Paper 15 - Business Strategy and Strategic Cost Management

The following table lists the learning objectives and the verbs that appear in the syllabus learning aims and examination questions:

	Learning objectives	Verbs used	Definition
LEVEL C	KNOWLEDGE What you are expected to know	List	Make a list of
		State	Express, fully or clearly, the details/facts
		Define	Give the exact meaning of
	COMPREHENSION What you are expected to understand	Describe	Communicate the key features of
		Distinguish	Highlight the differences between
		Explain	Make clear or intelligible/ state the meaning or purpose of
		Identity	Recognize, establish or select after consideration
		Illustrate	Use an example to describe or explain something
	APPLICATION How you are expected to apply your knowledge	Apply	Put to practical use
		Calculate	Ascertain or reckon mathematically
		Demonstrate	Prove with certainty or exhibit by practical means
		Prepare	Make or get ready for use
		Reconcile	Make or prove consistent/ compatible
		Solve	Find an answer to
		Tabulate	Arrange in a table
	ANALYSIS How you are expected to analyse the detail of what you have learned	Analyse	Examine in detail the structure of
		Categorise	Place into a defined class or division
		Compare and contrast	Show the similarities and/or differences between
		Construct	Build up or compile
		Prioritise	Place in order of priority or sequence for action
		Produce	Create or bring into existence
	SYNTHESIS How you are expected to utilize the information gathered to reach an optimum conclusion by a process of reasoning	Discuss	Examine in detail by argument
		Interpret	Translate into intelligible or familiar terms
		Decide	To solve or conclude
	EVALUATION How you are expected to use your learning to evaluate, make decisions or recommendations	Advise	Counsel, inform or notify
		Evaluate	Appraise or asses the value of
		Recommend	Propose a course of action

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This paper contains 4 questions. All questions are compulsory, subject to instruction provided against each questions. All workings must form part of your answer. Assumptions, if any, must be clearly indicated.

Full Marks: 100 **Time allowed: 3 hours**

1. Read the case and answer the following questions

Dr. Sukumar inherited his father's Dey's Lab in Delhi in 1995. Till 2002, he owned 4 labs in the National Capital Region (NCR). His ambition was to turn it into a National chain. The number increased to 7 in 2003 across the country, including the acquisition of Platinum lab in Mumbai. The number is likely to go to 50 within 2-3 years from 21 at present. Infusion of ₹ 28 crores for a 26% stake by Pharma Capital has its growth strategy.

The lab with a revenue of ₹ 75 crores is among top three Pathological labs in India with Atlantic (₹ 77 crores) and Pacific (₹ 55 crores). Yet its market share is only 2% of ₹ 3,500 crores market. The top 3 firms command only 6% as against 40-45% by their counterparts in the USA.

There are about 20,000 to 1,00,000 stand alone labs engaged in routine pathological business in India, with no system of mandatory licensing and registration. That is why Dr. Sukumar has not gone for acquisition or joint ventures. He does not find many existing laboratories meeting quality standards. His six labs have been accredited nationally whereon many large hospitals have not thought of accreditation; The College of American pathologists accreditation of Dey's lab would help it to reach clients outside India.

In Dey's Lab, the bio-chemistry and blood testing equipments are sanitised every day. The bar coding and automated registration of patients do not allow any identity mix-ups. Even routine tests are conducted with highly sophisticated systems. Technical expertise enables them to carry out 1650 variety of tests. Same day reports are available for samples reaching by 3 p.m. and by 7 a.m. next day for samples from 500 collection centres located across the country. Their technicians work round the clock, unlike competitors. Home services for collection and reporting is also available.

There is a huge unutilised capacity. Now it is trying to top other segments. 20% of its total business comes through its main laboratory which acts as a reference lab for many leading hospitals. New mega labs are being built to Encash preclinical and multi-centre clinical trials within India and provide postgraduate training to the pathologists.

Required:

(i) What do you understand by the term Vision? What is the difference between 'Vision' and 'Mission'? What vision Dr. Sukumar had at the time of inheritance of Dey's Lab? Has it been achieved? [2+2+3]

(ii) For growth what business strategy has been adopted by Dr. Sukumar? [3]

(iii) What is the marketing strategy of Dr. Sukumar to overtake its competitors? [5]

(iv) In your opinion what could be the biggest weakness in Dr. Sukumar's business strategy? [5]

Answer:

(i) A Strategic vision is a road map of a company's future – providing specifics about technology and customer focus, the geographic and product markets to be pursued, the capabilities it plans to develop, and the kind of company that management is trying to create. A strategic vision thus points an organisation in a

particular direction, charts a strategic path for it to follow in preparing for the future, and moulds organizational identity.

A company's Mission statement is typically focused on its present business scope – "who we are and what we do". Mission statements broadly describe an organisation's present capabilities, customer focus, activities, and business makeup. Mission is also an expression of the vision of the corporation. To make the vision come alive and become relevant, it needs to be spelt out. It is through the mission that the firm spells out its vision.

Dr. Sukumar's vision at the initial stage was to turn his one pathological laboratory firm into a national chain of pathological laboratories. He is in the process of achieving the vision as a number of Labs have been opened and others are in pipeline. However, at the same time the market share is low when compared with the external benchmark from US market.

(ii) To a large extent Dr. Dey's Lab has opted the business strategy of internal growth rather than going in for acquisitions or joint ventures. The reason for such a strategy is that Dr. Sukumar does not find many existing laboratories meeting the quality standards. To fund its growth and raise funds it has also given a 26% stake to Pharma Capital.

(iii) Dr. Sukumar's marketing strategy is superior to its competitors. Over a period of time it is able to evolve itself as reference lab for many leading hospitals. This is a testimony of the level of confidence it enjoys among the medical professionals. It provides a high level of customer services because of the following:

Product mix: It possesses technical expertise to conduct 1650 variety of tests.

Quality: The laboratories use modern methods to conduct tests. Even routine tests are conducted with highly sophisticated procedures. Technology such as bar coding and automated registration of patients is also used. Thus there are no mistakes in the identity of samples. There is also daily sanitisation and validation of lab equipments.

Speed: Laboratories are working round-the-clock. Further, using modern systems the company is able to deliver test results faster.

Convenience: There are 500 collection centres for the laboratory, thereby the reach is more. Additionally, system of collection of samples from home also provides convenience to the patients and others.

(iv) A weakness is an inherent limitation or constraint of the organisation which creates strategic disadvantage to it. In the case it is given that Dr Sukumar has not gone for mergers and acquisition as he does not find many prospective laboratories meeting the quality standards. Thus its biggest weakness is its inability to capitalise the opportunities through mergers and acquisitions. Acquisitions and partnerships can help in leveraging the existing goodwill. Many of these labs must be enjoying a lot of goodwill in their region. In fact, a business in the medical field such as a pathological laboratory, trust and faith are important. On account of its size and available resources Dey's Lab could have easily acquired some of these labs and built upon their names. With resources it should be feasible to modernize them to make them compatible with the business ideology and quality systems of the Dey's Lab. However, it appears that the company lacked capability to modernise an existing laboratory.

2. Answer any two questions from (a), (b) and (c): [2 x 15 =30]

(a) (i) Distinguish between Strategic Management and Strategic Planning. [5]

(ii) State the advantages of Strategic Planning. [5]

(iii) List out the characteristics of Learning Organization. [5]

Answer:

(i) The basic difference between Strategic management and Strategic planning are as follows:

Strategic Management	Strategic Planning
1. It is focused on producing strategic results; new markets; new products; new technologies etc.	1. It is focused on making optimal strategic decisions.
2. It is management by results.	2. It is management by plans.
3. It is an organizational action process.	3. It is an analytical process.
4. It broadens focus to include psychological, sociological and political variables.	4. It is focused on business, economic and technological variables.
5. It is about choosing things to do and also about the people who will do them.	5. It is about choosing things to do.

(ii) Strategic planning has following advantages or usefulness:-

(a) According to different research studies, strategic planning contributes positively to the performance of enterprise and predicts better outcomes and isolates key factors of the firm.

(b) It is concerned with the allocation of resources to product market opportunities and concerned to realise the company's profit potential through selected strategies.

(c) It measures the strengths and weaknesses of the firm.

(d) It selects the optimum strategy from the alternatives considering the interest of the firm, personal values of top management and social responsibility of the firm.

(e) With fast changing product market condition, technology economic condition the strategic planning is the only means by which future opportunities and problems can be anticipated by company executives.

(f) It enables executives to provide necessary direction for the firm, to take full advantage of new opportunities and to minimise the risk.

As success of firm depends on multiple factors, so strategic planning is a necessary condition but not sufficient condition for success.

(iii) Characteristics of Learning Organization

There is a multitude of definitions of a learning organization as well as their typologies. According to Peter Senge, a learning organization exhibits five main characteristics: systems thinking, personal mastery, mental models, a shared vision, and team learning.

Systems thinking. The idea of the learning organization developed from a body of work called systems thinking. This is a conceptual framework that allows people to study businesses as bounded objects. Learning organizations use this method of thinking when assessing their company and have information systems that measure the performance of the organization as a whole and of its various components. Systems thinking states that all the characteristics must be apparent at once in an organization for it to be a learning organization. If some of these characteristics are missing then the organization will fall short of its goal. However O'Keeffe believes that

the characteristics of a learning organization are factors that are gradually acquired, rather than developed simultaneously.

Personal mastery. The commitment by an individual to the process of learning is known as personal mastery. There is a competitive advantage for an organization whose workforce can learn more quickly than the workforce of other organizations. Individual learning is acquired through staff training and development, however learning cannot be forced upon an individual who is not receptive to learning. Research shows that most learning in the workplace is incidental, rather than the product of formal training, therefore it is important to develop a culture where personal mastery is practiced in daily life. A learning organization has been described as the sum of individual learning, but there must be mechanisms for individual learning to be transferred into organizational learning.

Mental models. The assumptions held by individuals and organizations are called mental models. To become a learning organization, these models must be challenged. Individuals tend to espouse theories, which are what they intend to follow, and theories-in-use, which are what they actually do. Similarly, organizations tend to have 'memories' which preserve certain behaviours, norms and values. In creating a learning environment it is important to replace confrontational attitudes with an open culture that promotes inquiry and trust. To achieve this, the learning organization needs mechanisms for locating and assessing organizational theories of action. Unwanted values need to be discarded in a process called 'unlearning'. Wang and Ahmed refer to this as 'triple loop learning.'

Shared vision. The development of a shared vision is important in motivating the staff to learn, as it creates a common identity that provides focus and energy for learning. The most successful visions build on the individual visions of the employees at all levels of the organization, thus the creation of a shared vision can be hindered by traditional structures where the company vision is imposed from above. Therefore, learning organizations tend to have flat, decentralized organizational structures. The shared vision is often to succeed against a competitor, however Senge states that these are transitory goals and suggests that there should also be long term goals that are intrinsic within the company.

Team learning. The accumulation of individual learning constitutes Team learning. The benefit of team or shared learning is that staff grow more quickly and the problem solving capacity of the organization is improved through better access to knowledge and expertise. Learning organizations have structures that facilitate team learning with features such as boundary crossing and openness. Team learning requires individuals to engage in dialogue and discussion; therefore team members must develop open communication, shared meaning, and shared understanding. Learning organizations typically have excellent knowledge management structures, allowing creation, acquisition, dissemination, and implementation of this knowledge in the organization.

2. (b)

(i) Discuss the benefits of the strategic alliance. [5]

(ii) State Corporate Portfolio Analysis. Describe its advantages. [3+2]

(iii) List the important characteristics of corporate level strategy. [5]

Answer:

(i) Benefits of Strategic Alliance

Nowadays, strategic alliance has become a common strategy to businesses. Two or more enterprises choose to form a partnership and work cooperatively to achieve their mutually beneficial objectives.

In a plain view, strategic alliance just reflects the desire of enterprises to achieve their independent business objectives cooperatively. But, in the true fact of today's globalizes and complex market place, there is the need to make such a business arrangement in order to gain competitive advantages among the fierce competitors in the market place.

Enterprises that enter into strategic alliance usually expect to benefit in one or more ways. Some of the potential benefits that enterprises could achieve are such as:

(a) Gaining capabilities

An enterprise may want to produce something or to enquire certain resources that it lacks in the knowledge, technology and expertise. It may need to share those capabilities that the other firms have. Thus, strategic alliance is the opportunity for the enterprise to achieve its objectives in this aspect. Further to that, in later time the enterprise also could then use the newly acquired capabilities by itself and for its own purposes.

(b) Easier access to target markets

Introducing the product into a new market can be complicated and costly. It may expose the enterprise to several obstacles such as entrench competition, hostile government regulations and additional operating complexity. There are also the risks of opportunity costs and direct financial losses due to improper assessment of the market situations.

Choosing a strategic alliance as the entry mode will overcome some of those problems and help reduce the entry cost. For example, an enterprise can license a product to its alliance to widen the market of that particular product.

(c) Sharing the financial risk

Enterprises can make use of the strategic arrangement to reduce their individual enterprise's financial risk. For example, when two firms jointly invested with equal share on a project, the greatest potential that each of them stand to loose is only half of the total project cost in case the venture failed.

(d) Winning the political obstacle

Bringing a product into another country might confront the enterprise with political factors and strict regulations imposed by the national government. Some countries are politically restrictive while some are highly concerned about the influence of foreign firms on their economics that they require foreign enterprises to engage in the joint venture with local firms. In this circumstance, strategic alliance will enable enterprises to penetrate the local markets of the targeted country.

(e) Achieving synergy and competitive advantage

Synergy and competitive advantage are elements that lead businesses to greater success. An enterprise may not be strong enough to attain these elements by itself, but it might possible by joint efforts with another enterprise. The combination of individual strengths will enable it to compete more effectively and achieve better than if it attempts on its own.

For example, to create a favorable brand image in the consumer's mind is costly and time-consuming. For this reason, an enterprise deciding to introduce its new product may need a strategic arrangement with another enterprise that has a ready image in the market.

As a conclusion, strategic alliance is beneficial and it can exists in many forms.

(ii) Corporate Portfolio Analysis is used when an organization's corporate strategy involves a number of businesses. When the company is in more than one business, it

can select more than one strategic alternative depending upon demand of the situation prevailing in the different portfolios. It is necessary to analyze the position of different business of the business house which is done by corporate portfolio analysis.

Portfolio analysis is an analytical tool which views a corporation as a basket or portfolio of products or business units to be managed for the best possible returns.

The aim of portfolio analysis is:

1) to analyze its current business portfolio and decide which businesses should receive more or less investment
2) to develop growth strategies, for adding new businesses to the portfolio
3) to decide which business should not longer be retained

Balancing the portfolio – Balancing the portfolio means that the different products or businesses in the portfolio have to be balanced with respect to four basic aspects –

1) Profitability
2) Cash flow
3) Growth
4) Risk

Advantages and Disadvantages of Portfolio Analysis

Portfolio analysis offers the following advantages:

a. It encourages management to evaluate each of the organization's businesses individually and to set objectives and allocate resources for each.
b. It stimulates the use of externally oriented data to supplement management's intuitive judgment.
c. It raises the issue of cash flow availability for use in expansion and growth.

(iii) Important characteristics of corporate-level strategy -

(a) The corporate level strategy is formulated by the top management of the organization.

(b) It is formulated on the basis of a clear and collective point of view about the future.

(c) The corporate level strategy defines the overall direction of the organisation and the broad boundaries based on which the business unit strategy and functional strategy are formulated.

(d) It is formulated on the basis of an analysis of available resources on the one hand and environmental opportunities on the other.

(e) The corporate level strategy deals with decision relating to the two-way flow of resources and information between corporate level and product/service lines and businesses. This is done through a coordination mechanism formulated by the top management with inputs from top management of SBUs.

(f) It is applicable for a long period of time.

2. (c)

(i) Enumerate the merits and demerits of Benchmarking. [3+5]

(ii) Analyze what is meant by the term 'Strategic driff'. [4]

(iii) List the importance of Strategic Evaluation. [3]

Answer:

(i) Merits and Demerits of Benchmarking

Merits

The important merits of benchmarking are summarized as follows:

(a) It increases customer satisfaction.

(b) It leads to significant cost savings and improvements in products and services.

(c) It helps in improving strategic planning by providing assessment of strengths and weaknesses of current process.

Demerits

(a) It increases the diversity of information which must be monitored by management. This increases the potential for information overload.

(b) It may reduce managerial motivation if they are compared with a better resourced rival.

(c) There is a danger that confidentiality of data will be compromised.

(d) It encourages management to focus on increasing the efficiency of their existing business instead of developing new lines of business. As one writely put it: Benchmarking is the refuge of the manager who's afraid of the future.

(e) Successful benchmarking firms may find that they are later overloaded with requests for information form much less able firms whom they can learn little.

(ii) Strategic Drift is defined as:

A subtle and unnecessary shift from an intended course or direction to another one – one that is usually undesirable, at least in a long-term perspective.

Of course we recognize that in some situations shifting may be necessary, but over time and with too many shifts, companies naturally lose focus and become more reactionary, negatively impacting long-term success.

The real problem in veering into a strategic drift becomes apparent when you observe senior executives that start to believe minor turbulence is equal to a major change in the market place. For example:

- A temporary loss of market share, but the market is showing there is no long-term cause for alarm.
- A slower than expected growth at the launch of a new product or the entrance of new competitor, but revenue is still growing.

You MUST have the CERTAINTY to know when you should and should NOT make adjustments and these decisions should be made ONLY after the data shows the change is critical. If not, you too may fall victim to strategic drift.

(iii) Importance of Strategic Evaluation

SEC helps an organization in several ways.

(a) Feedback: SEC offers valuable feedback on how well things are moving ahead. It also throws light on the relevance and validity of strategic choice. It helps to answer critical questions such as: Are we moving in the proper direction? Are our assumptions about major trends are correct? Should we adjust or abort strategy?

(b) Reward: SEC helps in identifying rewarding behaviours that are in tune with formulated strategies. It helps in pinpointing responsibilities for failure as well. Where people find it difficult to stick to a planned course of action due to

circumstances beyond their control, managers can take note of such things and initiate suitable rectification steps immediately.

(c) Future Planning: SEC offers a considerable amount of information and experience to decision makers that can be quite valuable in the formulation of new strategic plans.

3. Read the case and answer the following questions.

The GE India Ltd. has a machining facility specializing in jobs for the aircraft-components market. The previous job-costing system had two direct-cost categories (direct materials and direct manufacturing labor) and a single indirect-cost pool (manufacturing overhead, allocated using direct manufacturing labor-hours). The indirect cost-allocation rate of the previous system for current year would have been ₹230 per direct manufacturing labor-hours.

Recently a team with members from product design, manufacturing, and accounting used an ABC approach to refine its job-costing system. The two direct-cost categories were retained. The team decided to replace the single indirect-cost pool with five indirect-cost pools. The cost pools represent five activity areas at the facility, each with its own supervisor and budget responsibility. Pertinent data are as follows:

Activity Area	Cost-allocation Base	Cost-allocation Rate
Material handling	Parts	₹ 0.80
Lathe work	Lathe turns	0.40
Milling	Machine-hours	40.00
Grinding	Parts	1.60
Testing	Units tested	30.00

Information-gathering technology has advanced to the point at which the data necessary for budgeting in these five activity areas collected automatically.

Two representative jobs processed under the ABC system at the facility in the most recent period had the following characteristics.

Particulars	Job 410	Job 411
Direct materials cost per job	₹ 9,700	₹ 59,900
Direct manufacturing labor cost per job	₹ 750	₹ 11,250
Number of direct manufacturing labor-hours per job	25	375
Parts per job	500	2,000
Lathe turns per job	20,000	60,000
Machine-hours per job	150	1,050
Units per job (all units are tested)	10	200

(i) Compute the manufacturing costs per unit for each job under the previous job-costing system.

(ii) Compute the manufacturing costs per unit for each job under the activity-based costing system.

(iii) Compare the per unit cost figures for Jobs 410 and 411 computed in requirements (i) and (ii). Why do the previous and the activity-based costing systems differ in the manufacturing costs per unit for each job? Why might these differences be important to Tracy Corporation? [4+6+(3+5+2)]

Answer:

(i) Computation of manufacturing costs per unit for each job

Particulars	Job Order 410		Job Order 411	
Direct manufacturing costs:				
Direct materials	₹ 9,700		₹ 59,900	
Direct manufacturing labor ₹ 30 x 25; ₹ 30 x 375	750	₹ 10,450	11,250	₹ 71,150
Indirect manufacturing costs ₹ 230 x n 25; ₹ 230 x 375		5,750		86,250
Total manufacturing costs		16,200		1,57,400
Number of units		÷10		÷ 200
Manufacturing costs per unit		1,620		787

(ii) Computation of manufacturing costs per unit for each job under activity-based costing

Particulars	Job Order 410		Job Order 411	
Direct materials	₹ 9,700		₹ 59,900	
Direct manufacturing costs:				
Direct materials	₹ 9,700		₹ 59,900	
Direct manufacturing labour ₹ 30 x 25; ₹ 30 x 375	750	₹ 10,450	11,250	₹ 71,150
Indirect manufacturing costs:				
Materials handling Re 0.80 x 500; Re 0.80 x 2,000	400		1,600	
Lathe work Re 0.40 x 20,000; Re 0.40 x 60,000	8,000		24,000	
Milling ₹40x 150;₹40x 1,050	6,000		42,000	
Grinding ₹ 1.60 x 500; ₹ 1.60 x 2,000	800		3,200	
Testing ₹30 x 10; ₹ 30 x 200	300	15,500	6,000	76,800
Total manufacturing costs		25,950		1,47,950
Number of units per job		÷ 10		÷ 200
Unit manufacturing cost per job		2,595		739.75

(iii)

	Job Order 410	Job Order 411
Number of units in job	10	200
Costs per unit with prior costing system	₹ 1,620	₹ 787
Costs per unit with activity-based costing	2,595	739.75

Job order 410 has an increase in reported unit cost of 60.18% [(₹ 2,595 – ₹ 1,620) ÷ ₹ 1,620], while job order 411 has a decrease in reported unit cost of 6% [(₹ 739.75 – ₹ 787) ÷ ₹ 787].

A common finding when activity-based costing is implemented is that low-volume products have increases in their reported costs while high-volume products have decreases in their reported cost. This result is also found in requirements 1 and 2 of this problem. Costs such as materials-handling costs vary with the number of parts handled (a function of batches and complexity of products) rather than with direct manufacturing labour-hours, an output-unit level cost driver, which was the only cost driver in the previous job-costing system.

The product cost figures computed in requirements 1 and 2 differ because:

a. The job orders differ in the way they use each of five activity areas.

b. The activity areas differ in their indirect cost allocation bases (specifically, each area does not use the direct manufacturing labour-hours indirect cost allocation base).

The following table documents how the two job orders differ in the way they use each of the five activity areas included in indirect manufacturing costs:

	Usage Based on Analysis of Activity Area Cost Drivers		Usage Assumed with Direct Manufacturing Labour-Hours as Application Base	
Activity Area	**Job Order 410**	**Job Order 411**	**Job Order 410**	**Job Order 411**
Materials handling	20.0%	80.0%	6.25%	93.75%
Lathe work	25.0	75.0	6.25	93.75
Milling	12.5	87.5	6.25	93.75
Grinding	20.0	80.0	6.25	93.75
Testing	4.8	95.2	6.25	93.75

The differences in product cost figures might be important to GE Indian Ltd. for product pricing and product emphasis decisions. The activity-based accounting approach indicates that job order 410 is being undercosted while job order 411 is being overcosted. GE Indian Ltd. may erroneously push job order 410 and deemphasize job order 411. Moreover, by its actions, GE Indian Ltd. may encourage a competitor to enter the market for job order 411 and take market share away from it.

4. Answer any two questions from (a), (b) and (c): [2×15=30 marks]

(a) (i) The Videocon Company is an electronics business with eight product lines. Income data for one of the products (XT-107) for June are:

Revenues, 200,000 units at average price of ₹ 1,000		**₹ 20,00,00,000**
Variable costs		
Direct materials at ₹ 350 per unit	**₹ 7,00,00,000**	
Direct manufacturing labour at ₹ 100 per unit	**2,00,00,000**	
Variable manufacturing overhead at ₹ 50 per unit	**1,00,00,000**	
Sales commissions at 15 % of revenues	**3,00,00,000**	
Other variable costs at ₹ 50 per unit	**1,00,00,000**	
Total variable costs		**14,00,00,000**
Contribution margin		**6,00,00,000**
Fixed costs		**5,00,00,000**
Operating income		**₹ 1,00,00,000**

Delhi Electronics an instruments company, has a problem with its preferred supplier of XT-I07 components. This supplier has had a three-week labour strike. Delhi Electronics approaches the sales representative, Sachin, of the Videocon Company about providing 3,000 units of XT-I07 at a price of ₹ 800 per unit. Sachin informs the XT-I07 product manager, that he would accept a flat commission of ₹ 60,000 rather than the usual 15% of revenues if this special order were accepted. Videocon has the capacity to produce 3,00,000 units of XT-107 each month, but demand has not exceeded 2,00,000 units in any month in the past year.

1. **If the 3,000-unit order from Delhi Electronics is accepted, how much will operating income increase or decrease? (Assume the same cost structure as in June.)**
2. **Production Manager ponders whether to accept the 3,000-unit special order. He is afraid of the precedent that might be set by cutting the price. He says, "The price is below our full cost of ₹ 950 per unit. I think we should quote a full price, or Delhi**

Electronics will expect favored treatment again and again if we continue to do business with them." Do you agree with Production Manager? Explain. [5+5]

Answer:

1. Analysis of special order:

Sales, 3,000 units x ₹ 800		₹ 24,00,000
Variable costs		
Direct materials, 3,000 units x ₹ 350	₹ 10,50,000	
Direct manufacturing labour, 3,000 units x ₹ 100	3,00,000	
Variable manufacturing overhead, 3,000 units x ₹ 50	1,50,000	
Other variable costs, 3,000 units x ₹ 50	1,50,000	
Sales commission	60,000	
Total variable costs		17,10,000
Contribution margin		₹ 6,90,000

Note that the variable costs, except for commissions, are affected by production volume, not sales rupees. If the special order is accepted, operating income would be ₹ 1,00,00,000 = ₹ 6,90,000 = ₹ 1,06,90,000.

2. Whether Production Manager is making a correct decision depends on many factors. He is incorrect if the capacity would otherwise be idle and if his objective is to increase operating income in the short run. If the offer is rejected, Videocon, in effect, is willing to invest ₹ 6,90,000 in immediate gains for-gone (an opportunity cost) to preserve the long-run selling-price structure. Production Manager is correct if he thinks future competition or future price concessions to customers will hurt Videocon's operating income by more than ₹ 6,90,000.

There is also the possibility that Delhi Electronics could become a long-term customer.

(a) (ii) H Ltd. has produced its first 10 units of product B. The customer is enquiring about the cost of a further 30 units of product B. The total cost of the original 10 units was:

Materials	**3,000**
Variable labour costs (500 hours at ₹ 10 per hour)	**5,000**
Variable overheads*	**1,000**
Other overheads**	**1,000**
Machine tool costs***	**2,000**
Total cost	**12,000**

*** Directly affected by variable labour costs.**

**** Estimated at 20% of variable labour costs.**

***** All machine tools can still be used although all costs recovered on first order.**

Use an 80% learning curve to estimate the total costs for a new batch of 30 units of Product B. [5]

Answer:

Machine tool cost is ignored since already absorbed by the first batch.

Labour cost

Cum. Batch of	Y	Total for units ₹

10 units	500	5,000
20 units	500 × .8	8,000
40 units	500 × .8 × .8	12,800

∴ For 30 units ₹12,800 - ₹ 5,000 = ₹ 7,800

Variable overhead = 20% of ₹ 7,800 = ₹ 1,560

Overheads = 20% of ₹ 7,800 = ₹ 1,560

Total estimated cost for additional 30 units (₹)

Materials	9,000
Labour	7,800
Variable O.H.	1,560
Other O.H.	1,560
	19,920

4. (b) (i) A company is organised into two divisions namely A and B produces three products,. K. L and M.

Data per unit are :

		K	L	M
Market price	**(₹)**	**120**	**115**	**100**
Variable costs	**(₹)**	**84**	**60**	**70**
Direct labour hours		**4**	**5**	**3**
Maximum sales potential (units)		**1,600**	**1,000**	**600**

Division B has demand for 600 units of product L for its use. If Division A cannot supply the requirement, Division B can buy a similar product from market at ₹ 112 per unit.

What should be the transfer price of 600 units of L for Division B, if the total direct labour-hours available in Division A are restricted to 15,000? [8]

Answer:

Calculation of contribution per Direct Labour hour (₹)

Particulars		**Product**		
		K	**L**	**M**
Market price		120	115	100
Less: Variable cost		84	60	70
Contribution p.u	(i)	36	55	30
Direct labour hours p.u	(ii)	4	5	3
Contribution per DLH.	(i)/(ii)	9	11	10
Rank		III	I	II

Production	Max Sales	Hrs./ Unit	Production	Hours used	Balance Hrs.
L	1000	5	1000	5000	10000
M	600	3	600	1800	8200
K	1600	4	1600	6400	1800

Spare hours available in Division A = 1800 hrs.

Division A can produce product L Division B in

1800 spare hours = 1800 hrs./5 hrs. p.u. = 360 units of product L

Balance units of product L required by Division B = 600 units - 360 units = 240 units

Labour hours required for 240 units of product L = 240 units X 5 hrs. per unit =1200 hrs.

Opportunity contribution of K per hr. = ₹. 9

∴ Unit cost = 9 hrs. X₹. 5 = ₹. 45

Calculation of Transfer price p.u. (₹)

Variable cost	(600 units × ₹. 60)	36,000
Opportunity cost of contribution lost	(240 units × ₹. 45)	10,800
Total		46,800
Transfer price p.u.	(₹. 46800/600 units)	78

(b) (ii) INTEL Project is having the following activities and their time estimates :

Activity	Predecessor	Time (days)		
		Optimistic (a)	Likely(m)	Pessimistic (b)
A	-	2	4	6
B	A	8	12	16
C	A	14	16	30
D	B	4	10	16
E	C, B	6	12	18
F	E	6	8	22
G	D	18	18	30
H	F, G	8	14	32

Calculate the mean deviation and variance of the project. [3+4]

Answer:

Activity	A (optimistic)	M (most likely)	B (pessimistic)	Te = (a+4m+b) ÷ 6	Variance = [(b-a)/6]²
A	2	4	6	(2+16+6)/6 = 4	[(6-2)/6]² = 4/9
B	8	12	16	(8+48+16)/6 = 12	[(16-8)/6] ² =16/9
C	14	16	30	(14+64+30)/6 = 18	[(30-14)/6] ² = 64/9
D	4	10	16	(4+40+16)/6 = 10	[(16-42)/6] ² = 4
E	6	12	18	(6+48+18)/6 = 12	[(18-6)/6] ² = 4
F	6	8	22	(6+32+22)/6 = 10	[(22-6)/6] ² = 64/9
G	18	18	30	(18+72+30)/6 = 20	[(30-18)/6] ² = 4
H	8	14	32	(8+56+32)76 = 16	[(32-8)/6] ² = 16

4. (c) (i) Explain the theory of constraints? [5]

Answer:

The theory of constraints (TOC) focuses attention on constraints and bottlenecks within the organization which stands in the way for speedy production. The theory was developed by Goldartt and Cox to help managers to improve overall profitability of the concern. The main concept is to maximize the rate of manufacturing outputs. The theory was turned into an accounting system known as Throughput Accounting.

TOC views that the peace of production is guided by the bottleneck within the organization; hence the same should be either removed or their influence to hinder production be minimized.

In the new approach to production management called OPT (optimized production technology), TOC advocates a throughput orientation whereby throughput must be given first priority, inventories second and operational expenses last. The TOC adopts a short-run time horizon and treats all operating expenses (including direct labour but excluding direct materials) as fixed, thus implying that variable costing should be used for decision-making, profit measurement and inventory valuation. In substance, TOC appears to be merely a restatement of contribution per limiting factor; and in reality, TOC deals with a LP problem of maximizing throughput contribution subject to constraint of bottleneck resources.

(c) (ii) A company has developed a special purpose Electronic Security Device and once introduced in the market, the same expected to have a life cycle of 3 years from the time of its introduction in the market before the device becomes obsolete due to technological advancement of other competitive products.

You have been asked by the company to prepare a product life cycle budget.

The following information is available:

	Year I	Year II	Year III
No. of units to be manufactured and sold	**50,000**	**2,00,000**	**1,50,000**
Price per device (₹)	**500**	**400**	**350**
R & D and Design cost (₹)	**9,00,000**	**1,00,000**	**Nil**
Production cost:			
Variable cost per device(₹)	**200**	**150**	**150**
Fixed cost(₹)	**70,00,000**	**70,00,000**	**70,00,000**
Marketing cost:			
Variable cost per device(₹)	**100**	**70**	**60**
Fixed cost(₹)	**30,00,000**	**25,00,000**	**25,00,000**
Distribution cost:			
Variable cost per device(₹)	**50**	**50**	**50**
Fixed cost(₹)	**10,00,000**	**10,00,000**	**10,00,000**

Prepare the budgeted life cycle operating profit.

It has been further indicated that if a discount of 10% is given to customer, the unit to be sold per year will increased by 5%. Would you recommend introduction of such discount?

[4+(5+1)]

Answer:

Preparation of Budgeted Life Cycle Operating Profit

(₹ In Lakh)

	Year I	Year II	Year III	Life Cycle
Sales Revenue	250.00	800.00	525.00	1,575.00
R & D, Design cost	9.00	1.00		10.00
Production cost:				
Variable cost	100.00	300.00	225.00	625.00
Fixed cost	70.00	70.00	70.00	210.00
Marketing Cost:				
Variable cost	50.00	140.00	90.00	280.00
Fixed cost	30.00	25.00	25.00	80.00
Distribution cost:				
Variable cost	25.00	100.00	75.00	200.00
Fixed cost	10.00	10.00	10.00	30.00
	294.00	646.00	495.00	1,435.00
Operating profit	(44.00)	154.00	30.00	140.00

Operating results if discount given:

WN: Revised sales revenue	Total Units X SP (₹)	=Total (₹ Lakh)
Year I	50,000+ 5%=52,500 X 450	=236.25
Year II	2,00,000+5%=2,10,000X 360	=756.00
Year III	1,50,000+5%= 1,57,500X 315	=496.12
		1,488.37

Budgeted Life Cycle Profit (With discount of 10% to customers and sales increase by 5%)

(In ₹ Lakh)

	Year I	Year II	Year III	Total Life Cycle
Sales Revenue	236.25	756.00	496.12	1,488.37
R & D, Design	9.00	1.00		10.00
Production cost:				
Variable	105.00	315.00	236.25	656.25
Fixed	70.00	70.00	70.00	210.00
Marketing Cost:				
Variable	52.50	147.00	94.50	294.00
Fixed	30.00	25.00	25.00	80.00
Distribution Cost:				
Variable	26.25	105.00	78.75	210.00
Fixed	10.00	10.00	10.00	30.00
	302.75	673.00	514.50	1,490.25
Operating profit	(66.50)	83.00	(18.38)	(1.88)

The second alternative is not acceptable, as that would result in overall loss during the life cycle.