunities for greater accomplishment of objectives by adjusting the firm's current strategy. No organisation can afford to ignore changes in technology, competitive environment, government policy or changes in social values. If it does not react to the demands of the environment by changing its strategy, it is counting decline or extinction.

Input-output relationship between a firm and environment also necessitates environmental scanning. A firm, in order to function, must produce various inputs as human, capital, managerial, and technical from the environment. These inputs are then converted into goods and services and made available to those living in the environment. Thus, firm's operations regarding acquisition of quantum and kinds of input and distribution of output are subject to environmental influences.

The management must also scan the environment of home as well as host countries so as to fund out what are the diverse claims and expectations of different sections of the society which the firm has to fulfill in order to be socially acceptable. These claims need to be accorded due weight age while formulating overall as well as subsidiary level objectives, policies and strategies.

While scanning environment the management must remember that such an appraisal facilitates spotting of opportunities at the level of an industry rather than at firms or products level. As a result of this aggregation, management decision loses the sharpness needed for choosing a particular product-market. Furthermore, environmental analysis fails to answer whether the desired economic and technological potential existing within a particular industry will be available to the firm. The prospects in an industry as a whole are not necessarily the same for an individual firm particularly when the total industry capacity substantially exceeds the demand.

Along with this, the determination of opportunities or threats is often as much a function of the perception and the attitude of the management as it is of the factor itself. For example, there are two factors, viz., increased government interference and competition increasingly centered on technical specification of the control system as well as the machine. To the management wedded to a philosophy of no government intervention of any type, both factors appear to be a threat. However, to the management with less rigid attitudes a great opportunity is opened up in terms of a chance to break into an existing competitor's historical preserve by product innovation for which the government subsidises part of the best and also instigates the risk through adverse orders for prototypes or trail in factories. Thus, both factors seem equally valid and yet the same basic factors are merely viewed with different attitudes. To the enterprising arrangement, all changes offer new opportunities and the change to generate new alternatives for an existing business.

5. Write a note on Tows Matrix. (10)

Answer.

The TOWS Matrix, is an important strategy formulation matching tool. The TOWS Matrix postulates the following four alternatives strategies.

WT Strategy: The WT or the mini-mini strategy seeks to minimise the weaknesses and threats. Some of the weakness may be overcome or minimised. For example, managerial weakness may be solved by change of managerial personnel, training, etc. weakness due to excess manpower may be addressed to by restructuring and retirement schemes. External threat may be met by strategic alliance, or other type's joint ventures. In some cases an unprofitable business that cannot be revived may be given up.

	Internal Factors	
Internal Factors / External Factors	Internal Strengths (S)	Internal Weakness (W) ....
External Opportunities (O)	SO (Maxi - Maxi) Strategy (maximise strengths and opportunities)	WO (Mini-Maxi) Strategy (minimise weakness and maximise opportunities)
External Threats (T)	ST (Maxi - Maxi) Strategy (maximise strengths and minimise threats)	WT (Mini - Mini) Strategy (minimise weaknesses and threats)

WO Strategy: The WO or mini-maxi-strategy aims at minimising the weaknesses and maximising the opportunities. For example, for a textile machinery manufacturer in India the main weaknesses were dependence on foreign firms for technology and the long time taken to execute an order. The solutions are to give thrust to R&D to develop technology and measures to reduce the time lag so as to be is a better position to exploit to the maximum the growing demand.

ST Strategy: The ST or maxi-mini strategy attempts to use the organisations strengths to deal with the environment threats. For example, a company may use its technological, financial and marketing strengths to combat a new competition. For example, Hindustan Lever has been employing this strategy to fight the increasing competition from companies like P&G, Nirma etc.

SO Strategy: The SO or maxi-maxi strategy, which is the most desirable and advantages strategy, seeks to mass up a firm's strengths to exploit the opportunities. For instance, Hindustan Lever has been augmenting its strengths (by measures such as the merger of BBLIL into HLL and takeover of firms in the food business) to exploit the growing potential of the food business.

(Section B)

Question No.6 is Compulsory. Answer any two questions from the rest.

6. A Company is engaged in the manufactured of edible oil. It has three divisions as under:
(i) Harvesting Oil seeds and transportation thereof to the oil mill.
(ii) Oil Mill, which processes oilseeds and manufactures edible oil.
(iii) Marketing division, which packs the edible oil in 2 kg. Containers for sale at ₹150 each.
The oil Mill has a yield of 1,000 kg. of oil from 2,000 kg. of oilseeds during a period. The marketing Division has a yield of 500 cans of edible oil of 2 kg. each from every 1,000 kg. of oil.
The net weight per can is 2 kg. of oil.
The cost data for each division for the period are as under:

Harvesting division:	
Variable cost per kg. of oilseed	₹2.50
Fixed cost per kg. of oilseed	₹5.00
Oil Mill Division:	
Variable cost of processed edible oil	₹10.00 per kg.
Fixed cost of processed edible oil	₹7.50 per kg.
Marketing Division:	
Variable cost per can of 2 kg. of oil	₹3.75
Fixed cost per can of 2 kg. of oil	₹8.75

The fixed costs are calculated on the basis of the estimated quantity of 2,000 kg. of oilseeds harvested. 1,000 kg. of processed oil and 500 cans of edible oil packed by the aforesaid divisions respectively during the period under review.
The other oil mills buy the oilseeds of same quantity at ₹12.50 kg. in the market. The market price of edible oil processed by the oil mill, if sold without being packed in the marketing division is ₹62.50 per kg. of oil.

Required:

(i) Compute the overall profit of the Company of harvesting 2,000 kg. of oilseeds, processing it into edible oil and selling the same in 2 kg. cans as estimated for the period under review.
(ii) Compute the transfer prices that will be used for internal transfers from (1) Harvesting Division under the following pricing methods:
  1. Shared contribution in relation to variable costs: and
  2. Market price.
(iii) Which transfer pricing method will each divisional manager prefer to use? (3+3+4)

Solution:

(i) Statement showing profitability of the company

(By harvesting 200 kg. of oilseeds, processing into edible oils and selling the same into 2 kg can)

	Harvesting Division	**Oil Mill Division**	**Marketing Division**	**Total**
Output of each department	2,000 kg. of oilseeds	1,000 kg. of oil produced	500 cans of 2 kg. each	
Total Cost				
Variable Cost (₹)	5,000 (2,000 kg. x ₹2.50)	10,000 (1,000 kg. x ₹10)	1,875 (500 x ₹3.75)	16,875
Fixed Cost (₹)	10,000 (2,000 kg. x 5.00)	7,500 (1,000 kg x ₹7.50)	4,375 (500 x ₹8.75)	21,875
Total Cost	15,000	17,500	6,250	38,750
Sales revenue (500 x 5.00)				75,000
Profit				36,250

(ii) Computation of transfer price (for internal transfer under the following pricing methods):

(a) Shared Contribution in relation to Variable costs:

Transfer price from Harvesting Division to Oil Division

= Variable Cost + share Contribution of Harvesting Division in relation to variable Cost
=₹5,000+₹17,222 (Note 2)
=₹22,222

Transfer Price from Oil Mill Division to Marketing Division

=Transfer Price from Harvesting Division to Oil Mill Division + Variable Cost of Oil Mill + Division + Shared Contribution of Oil Mill Division
=₹22,222 + 10,000 + 34,445 (Note 2)
=₹66,667

(b) Market Price:

Transfer Price from Harvesting Division to Oil Mill Division

=Market price of 2,000 kg. of Oilseeds transferred to Oil Mill Division
=2,000 kg. x ₹12.50
=₹25,000

Transfer Price from Oil Mill Division to Marketing Division

=Market Price of 1,000 kg of edible oil
=1,000 kg x ₹62.50
=₹62,500

(iii) Statement showing profitability under different transfer pricing methods

Details	**From Harvesting Division to Oil Mill Division**	**From Oil Mill Division to Marketing Division**	**From Marketing Division to Market 500 cans of 2 kg. each**
Shared Contribution			
Transfer Price (refer to (ii) (i)	₹22,222	₹66,667	₹75,000
Less: (i) Transfer Price	-------	(22,222)	(66,667)
(ii) Variable Cost	(5,000)	(10,000)	(1,875)
(iii) Fixed Cost	(10,000)	(7,500)	(4,375)
Profit	7,222	26,975	2,083
Market Price Method			
Transfer Price (Refer to (ii) (ii)	25,000	62,500	75,000
Less: (i) Transfer Price	------	(25,000)	(62,500)
(ii) Variable cost	(5,000)	(10,000)	(1,875)
(iii) Fixed Cost	(10,000)	(7,500)	(4,375)
Total Cost	10,000	20,000	6,250

Decision:

(i) Division Manager of Harvesting Division would like to use Marketing method for transferring 2,000 kg. of oilseeds to Oil Mill Division, because by use of this method, Profit of Harvesting Division would increase by ₹2,778 (i.e., ₹10,000-7,222) over the shared contribution method.

(ii) The Manager of the Oil Mill Division would prefer Shared Contribution Method to Market Price Method, Because the use of this method (Shared Contribution) would increase profit of Oil Mill Division by ₹6,945 (i.e., 26,9485-20,000) over the Market Price Method.

(iii) The manager of Marketing Division would be benefited by using Market Price Method. This would increase profit of Marketing Division by ₹4,167 (i.e., 6,250-2,083)

Working Notes:

1. Total Contribution= Sales Revenue- Total Variable Cost= ₹75,00-₹16,875=₹58,1525.

2. Amount of Shared Contribution in relation to variable Cost:

Harvesting Division=(₹58,125/16,875) x ₹5,000=₹17,222
Oil Mill Division=(₹58,125/16,875) x ₹10,000=₹34,445
Marketing Division=(₹58,125/16,875) x 1,875=₹6,458

7.

(a) The performance data for the last year and current year of an organization are shown below:

	Last Year	Current Year
Sales	₹80,00,000	92,84,000
Material Cost	50,00,000	61,48,000
Variable Overheads	5,00,000	5,40,000
Labour Cost (fixed)	10,00,000	11,50,000
Fixed Overheads	8,00,000	8,50,000
Total Cost	73,00,000	86,88,000
Profit	7,00,000	5,96,0000

Assess the impact of different factors responsible for decline in profit during the current year, given the following information:

Average price rise in materials	6%
Average increase in rate or expenses (both variable and fixed)	8%
Average increase in wage rates	10%
Average increase in selling price	5.5%

(10)

Solution:

	Sales	% of last year
Current year's Sales	₹92,84,000	105.5%
Less: Due to increase in selling price @ 5.5%	4,84,000	5.5%
Current year's sales at last year price	88,00,000	100.00%
Last year Sales	80,00,000	
Increase in sales volume (It is 10% of Sales of last year.)	8,00,000	
Contribution on extra sales at last year (25/80) x 8,00,000=	=₹2,50,000	
Materials:		
Current year cost	₹61,48,000	106%
Less: Due to price rise @ 6%: (61,48,000÷106?) x 6	3,48,000	
Current year material at last year price	58,00,000	
Less: Last year material consumption plus 10% for increase in sales volume (50,00,000 + 5,00,000)	55,00,000	
Extra consumption	3,00,000	
Variable Overheads		
Current year Cost	₹5,40,000	108%
Less: Due to price rise 8%: (5,40,000 ÷ 108) x 8	40,000	
Current year at last year's price	5,00,000	
Last year overhead plus 10% increase for sales volume (5,00,000 + 50,000)	5,50,000	
Extra variable Cost over last year	(50,000)	

Variance Analysis

Items	Price/Cost	Volume	Policy of the Company	Total
Sales	₹4,84,000 (F)	₹2,50,000 (F)		₹7,34,000 (F)
Material	3,48,000 (A)	3,00,000 (A)		6,48,000 (A)
Variable	40,000 (A)	50,000 (F)		10,000 (F)

overhead				
Labour	1,00,000 (A)		50,000 (A)	1,50,000 (A)
Fixed Overheads	64,000 (A)		14,000 (F)	50,000 (A)
Total	68,000 (A)	Nil	36,000 (A)	1,04,000 (A)

A=Adverse Variance
F=Favourable Variance
Decline in profit ₹1,04,000 due to adverse reasons mentioned above.

(b) The Marketing Director of a Company engaged in the manufacture and sales of a range of products wants to increase the market share and for the purpose proposes to spend ₹5,00,000 on advertisement campaign.

Two alternatives sales budget have been put forward as under:

Products	**A**	**B**	**C**	**D**
Budget: (Units'000)				
A:Before advertisement	360	560	520	300
B:After advertisement	380	590	545	315
The selling prices on variable cost data are as under:				
Selling price/Units	₹20	₹24	₹50	₹42
Direct materials/Unit	₹8	₹11	₹25	₹21
Direct Labour/Units	₹3	₹3	₹6	₹5
Variable Overheads/Unit	₹2	₹2	₹4	₹3

Direct labour hour rate is ₹5 per hour. Fixed overheads amount to ₹51,40,000 per annum. The production capacity is limited to ₹15,00,000 direct labour hour for the ensuring year. A and C however, could be bought on subcontract basis at ₹17 and ₹40 per unit respectively for sale.

Required:

Present a statement showing profitability of the proposed scheme and state weather the investment in the advertisement campaign is worthwhile. **(10)**

Solution:

Calculation of contribution per unit

Particulars	**A**	**B**	**C**	**D**
Selling Price **(i)**	20	24	50	42
Variable cost:				
Direct material	8	11	25	21
Direct Labour	3	3	6	5
Variable overhead	2	2	4	3
(ii)	13	16	35	29
Contribution**(i)-(ii)**	7	8	15	13
Direct Labour Hours p.u.	0.6	0.6	1.2	1.0
Contribution per Direct Labour hr.	11.67	13.33	12.50	13.0
Rank	IV	I	III	II

Calculation of Direct Labour hours required:

As per Budget A (Before advertisement)		**(Hours)**
A	3,60,000 units x 0.6 hr.	=2,16,000
B	5,60,000 units x 0.6 hr.	=3,36,000
C	5,20,000 units x 1.2 hr.	=6,24,000
D	3,00,000 units x 1.0 hr.	=3,00,000
Total		14,76,000

As per Budget B (After advertisement)		(Hours)
A	3,80,000 units x 0.6 hr.	=2,28,000
B	5,90,000 units x 0.6 hrs.	=3,54,000
C	5,45,000 units x 1.2 hrs.	=6,54,000
D	3,15,000 units x 1.0 hrs.	3,15,000
Total		15,51,000

Budget B required 51,000 Direct labour hours in excess of 100% capacity of 15,00,000 Direct Labour hours. Therefore product A or C can be purchased from outside to meet the excess demand.

Profitability statement (Before advertisement)

Particulars	A	B	C	D	Total
Units	3,60,000	5,60,000	5,20,000	3,00,000	
Contribution p.u.	7	8	15	13	
Total Contribution	25,20,000	44,80,000	78,00,000	39,00,000	1,87,00,000
Less: Fixed cost profit					51,40,000
					1,35,60,000

Profitability statement if product C is bought on sub-contract basis for balance hours

Particulars	A	B	D	C	C (Bought out)	Total
Units	3,80,000	5,90,000	3,15,000	5,02,500	42,500	--------
Direct Labour hrs. p.u.	0.6	0.6	1.0	1.2	-------	--------
Total D.L. Hours	2,28,000	3,54,000	3,15,000	6,03,000	--------	15,00,000
Contribution p.u.	7	8	13	15	10	-------
Total Contribution	26,60,000	47,20,000	40,95,000	75,37,500	4,25,000	1,94,37,500
Less: Fixed cost						51,40,000
Profit						1,42,97,500

Profitability statement if product A is bought on sub-contract basis for balance hours

Particulars	B	C	D	A	A (bought out)	Total
Units	5,90,000	5,45,000	3,15,000	2,95,000	85,000	---------
Direct Labour hrs. p.u.	0.6	1.2	1.0	0.6	---------	---------
Total D.L. hrs.	3,54,000	6,54,000	3,15,000	17,70,000	---------	15,00,000
Contribution p.u.	8	15	13	7	3	---------
Total contribution	47,20,000	81,75,000	40,95,000	20,65,000	2,55,000	1,93,10,000
Less: Fixed cost						51,40,000
Profit						1,41,70,000

Incremental profit if product C is bought out	=1,42,97,500-1,41,70,000	=₹1,27,500
Therefore product A can be produced		
Profit if advertisement campaign is taken up	=1,42,97,500-5,00,000	=₹1,42,97,500
Profit, if no advertisement campaign is taken up	=₹1,35,60,000	
Incremental profit if advertisement campaign is taken up	=1,42,97,500-1,35,60,000	=₹7,37,500

Suggestion: Hence it is suggested to take up advertisement campaign and procure product A from outside for excess direct labour hours over the normal capacity.

8.

(a) The most recent audited summarized Balance Sheet of Stop and Shop Financial services is given below:

Liabilities	(₹ in lakhs)	Assets	(₹ in lakhs)
Equity Share capital	65	Fixed Assets:	
Reserve & Surplus	110	-Assets on lease (Original cost: ₹550 lakhs)	375
Term Loan from IFCI	80	-Other fixed assets	50
Public Deposits	150	Investments (on wholly owned subsidiaries)	20
Bank Borrowings	147	Current assets	
Other Current Liabilities	50	-Stock on hire	80
		-Receivables	30
		-Other current assets	35
		Miscellaneous expenditure (not written off)	12
	602		602

The Company intends to enhance its investment in the lease portfolio by another ₹1,000 lakhs. For this purpose it would like to raise a mix of debt and equity in such a way that the overall cost of raising additional funds is minimized. The following constraints apply to the way the funds can be mobilized:

(i) Total debt divided by net owner funds, cannot exceed 10.

(ii) Amount borrowed from financial institutions cannot exceed 25% of the net worth.

(iii) Maximum amount of bank borrowings cannot exceed three times the net owned funds.

(iv) The Company would like to keep the total public deposit limited to 40% of the total debt.

The post-tax costs of different sources of finance are as follows:

Equity	25%
Term Loans	8.5%
Public Deposit	7%
Bank Borrowings	10%

Formulate the funding problem as an LPP.

[Note: Total Debt=Term loans from financial institutions + Public Deposits + Bank Borrowings

Net Worth=Equity Share Capital + Reserve & Surplus

Net Owned Funds=Net Worth – Miscellaneous Expenditures.] **(10)**

Solution:

Step 1. The key decision is to raise funds from equity, term loans, Public deposits and Bank Borrowings to minimize the post-tax costs.

Step 2.

Let,

X_1 be the funds raised from equity.

X_2 be the funds raised from term loans.

X_3 be the funds raised from public deposits

X_4 be the funds raised from bank borrowing.

Step 3. Feasible alternatives are sets of values of X_1, X_2

Where $X_1, X_2, X_3, X_4 \geq 0$

Formulation of LP model

Minimise $Z=0.25X_1 + 0.085X_2 + 0.07X_3 + 0.1X_4$

Subject to constraints:

(i) $\frac{X_2 + X_3 + X_4 + 80 + 150 + 147}{(175 + X_1) - 12} \leq 10x_1$ i.e., $-10X_1 + X_2 + X_3 + X_4 \leq 1,253$

(ii) $(80 + X_2) \leq 0.25\ (175 + X_1)$ i.e., $X_1 - 4X_2 \geq 145$

(iii) $(147 + X_4) \leq 3(X_1 + 175 - 12)X_1$ i.e., $-3X_1 + X_4 \leq 342$

(iv) $(150 + X_3) \leq 0.4(X_2 + X_3 + X_4 + 377)$ i.e., $-4X_2 + 6X_3 - 4X_4 \leq 8$

(v) $X_1 + X_2 + X_3 + X_4 = 1,000$

(vi) $X_1, X_2, X_3, X_4 \geq 0$

(b) Computo Ltd manufactures two parts 'p' and 'Q' for computer Industry.

- P: Annual production and Sales of 1,00,000 units at a Selling price of ₹100.05 per unit.
- Q: Annual production and Sales of 50,000 units at a Selling price of ₹150 per unit.

Direct and Indirect Costs incurred on these two parts are as follows:- (₹ in thousands)

Particulars	P	Q	Total
Direct Material Cost (Variable)	4,200	3,000	7,200
Labour Cost (Variable)	1,500	1,000	2,500
Direct Machining Costs (See Note)	700	550	1,250
Indirect Costs:			
Machine set Up Cost			462
Testing Cost			2,375
Engineering Cost			2,250
Total			**16,037**

Note: Direct Machining Costs represent the cost of machine capacity dedicated to the production of each product. These costs are fixed and are not expected to vary over long-run horizon.

Additional information is as follows:-

Particulars	P	Q
Production Batch Size	1,000 units	500 units
Set up time per batch	30 hours	36 hours
Testing time per unit	5 hours	9 hours
Engineering Cost incurred on each product	₹8,40,000	₹14,10,000

A foreign Competitor has introduced product very similar to 'P'. To maintain the Company's share and profit, Computo Ltd. has to reduce the price to ₹86.25. The Company calls for a meeting and comes up with a proposal to change design of product 'P'. The expected effect of new design is as follows:

- Direct material Cost is expected to decrease by ₹5 per unit.
- Labour Cost is expected to decrease by ₹2 per unit.
- Machine time is expected to decrease by 15 minutes, previously took 3 hours to produce 1 unit of 'P'. The machine will be dedicated to the production of new design.
- Set up time will be 28 hours for each set up.
- Time required for testing each unit will be reduced by 1 hour.
- Engineering Cost and Batch Size will be unchanged.

Required:

(i) Company Management identifies that cost driver for Machine Set-Up Costs is 'set up hours used in batch setting' and for Testing Costs is 'testing time'. Engineering Costs are assigned to products by special study. Calculate the full cost per unit foe 'P' and 'Q' using Activity-Based Costing.

(ii) What is the Mark-up on full cost per unit of P?

(iii) What is the Target Cost per unit for new design to maintain the same mark up percentage on full cost per unit as it had earlier? Assume cost per unit of cost drivers for the new design remains unchanged.

(iv) Will the new design achieve the cost reduction target?

(v) List possible management actions that the Computo Ltd. should take regarding new design. **(3+1+2+2+2)**

Solution:

(i) Computation of Quantities of Cost drivers

Particulars	P	Q	Total
a. Quantity	1,00,000 units	50,000 units	
b. Batch Size	1,000 units	500 units	
c. Number of Batches (a ÷ b)	100 batches	100 batches	
d. Set Up Time per batch	30 hours	36 hours	
e. Total Set Up Time for production (c x d)	3,000 hours	3,600 hours	6,600 hours
f. Testing Time per unit	5 hours	9 hours	
g. Total Testing Time for production (a x f)	5,00,000 hours	4,50,000	9,50,000 hours

Computation of ABC Recovery Rates

Activity	Activity Cost Pool	Cost driver	Cost Driver Quantity	ABC Rate
Machine Set Up	₹4,62,000	Set Up Hours	6,600 set Up Hours	₹70 per hour
Testing	₹23,75,000	Testing Hours	9,50,000 Testing Hours	₹2.50 per hour

Note: Engineering Costs are assigned by special study. Hence ABC Rate is not calculated.

Computation of Cost per unit using ABC system

Particulars	P	Q
Direct Costs:		
Direct Material	42,00,000÷1,00,000=42.00	30,00,000÷50,000=60.00
Direct Labour	15,00,000÷1,00,000=15.00	10,00,000÷50,000=20,000
Direct Machining	7,00,000÷1,00,000=7.00	5,50,000÷50,000=11.00
Sub Total Direct Costs	**64.00**	**91.00**
Indirect Cost:		
Machine Set Up	(₹70x30hrs) ÷1,000 uts=2.10	(₹70x36 hrs) ÷500 uts=5.04
Testing	(₹2.5 phx5 hours)=12.50	(₹2.5 phx9 hours)=22.50
Engineering	8,40,000÷ 1,00,000=8.40	14,10,000÷50,000=28.20
Sub Total Indirect Costs	**23**	**55.74**
Total Costs	**87.00**	**146.74**

(ii) Markup (or) profit per unit of P=Selling price -Full Cost=₹87.0=₹13.05 p.u.
Percentage of Markup to full Cost=₹13.05÷₹87=15% on Cost.

(iii)

New Selling Price (given)	=₹86.25
Less: Target Profit at 15% on Cost i.e. 15/115 on SP=86.25x15/115	=₹11.25
Target Cost for New Design of P	=₹75.00

(iv) Computation of Cost per unit of New Design P

Particulars		P
Direct Costs:	Direct Material	42.00-5.00=37.00
	Direct Labour	15.00-2.00=13.00
	Direct Machining (dedicated machine, hence time saved is not relevant, as the costs continue to be fixed)	7,00,000÷1,00,000=7.00

Sub Total Direct Costs		**57.00**
Indirect Costs:	Machining Set Up	1.96
	Testing	10.00
	Engineering	8.40
	Sub Total Indirect Costs	20.36
Total Estimated Costs of New Design P		**77.36**

Target cost is ₹75.00 only. Hence, the new design will not achieve the cost reduction target.

Note:

It is assumed that output of P will remain at 1,00,000 units, inspite of the reduction in machine time.

To maintain 15% profit margin, probable SP of New Design P will Be ₹77.36 + 15%=₹88.96

(v) Possible management actions for new design

(a) Value Engineering and Value Analysis to reduce the Direct Material Costs.

(b) Time and Motion Study in order to redefine the Direct Labour time and related costs.

(c) Exploring possibility of cost reduction in costs of Direct Machining.

(d) Identifying non-value added activities and eliminating them in order to reduce Overheads.

(e) Analysis of effect of sale of New Design P on sale of Q.

(f) Analysis of sensitivity of sale quantity of New Design P to price from ₹86.25 to ₹88.96.

9.

(a) A Small project is composed of seven activities, whose time estimates (in days) are listed below. Activities are identified by their beginning (i) and ending (j) node numbers.

Activity (I -j)	**1-2**	**1-3**	**1-4**	**2-5**	**3-5**	**4-6**	**5-6**
Duration t_o	2	2	4	2	4	4	6
Duration t_m	2	8	4	2	10	10	12
Duration t_p	14	14	16	2	28	16	30

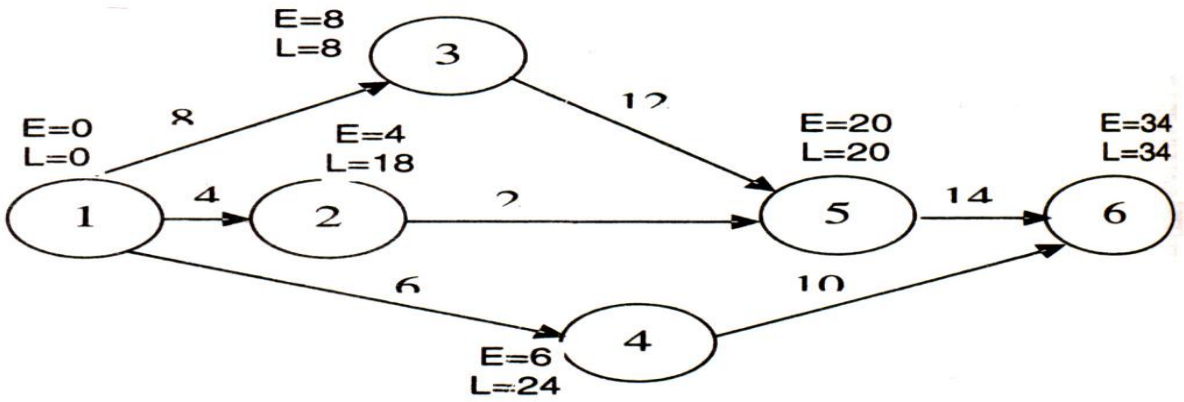
(i) Draw the project Network.

(ii) Find the expected duration and variance for each activity. What is the expected project length?

(iii) If the project due date is 38 days, what is the probability of meeting the due date? (4+3+3)

Solution:

Activity	**T_o**	**T_m**	**T_p**	**T_e**	**Variance**
1 – 2	2	2	14	4	4
1 – 3	2	8	14	8	4
1 – 4	4	4	16	6	4
2 – 5	2	2	2	2	0
3 – 5	4	10	28	12	16
4 – 6	4	10	16	10	4
5 - 6	6	12	30	14	16



From the above, Critical path is 1 – 3 – 5 – 6, Expected Project Duration is 34 days.
Variance of Critical Path Activities = 4 +16 + 16 = 36. Hence standard Deviation = **6 days.**
Standard Normal Variate Z = $(t_r - T_{cp}) \div S.D = (38 - 34) \div 6$ **= 0.67.**
Normal table value of Z = 0.2486. (From the Values from the Normal Tables)
Hence, Probability of completing the project within 38 days = $0.5 \pm NT(Z) = 0.5 + 0.2486 = 74.86\%$

Probability of not completing the project within 38 days = 100% - 74.86% = 25.14%.

(b) What is Margin of Safety? How it is calculated? How it can be improved? (2+1+2)
Answer: The margin of safety refers to sales in excess of the break-even volume. It represents the difference between sales at a given activity level and sales at break-even point. It is important that there should be a reasonable margin of safety to run the operations of the company in profitable position. A low margin of safety usually indicates high fixed overheads so that profits are not made until there is a high level of activity to absorb the fixed costs. A margin of safety provides strength and stability to a concern.

The margin of safety is an important measure, especially in times of receding sales, to know the
real position to operate without incurring losses and to take steps to increase the margin of safety to improve the profitability.

Margin of safety is calculated by using the following formula:

Margin of safety = Actual Sales – Break –even Sales

The higher the margin of safety, the better profitability of the product/ product line. The margin of safety can be improved by adopting any of the following steps:

- Keeping the break-even point at lowest level and try to maintain actual sales at highest level.
- Increase in sales volume
- Increase in selling price
- Change in product mix increasing contribution
- Lowering fixed cost
- Lowering variable cost
- Discontinuance of unprofitable products in sales mix

(c) What is cost of quality? How it can be reduced? (2+3)

Answer: The cost of quality is the sum of cost of conformance, cost of non-conformance and cost of lost opportunity. The quality costs amount to somewhere between 5-25% of turnover depending on industry. The quality cost will be much more if we include the potential loss of business from the affected customers. With cost of quality accounting for such a large proportion of turnover any reduction in quality cost will improve profitability and provide competitive edge to the company.

The quality cost reduction can be achieved in the following two stages :

- First, when prevention costs are increased to pay for the right kind of systems engineering work in quality control, a reduction will occur in rejection, defect and rework of output. This defect reduction means a substantial reduction in both types of failure costs.
- Secondly, a reduction in defective output will have a positive effect on appraisal costs because defect reduction means a reduced need for routine inspection and test activities. It follows that as prevention is increased the need for appraisal decreases. The end result is a substantial reduction in the cost of quality and an increase in the level of quality.