PAPER – 15 - BUSINESS STRATEGY & 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

Paper 15 - Business Strategy and Strategic Cost Management

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

Fastfix is a small company operating in a single city. Its business is repairing laptops. It has earned a good name for its fair charges and speedy delivery. For the next five years, the environment offers the following information:

Many school students are being given laptops by the school themselves and this trend is likely to continue for another five years. College students and coaching centres provide new laptops to all the students during the admission. The fees are inclusive of these costs. Tablets are first replacing laptops in certain market segments and models are changing every six months. If there are major repairs, richer people discard the products and go in for new products or newer versions. However, there are rural markets and certain parts of urban markets which will still be interested in the low cost repaired and re - sold products.

Considering the above case of Fastfix it will limit its operations to only one city. You are required to give:

(i) A vision statement;
(ii) A mission statement;
(iii) Does SWOT analysis exist?
(iv) Some parameters that could be used in such the above situation relating to the financial and growth perspectives in a Balance Score Card (BSC).
(v) Explain the characteristics of Mission Statement.

[1+2+6+4+7]

Answer:

(i) Vision Statement:

Our Company intends to provide the best quality of repairs to laptops in the fastest possible time anywhere in the city with the most reasonable changes to customers.

(ii) Mission Statement:

We deliver at customers" doorstep their fully functional laptops with minimum down times for customers while ensuring:

(a) Timely delivery as promised:
(b) Reasonable charges:
(c) Good quality of services;
(d) Replacement of parts by genuine parts based on genuine needs;
(e) Pick up of faulty laptops; and
(f) Offer stand by laptops as per customer requests.

(iii) SWOT Analysis:

- **Strengths:**

  Access to standard parts that normally fail in laptops, network of trained employees who have thorough job knowledge, available loyal customers, less time in delivery and perfect commitment.

- **Weakness:**

  Going beyond the scope of faults recognised by the customers, often leading to cost over runs while preventing future repairs calls.

• **Opportunities:**
Branches may be opened in schools/colleges/big coaching centres. Business can be extended to sale of reworked computers in ready and going markets, preventing maintenance services, annual maintenance contracts, upgrades and compatibility addition with new peripherals, etc.

• **Threats:**
Unless tablet markets also are created to, there is a threat to long term survival. Threats from one stop shops for repairing all types of mobiles/computers/laptop/tablets/ i-phones/smart phones, etc. Threats of obsolescence resulting in non-availability of spares.

(iv) Balance Score Cards (BSC):

Financial perspective:
Revenue from repairs, average job order cost, total spares purchases, delivery costs, (revenue per jobless variable cost per job) as a % of revenue par job, debtors management (target nil), etc.

Learning/innovation/growth perspectives:
Number of employees trained, number of new products repaired, number of new spares used, machinery used for cleaning/servicing, new logistics management, service call tracking, repair status on -line tracking, etc.

(v) Characteristics of a Mission Statement:

In order to be effective, a mission statement should possess the following seven characteristics:

- **Feasible –** a mission should always aim high but it should not be an impossible statement.
- **Precise –** a mission statement should not be so narrow as to restrict the organisation's activities, nor should it be too broad to make itself meaningless.
- **Clear –** a mission should be clear enough to lead to action. It should not just be a high sounding set of platitudes meant for publicity purposes.
- **Motivating –** a mission statement should be motivating for members of the organization and of the society and they should feel it worthwhile working for such an organization or being its customers.
- **Distinctive –** a mission statement which is indiscriminate is likely to have little impact.
- **Major Components of Strategy –** a mission statement, along with the organizational purpose should indicate the major components of the strategy to be adopted.
- **It should indicate how objectives are to be accomplished –** besides indicating the broad strategies to be adopted; a mission statement should also provide clues regarding the manner in which the objectives are to be accomplished.

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

(a)(i) Explain in brief the different competitive strategies for competition globally in global industries. Give one example in each strategy. [8]

Answer:

Competition in global industries poses a different kind of challenges because it cuts across national boundaries and international or global forces come into play. These forces create, among others, two distinctive pressures:

- Cost pressure because of Global competition, and
- Pressure for local responsiveness that is adoption to local needs or values and consumer tastes and preferences. For some products costs pressure may be more, and for some others, the need for local adoption is more. Guided by these two factors and production

structure, companies which wise to compete globally, generally adopt one of the four strategies:

a. International strategy;
b. Multi - domestic strategy;
c. Global strategy, and
d. Transnational strategy.

International strategy:
It can be adopted for those products and services which are not available in some countries and can be transferred from other countries. Some examples are: Kellogg's, Indian software and Indian handicrafts.

Multi - domestic strategy:
It is almost opposite of international strategy it involves high degree of local responsiveness or local content. Products are highly customized to suit local requirements or conditions. Some examples are: Asian Paints (paints in general) and Indian garments.

Global strategy:
Global strategy suits companies which make highly standardized sophisticated products, and are in a position to reap benefits of economies of scale and experience effects. These also include high technology products which have universal applicability and hardly require any local adoption. Examples are: Intel, Motorola, Microsoft, Wal-Mart and Marks & Spenser also.

Transnational strategy:
It is the most difficult strategy to follow because this is based on a combination of two apparently contradictory factors, i.e., cost effectiveness and local adoption but this may be a global strategy, because in global business, there is always a price pressure or cost pressure; and also the need to make the product as close to a particular country's expectation as possible to maximize value offering. Some good examples are: Caterpillar, McDonald's, and Coca -Cola, Pepsi, Domino's Pizza, etc.

(ii) "Internal Growth (often called 'Organic Growth') is where strategies are developed that build on the business' own capabilities and sources." —Mention different means by which such growth is achieved. [2]

Answer:

Organic growth, also called internal growth, is based on investing in what the business already does. This type of growth can be achieved by –

- **Expanding product range –**

Once a product is established on the market, further related products can be introduced.

- **Targeting new markets -**

Selling the products to the new market sectors.

- **Expanding the distribution network** -

Products available in more places, and

- **Benefiting from economies of scale** -

Reduce the costs, which should gain new customers.

(iii) Describe the things which are to be considered by an industry at the time of competitive dynamics analysis. [5]

Answer:

Competitive dynamics is the analysis of competition at the action and response level to predict how a firm will act or react against opponents.

First, When analyzing the competitive dynamics of any industry initially look at what are the risks of someone else moving into the market and evaluate whether there are any barriers to entry in terms of e.g. brand loyalty, vast amount of capital needed, limited distribution access or may be absolute cost advantage.

Secondly, look at whether the buyers in the given industry has any specific bargaining power which could be the case if e.g. there only are a limited number of big powerful buyers or in case there are many substitute products.

Thirdly, look at the potential risk of a substitute product entering the market.

Fourthly, evaluate the bargaining power of the suppliers by looking at the number of suppliers and their potential for switching production to something else or finding another buyer.

Fifth, look at the competitive rivalry among the companies in the same industry

(b).(i) Distinction between Strategic Management and Strategic Planning. [5]

Answer:

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

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

(ii) Discuss the benefits of Strategic Alliance. [5]

Answer:

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:

• 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.

• 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.

• 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 stands to lose is only half of the total project cost in case the venture failed.

• 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.

• 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.

(iii) Discuss about the Organizational Development and its characteristics. [5]

Answer:

Organizational Development:- Organizational development (OD) is a complex educational strategy designed to increase organizational effectiveness and wealth through planned involvement by a consultant using theory and techniques of applied behavioural science.

Characteristics of OD

- It is educational strategy, which attempts to bring about a planned change.
- It is concerned with improving organizational climate and culture.
- It related to real organizational problems instead of hypothetical classroom cases.
- It uses sensitivity training methods and emphasizes the importance of experimentally based training.
- Its change agents are almost external consultants outside of the organization.
- External change agents and internal organization executives establish a collaborative relationship involving mutual trust and influence, and jointly determined goals.
- It provides feedback data and information to the participants.
- It is a long-term approach concerned with people for increasing organizational effectiveness.
- It is research based as most of its interventions are based on research findings.

(c) (i) " Risk Reduction is a viable goal of diversification" - Do you agree with this statement. Discuss it. [6]

Answer:

Analysts and academics have suggested that one of the purposes of diversification is to reduce the risk that is inherent in a firm's variability in revenues and profits over time. In essence, the argument is that if a firm enters new products or markets that are affected differently by seasonal or economic cycles, its performance over time will be more stable. For example, firm manufacturing lawn mowers may diversify into snow blowers to even out its annual sales. Or a firm manufacturing a luxury line of household furniture may introduce a lower-priced line since affluent and lower-income customers are affected differently by economic cycles.

At first glance the above reasoning may make sense, but there are some problems with it. First, a firm's stockholders can diversify their portfolios at a much lower cost than a corporation. Second, economic cycles as well as their impact on a given industry (or firm) are difficult to predict with any degree of accuracy.

Notwithstanding the above, some firms have benefited from diversification by lowering the variability (or risk) in their performance over time. Consider Emerson Electronic.

Emerson Electronic is a ₹16 billion manufacturer that has enjoyed an incredible run—43 consecutive years of earnings growth! It produces a wide variety of products, including measurement devices for heavy industry, temperature controls for heating and ventilation systems, and power tools sold at Home Depot. Recently, many analysts questioned Emerson's purchase of companies that sell power systems to the volatile telecommunications industry. Why? This industry is expected to experience, at best, minimal growth. However, CEO David Farr maintained that such assets could be acquired inexpensively because of the aggregate decline in demand in this industry. Additionally, he argued that the other business units, such as the sales of valves and regulators to the now-booming oil and natural gas companies, were able to pick up the slack. Therefore, while net profits in the electrical equipment sector (Emerson's core business) sharply decreased, Emerson's overall corporate profits increased 1.7 percent.

In summary, risk reduction in and of itself is rarely viable as a means to create shareholder value. It must be undertaken with a view of a firm's overall diversification strategy.

(ii) "A strategy decision making is a complex process. It is made by considering important issues." - Discuss it. [7]

Answer:

- **Criteria for decision-making:** The process of decision-making requires objective setting. The objective is set up according to Rational-Analytical criteria to get the maximum gain or according to Intuitive-Emotional criteria to get satisfactory result, or according to Political-Behavioural criteria where the firm moves towards its objectives in small, logical and incremental steps. In this way, objectives serve as the criteria for decision-making.

- **Rationality in decision making:** Rationality means exercising a choice from alternative courses of action in such a way that it should give the best possible result. According to economists (maximises) a decision will be rational if it leads to profit maximisation. According to behaviourists (satisfactory) rationality means bounded condition imposed by limited capacity of men. According to Incrementalilsts rationality means consideration of bargain among all interested parties existing in an organisation.

- **Creativity in decision making: -** Decision must be original and creative by considering underlie strategy, including preferences of managers, their attitude towards risk, corporate obligations to society & interested parties.

- **Variability in decision making: -** It is a common observation that, given an identical set of conditions two decision makers may reach totally different conclusions. This happen due to variability in decision-making. Therefore, in a unique situation, there are no set formulas that can be applied in strategic decision-making.

- **Person related factors in decision making: -** There are a lot of person related factors that play a role in decision making. Some of these are [a] age, knowledge, risk-taking ability, creativity which have positive role in strategic decision making. [b] Cognitive styles, which help to understand the information and to interrelate, integrate the variables. [c] Values, which are important in matters of social responsibility and business ethics issues.

- **Individual vs. Group Decision making: -** Due to differences in person related factors; there are individual differences among decision makers. These differences matter in strategic decision making. So it is necessary that the decision must be made with a perspective of understanding, and anticipating the major implication and with requisite authority to allocate resources for implementation of the decisions.

- **Future oriented and long-term prosperity: -** This decision is based on future forecasting and it is expected to have significant impact on firm's future prosperity. So the approach, which has long term commitment, should be adopted.

(iii) Explain the uses of strategic Group Analysis. [2]

Answer:

- Helps identify who the most direct competitors are and on what basis they compete.
- Raises the question of how likely or possible it is for another organization to move from one strategic group to another.
- Strategic Group mapping might also be used to identify opportunities.
- Can also help identify strategic problems.

3. Read the case and answer the following questions

LIC Housing Finance helps prospective homeowners find low-cost financing and assists existing homeowners in refinancing their current loans at lower interest rates.

LIC Housing charges clients 0.5% of the loan amount it arranges. In its 2014 static budget, LIC Housing assumes the average loan amount will be ₹20,00,000. Budgeted cost data per loan application for 2015 are

- **Professional labor: 6 hours at a rate of ₹400 per hour**
- **Loan filing fees: ₹1,000**
- **Credit-worthiness checks: ₹1,200**
- **Courier mailings: ₹ 500**

Office support is budgeted to be ₹3,10,000 per month. LIC Housing Finance views this amount as a fixed cost.

Required:

1. **Prepare a static budget for November 2015 assuming 90 loan applications.**
2. **Prepare a Level 2 variance analysis identifying sales-volume and flexible-budget variances for LIC Housing Finance for November 2015. Actual loan applications in November 2015 were 120, and the average loan amount was ₹22,40,000. Other actual data for November 2015 were**
   - **Revenue: ₹13,44,000**
   - **Professional labor: 7.2 hours per loan application at ₹420 per hour; total cost ₹3,62,880**

- **Loan filing fees: ₹1,000 per loan application; total cost ₹1,20,000**
- **Credit-worthiness checks: ₹1,250 per loan application; total cost ₹1,50,000**
- **Courier mailings: ₹540 per loan application; total cost ₹64,800**
- **Office support costs: ₹3,35,000**

3. **Compute professional labor price and efficiency variances for November 2015. (Compute labor price on a per-hour basis).**
4. **What factors would you consider in evaluation the effectiveness of professional labor in November 2015? [3+(3+5)+5+4]**

Solution:

Static Budget

1.	Revenue (90 × 0.5 per cent × ₹20,00,000)	₹ 9,00,000
	Variable costs:	
	Professional labor (6 × ₹400 × 90)	2,16,000
	Loan filing fees (₹1,000 × 90)	90,000
	Credit-worthiness checks (₹1,200 × 90)	1,08,000
	Courier mailings (₹500 × 90)	45,000
	Total variable costs	4,59,000
	Contribution margin	4,41,000
	Fixed costs	3,10,000
	Operating income	1,31,000
2.	Flexible budget for November 2015:	
	Revenue (120 × 0.5 per cent × ₹20,00,000)	₹12,00,000
	Variable costs:	
	Professional labor (6 × ₹400 × 120)	2,88,000
	Loan filing fees (₹ 1,000 × 120)	1,20,000
	Credit-worthiness checks (₹1,200 × 120)	1,44,000
	Courier mailings (₹500 × 120)	60,000
	Total variable costs	6,12,000
	Contribution margin	5,88,000
	Fixed costs	3,10,000
	Operating income	₹2,78,000

Level 2 Analysis

	Actual Results	Flexible-Budget Variances	Flexible Budget	Sales-Volume Variances	Static Budget
	(1)	(1)-(3)	(3)	(3)-(5)	(5)
Loans	120	0	120	30 F	90
Revenue	₹13,44,000	₹1,44,000 F	₹12,00,000	₹3,00,000	₹9,00,000
Variable costs:					
Professional labor	3,62,880	74,880 U	2,88,000	72,000 U	2,16,000
Loan filing fees	1,20,000	0	1,20,000	30,000 U	90,000
Credit-worthiness checks	1,50,000	6,000 U	1,44,000	36,000 U	1,08,000
Courier mailings	64,800	4,800 U	60,000	15,000 U	45,000
Total variable costs	6,97,680	85,680 U	6,12,000	1,53,000 U	4,59,000
Contribution margin	6,46,320	58,320 F	5,88,000	1,47,000 F	4,41,000
Fixed costs	3,35,000	25,000 U	3,10,000	0	3,10,000
Operating income	₹ 3,11,320	₹ 33,320 F	₹ 2,78,000	₹ 1,47,000	₹ 1,31,000

₹ 33,320 F — Total flexible-budget variance

₹ 1,47,000 F — Total sales-volume variance

₹ 1,80,320 F — Total static-budget variance

3.

Flexible Budget Actual Costs Incurred (Actual Input Qty. × Actual Price)	Actual Input Qty. × Budgeted Price	(Budgeted Input Qty. Allowed for Actual Output x Budgeted Price)
(1)	(2)	(3)
(120 × 7.2 × ₹ 420)	(120 × 7.2 × ₹400)	(120 × 6.0 × ₹ 400)
864 hr. × ₹ 420/hr.	864 hr. × ₹ 400/hr.	720 hr. × ₹ 400/hr.
₹ 3,62,880	₹ 3,45,600	₹ 2,88,000

₹ 17,280 U — Price variance

₹ 57,600 U — Efficiency variance

₹ 74,880 U — Flexible-budget variance

4. Effectiveness refers to the degree to which a predetermined objective is accomplished. One objective of LIC Housing Finance professional labor is to maximize loan-based revenue (0.5 per cent of loan amount × number of loans). The professional staff has increased loans from a budgeted 90 to 120, a significant increase. Additionally, the average loan amount increased from a budgeted ₹ 20,00,000 to ₹ 22,40,000. The result is an increase in revenue from the budgeted ₹ 9,00,000 to actual ₹ 13,44,000. With both a higher number of loans and a higher average amount per loan, there was an increase in the effectiveness of professional labor in November 2015.

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

4. (a) (i) Write short notes on Price Discrimination. [4]

Answer:

Price discrimination means charging different prices and it takes various forms according to whether the basis is customer, product, place or time.

Price discrimination is possible if the following conditions are satisfied -

(a) Segmentable Market: The market must be capable of being segmented for price discrimination.
(b) No resale: The customers should not be able to resell the product in another segment at a higher price.
(c) No competition: Competitors' underselling in the segment of higher prices should not be possible.

Forms of Price Discrimination:

(a) Based on customers: The same product is charged at different prices to different customers. It is however, potentially disruptive of customer relations.
(b) Based on product version: A slightly different product is charged at different price regardless of its cost-price relationship, e.g. a table with wooden top is sold at ₹4,000, whereas a table with sunmica top is sold at ₹6,000. The higher premium for improved products may not be only due to higher production cost.
(c) Based on place: An example of this method is the seats in cinema theatre where the front seats are charged at lower rates than the back seats.
(d) Based on time: An example of this method is the practice of giving off- season concession in sale of fans or refrigerators just after the summer season. The higher prices charged during the season periods are called Peak Load Prices.

4. (a) (ii) A Manufacturer produces 3 products whose cost data are as follows -

Particulars		X	Y	Z
Direct Materials (₹/Unit)		32.00	76.00	58.50
Direct Labour:				
Dept.	Rate/hour (₹)	Hours	Hours	Hours
I	2.50	18	10	20
II	3.00	5	4	7
III	2.00	10	5	20
Variable Overheads (₹)		8	4.50	10.50

Fixed Overheads ₹ 4,00,000 per annum.

The budget was prepared at a time, when market was sluggish. The Budgeted Quantities & Selling Prices are as under -

Product	Budgeted Quantity (Units)	Selling Price / unit (₹)
X	19,500	135
Y	15,600	140
Z	15,600	200

Later, the market improved and the Sales Quantities could be increased by 20% for product X and 25% each for products Y and Z. The Sales Manager confirmed that the increased Sales could be achieved at the prices originally budgeted. The Production Manager stated that the output could not be increased beyond the budgeted level due to the limitation of Direct Labour Hours in Department II.

Required:

1. **Prepare a Statement of Budgeted Profitability.**
2. **Set Optimal Product Mix and calculate the Optimal Profit.** **[5+6]**

Answer:

1. Statement showing Budgeted Profitability

(in ₹)

Particulars	X	Y	Z
1. Selling Price per unit	135.00	140.00	200.00
2. Variable Cost per unit			
(a) Direct Material per unit	32.00	76.00	58.50
(b) Direct Labour per unit			
Department I	18×2.50 = 45.00	10×2.50 = 25.00	20×2.50 = 50.00
Department II	5×3.00=15.00	4×3.00 = 12.00	7×3.00 = 21.00
Department III	10×2.00 = 20.00	5×2.00 = 10.00	20×2.00 = 40.00
Total	80.00	47.00	111.00
(c) Variable OH	8.00	4.50	10.50
Total Variable Cost per unit (a+b+c)	120.00	127.50	180.00
3. Contribution per unit (1-2)	15.00	12.50	20.00
4. No. of Units Sold (Original Budget)	19,500	15,600	15,600
5. Total Contribution	2,92,500	1,95,000	3,12,000
6. Gross Contribution from all products			7,99,500
7. Less: Fixed OH			(4,00,000)
8. Budgeted Profit			3,99,500

2. Statement showing No. of Direct Labour hours used presently (in hours)

Department	X	Y	Z	Total
I	19,500 ×18	15,600 × 10	15,600 × 20	8,19,000

II	19,500 × 5	15,600 × 4	15,600 × 7	2,69,100
III	19,500 × 10	15,600 × 5	15,600 × 20	5,85,000
Total Cost	6,43,500	2,96,400	7,33,200	16,73,100

3. Statement showing ranking of products - based on Department II Labour hours

Note: It is given that Department II Labour Hours are limited, so it constitutes the Key Factor.

Particulars	X	Y	Z	Total
a. Contribution per unit (WN 1)	15.00	12.50	20.00	
b. Labour hours required - Department II	5	4	7	
c. Contribution per Labour Hour of Dept. II	3.00	3.125	2.857	
d. Rank - based on above	II	I	III	
e. Revised Output required	19,500 + 20% = 23,400	15,600 + 25% = 19,500	15,600 + 25% = 19,500	
f. Time required in Dept. II to achieve Revised Output (5 × 2)	1,17,000	78,000	1,36,500	3,31,500
g. Allocation of available hours based on rank	1,17,000	78,000	74,100 (b/f)	2,69,100 (WN2)
h. Possible Production as per hrs allocated (7÷2)	23,400	19,500	10,585	
i. Total Contribution (1× 8)	3,51,000	2,43,750	2,11,700	
j. Gross Contribution from all products	8,06,450			
Less: Fixed OH	(4,00,000)			
k. Optimum Profit	4,06,450			

4. (b) (i)

J Company has the capacity of production of 80,000 units and presently sells 20,000 units at ₹ 100 each. The demand is sensitive to Selling Price and it has been observed that for every reduction of ₹ 10 in Selling Price, the demand is doubled.

Required:

(i) What should be the Target Cost at full capacity, it Profit Margin on Sale is 25%?

(ii) What should be the cost reduction scheme if at present 40% of Cost is variable, with same % of profit?

(iii) If Rate of Return desired is 16%, what will be the maximum investment at full capacity? [2+4+2]

Answer:

(i) Target Cost at Full Capacity

Selling Price per unit	₹ 100	₹ 90	₹ 80
Demand	20,000 units	40,000 units	80,000 units = Full Capacity

Hence, Target Cost at Full capacity = Sale price less Profit Margin = ₹ 80 less 25% thereon = ₹ 60 p.u.

(ii) Determination of Target Cost reduction

(a)	Since Present Price is ₹ 100 p.u. and Profit is 25% thereon, Present Cost p.u. = ₹ 75, of which 40% is variable. So, Fixed Cost is 60% of ₹ 75 = ₹ 45 p.u. so, Total Fixed Cost =	45 × 80,000 = ₹ 36 Lakhs
(b)	Variable Cost at Full Capacity = (40% of ₹ 75 p.u.) × 80,000 units =	₹ 24 Lakhs
(c)	Estimated Cost at Full Capacity = Fixed Cost (constant at all levels) + Variable Cost (a+b)	₹ 60 Lakhs
(d)	Target Cost at Full Capacity = ₹ 60 p.u. for 80,000 units =	₹ 48 Lakhs

(e)	Cost Reduction Target/Scheme=Estimated Cost less Target Cost = (c-d)	₹ 12 Lakhs

(iii) Computation of Investment required

(a)	Profit at full capacity = 25% of ₹ 80 = ₹ 20 p.u. × 80,000 units =	₹ 16 Lakhs
(b)	Since ROCE desired is 16%, Maximum Required Investment = $\frac{₹16 lakhs}{16\%}$	₹ 100 Lakhs

4. (b) (ii)

Blue Ice Ltd., has adopted a Standard Costing System. The Standard output for a period is 20,000 units. The Standard Cost and Profit per unit is given below:

	₹
Direct Materials (6 units @ ₹ 1.50)	**9.00**
Direct Labour (6 hrs. @ ₹1.00)	**6.00**
Direct Expenses	**1.00**
Factory Overheads:	
Variable Overheads	**0.50**
Fixed Overheads	**0.60**
Administrative Overheads	**0.60**
	17.70
Profit per unit	**2.30**
Selling Price (Fixed by Government)	**20.00**

Actual production and sales for a period was 14,400 units.

The following are the variance worked out at the end of the period:

	Favourable (₹)	Adverse (₹)
Direct Materials:		
Price Variance	**-**	**8,500**
Usage Variance	**2,100**	**-**
Direct labour:		
Rate Variance	**-**	**8,000**
Efficiency Variance	**6,400**	**-**
Factory Overheads:		
Variable Expenditure Variance	**800**	**-**
Fixed Expenditure Variance	**800**	**-**
Fixed Volume Variance	**-**	**3,360**
Administrative Overheads:		
Expenditure Variance	**-**	**800**
Volume Variance	**-**	**3,360**

You are required to:
Ascertain the details of cost and prepare the Profit and Loss Account in the statement for the period, showing actual profit. [3+4]

Answer:

Blue Ice Ltd.
Ascertainment of Details of Costs

(14,400 units)	Variance (₹)	Standard Cost (₹)	Actual Cost (₹)
Directs Materials (14,400 × 9)		1,29,600	
Price Variance (Adverse)	8,500		
Usage Variance (Favourable)	(2,100)	6,400	1,36,000
Direct Labour (14,400 × 6)		86,400	

Rate Variance (Adv)	8,000		
Efficiency Variance (Fav)	(6,400)	1,600	88,000
Direct Expenses (14400 × 1)		14,400	14,400
Factory Overheads:			
Variable (14,400 × 0.50)		7,200	
Fixed (14,400 × 0.60)		8,640	
Variable Expenditure Variance (Fav)	(800)		
Fixed Expenditure Variance (Fav)	(800)		
Fixed Volume Variance (Adv)	3,360	1,760	17,600
Administrative Overheads:			
(14,400 × 0.60)		8,640	
Expenditure Variance (Adv)	800		
Volume Variance (Adv)	3,360	4,160	12,800
Total Cost (14,400 × 17.70)		2,54,880	2,68,800

Profit and Loss Account of Blue Ice Ltd.
for the year ended....

Particulars	(₹)	(₹)
Sales Revenue (14400 × 20)		2,88,000
Less: Costs:		
Direct Materials	1,36,000	
Direct Labour	88,000	
Direct Expenses	14,400	
Factory Overhead		
Variable	6,400	
Fixed	11,200	
Administrative Overhead	12,800	2,68,800
Profit (Actual)		19,200
Standard Profit (14,400 × 2.30)		33,120

4. (c) (i)

Excellent, a Scientific Equipment manufacturing company is engaged in producing different types of high class equipment for use in science laboratories. The company has two different assembly lines to produce its most popular product. The processing time for each of the assembly lines is regarded as a random variable and is described by the following distributions:

Processing time (minutes)	Assembly A_1	Assembly A_2
20	**0.20**	**0.10**
21	**0.40**	**0.15**
22	**0.20**	**0.40**
23	**0.15**	**0.25**
24	**0.05**	**0.10**

Using the following random numbers, generate data on the process times for 15 units of the item and compute the expected process time for the product.

3441, 7674, 4349, 4383, 8311, 1519, 0236, 4594, 1554, 0575, 8900, 8008, 2874, 2434, 0993

For the purpose, read the numbers horizontally, taking the first two digits for the processing time on assembly A_1 and the last two digits for processing time on assembly A_2. [8+2]

Answer:

Table 1: Random Number Coding for Process Times

Time (mts.)	Assembly A_1			Assembly A_2		
	Prob.	Cum. Prob.	RN Interval	Prob.	Cum. Prob.	RN Interval
20	0.20	0.20	00-19	0.10	0.10	00-09
21	0.40	0.60	20-59	0.15	0.25	10-21
22	0.20	0.80	60-79	0.40	0.65	25-64
23	0.15	0.95	80-94	0.25	0.90	65-89
24	0.05	1.00	95-99	0.10	1.00	90-99

The random numbers for the first unit are 34 and 41 respectively for the assemblies, A1 and A2. From the Table 2, we observe that the times corresponding to these are 22 and 21 minutes respectively. Thus, the total time required for the unit is 43 minutes. In the same way, the times for the other 14 units are determined and shown in the last column of the table.

Table 2: Simulation Worksheet

Unit	Assembly A_2		Assembly A_1		Total time (Mts.)
	R. Number	Time	R. Number	Time	
1	41	22	34	21	43
2	74	23	76	22	45
3	49	22	43	21	43
4	83	23	43	21	44
5	11	21	83	23	44
6	19	21	15	20	41
7	36	22	02	20	42
8	94	24	45	21	45
9	54	22	15	20	42
10	75	23	05	20	43
11	00	20	89	23	43
12	08	20	80	23	43
13	74	23	28	21	44
14	34	22	24	21	43
15	93	24	09	20	44
			Expected time = 649/15 = 43.27		

4. (c) (ii)

A farmer has a farm with 125 acres. He produces Carrot, Beetroot and Potato. Whatever he produces is fully sold in the market. He gets ₹ 5 per kg for Carrot, ₹ 4 kg for Beetroot and ₹ 5 per kg for Potato. The average yield is 1500 kg of Carrot per acre, 1800 kg of Beetroot per acre and 1200 kg of Potato per acre. To produce each 100 kg of Carrot and Beetroot and 80 kg of Potato, a sum of ₹ 12.50 has to be spent for manure. Labour required for each acre to raise the crop is 6 man-day for Carrot and Potato each and 5 man-day for Beetroot. A total of 500 man-days of labour at the rate of ₹ 40 per man-day are available. Formulate & LPP to maximize the farmer's total profit. [5]

Answer:

Let C, B and P be the number of acres allotted for cultivating Carrot, Beetroot and Potato respectively. The Profit from the produces is determined in the following manner -

Particulars Per acre	Carrot	Beetroot	Potato
Selling Price	₹5/kg ×1500 kgs = ₹7500	₹ 4 / kg × 1800 kgs = ₹ 7200	₹ 5/kg × 1200 kgs = ₹ 6000
Less: Manure Cost	1500 kgs × ₹12.50/100 =₹187.50	1800 kgs × ₹ 12.50/100 = 225.00	1200 kgs × ₹ 12.50/80 = ₹187.50

Less: Labour Cost	₹ 40 × 6 = ₹ 240	₹ 40 × 5 = ₹ 200	₹40 × 6 = ₹ 240
Profit per acre	₹ 7072.50	₹ 6775	₹ 5572.50

Maximise Profit Z = 7072.50 C + 6775 B + 5572.5 P
Subject to C+B+P ≤ 125 (Land Availability)
6C + 5B + 6P ≤ 500 (Man Days Availability)
C, B, P≥ 0 (Non-Negativity Assumption)