PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

*Question No.**1** is compulsory.*

*Answer any **four** questions from the remaining **five** questions.*

Working notes should form part of the respective answers.

No statistical or other table will be provided with this question paper.

Question 1

JK Ltd., is following Life Cycle Costing. Its four products P_4, P_3, P_2 and P_1 are in the market respectively in Introduction, Growth, Maturity and Decline stages (phases). The Management wants to analyse the marketing challenges faced by the products to take strategical measures to stabilise the products in the market. For this purpose, the Board directed the Secretary to get a product-wise report from the marketing chief of each product. The chiefs were asked to give one characteristic possessed by the product because of which the product is being classified in the respective stage and two strategical measures to be taken to overcome the market challenges faced at that stage (phase). The Secretary received the report from all the chiefs and handed them over to the computer operator to get it printed in a tabulated form. But the operator, without understanding the significance of the products, phases, characteristics and strategies, mixed all the twelve items [(1 + 2) × 4] and got it printed as a list as given below:

(i) Over capacity in the industry.

(ii) The company can continue to offer the product to our loyal customers at a reduced price.

(iii) Few competitors produce basic version of our product.

(iv) Product features may be improved or enhanced to differentiate our product from that of the competitors.

(v) Attracting customers by raising awareness about our product through promotion activities.

(vi) High volume of business and increase in competition.

(vii) Use the present product as replacement product for launching another new product successfully in the market.

(viii) Value-based pricing strategies may be considered.

(ix) Profits start declining and at times become negative.

(x) Maintain control over product quality to assure customer satisfaction.

(xi) Strengthening or expanding channel and supply chain relationships.

(xii) Prices may have to be reduced to attract the price-sensitive customers.

The items are required to be TABULATED as in the format given below:

Required

(i) Complete the table given below by entering the twelve items under appropriate category columns. You need not rewrite the items. Write the serial numbers of the items only in columns (3) and (4).

Products ***(1)***	***Phases (Stages)*** ***(2)***	***Characteristics*** ***(3)***	***Strategies*** ***(4)***
P_4	*Introduction*		
P_3	*Growth*		
P_2	*Maturity*		
P_1	*Decline*		

(4 + 8 = 12 Marks)

(ii) LIST down the importance (any four) of Product Life Cycle Costing. ***(4 Marks)***

(iii) STATE the benefits (any four) of Product Life Cycle Costing. ***(4 Marks)***

Answer

(i) Statement Showing Product Life Cycle Characteristics and Strategies

Products **(1)**	**Phases (Stages)** **(2)**	**Characteristics** **(3)**	**Strategies** **(4)**
P_4	Introduction	(iii)	(v), (xi)
P_3	Growth	(vi)	(x), (viii)
P_2	Maturity	(i)	(iv), (xii)
P_1	Decline	(ix)	(ii), (vii)

(ii) Importance of Product Life Cycle (PLC) Costing

- As a *Planning* tool, it characterizes the marketing challenges in each stage and poses major alternative strategies, i.e. application of Kaizen.
- As a *Control* tool, the PLC concept allows the company to measure product performance against similar products launched in the past.
- As a *Forecasting* tool, it is very important because sales histories exhibit diverse patterns and the stages vary in duration.
- It leads to appropriate *strategy formulation* depending on the stages of the product life cycle.

(iii) Benefits of Product Life Cycle Costing

The benefits of product life cycle costing are summarized as follows:

- The product life cycle costing results in *earlier actions to generate revenue or to lower costs* than otherwise might be considered. There are a number of factors that need to the managed in order to maximize return on a product.
- Better decisions should follow from a *more accurate and realistic assessment of revenues and costs*, at least within a particular life cycle stage.
- Product life cycle thinking can promote *long-term rewarding* in contrast to short-term profitability rewarding.
- It provides an *overall framework for considering total incremental costs over the entire life span of a product*, which in turn facilitates analysis of parts of the whole where cost effectiveness might be improved.
- It is an approach used to provide a *long-term picture of product line profitability*, feedback on the effectiveness of life cycle planning and cost data to clarify the economic impact of alternatives chosen in the design, engineering phase etc.
- It is also considered as a way to enhance the *control of manufacturing costs*. The thrust of product life cycle costing is on the distribution of costs among categories changes over the life of the product, as does the potential profitability of a product. Hence it is important to track and measure costs during each stage of a product's life cycle.
- Product life cycle costing *traces research and design and development costs* etc., incurred to individual products over their entire life cycles, so that the total magnitude of these costs for each individual product can be reported and compared with product revenues generated in later periods.

Question 2

Zen Ltd., forms a Committee consisting of its Production, Marketing and Finance Directors to prepare a budget for the next year. The Committee submits a draft budget as detailed below:

		₹
Selling price per unit		*50*
Direct material cost per unit	*₹ 9*	
Direct labour cost per unit	*₹ 9*	
Variable overhead (3 hrs. @ ₹ 2)	*₹ 6*	*24*
Contribution per unit		*26*
Budgeted Sales Quantity		*25,000 units*
Budgeted Contribution (25,000 × ₹26)		*6,50,000*
Budgeted Fixed Cost		*5,00,000*
Budgeted Profit		*1,50,000*

The Management is not happy with the budgeted profit as it is almost equal to the previous year's profit. Therefore, it asks the Committee to prepare a budget to earn at least a profit of ₹ 3,00,000. To achieve the target profit, the Committee reports back with the following suggestions:

The unit selling price should be raised to ₹ 55.

The sales volume should be increased by 5,000 units.

To attain the above said increase in sales, the company should spend ₹ 40,000 for advertising.

The production time per unit should be reduced.

To win the acceptance of the workers in this regard the hourly rate should be increased by ₹ 3 per unit besides an annual group bonus of ₹ 30,000.

There is no change in the amount and rates of other expenses. The company has sufficient production capacity.

As the implementation of the above proposal needs the acceptance of the work force to increase the speed of work and to reduce the production time per unit, the Board wants to know the extent of reduction in per unit production time.

Required

(i) CALCULATE the target production time per unit and the time to be reduced per unit.

(14 Marks)

(ii) IDENTIFY the other problems that may arise in production due to decrease in unit production time and also suggest the remedial measures to be taken. ***(4 Marks)***

(iii) STATE the most suitable situation for the adoption of Target Costing. ***(2 Marks)***

Answer

(i) Target Production Time *per unit* and Time to be Reduced *per unit*

Alternative.1	Alternative.2	Alternative.3
Target Production Time *per unit*	**Target Production Time *per unit***	**Target Production Time *per unit***
(₹12 + ₹2 × hrs.) × 30,000 units = ₹5,10,000	(₹3 + ₹3 + ₹2) × hrs. × 30,000 units = ₹ 5,10,000	[(₹9 + ₹3)/ 3 + ₹2] × hrs. × 30,000 units = ₹5,10,000
Hrs. = 2.50	Hrs. = 2.125	Hrs. = 2.833
Time to be reduced *per unit*	**Time to be reduced *per unit***	**Time to be reduced *per unit***
= 3 hrs.– 2.50 hrs.	= 3 hrs. – 2.125 hrs.	= 3 hrs. – 2.83 hrs.
= 0.50 hrs.	= 0. 875 hrs.	= 0. 17 hrs.
Verification	***Verification***	***Verification***
Labour Rate *per unit*	Labour Rate *per unit*	Labour Rate *per unit*
= ₹12	= ₹6 × 2.125 hrs.	= ₹4 × 2.83 hrs.
	= ₹12.75	= ₹11.32

Workings

Statement Showing Target Cost (Direct Labour and Variable Overhead)

Particulars	Amount (₹)
Target Sales (₹ 55 × 30,000 Units)	16,50,000
Less: Target Profit	3,00,000
Less: Direct Material Cost (₹ 9 × 30,000 Units)	2,70,000
Less: Budgeted Fixed Costs	5,00,000
Less: Proposed Advertising	40,000
Less: Proposed Annual Group Bonus	30,000
Target Cost (Variable Overhead and Direct Labour) for 30,000 units	5,10,000

(ii) Problem

The target-costing method is applicable particularly for repetitive manufacturing. It should however be recognised that some products often bear a high degree of repetition and that there often are considerable repetitions where reduction targets could come into play as a framework for improving design. Working under pressure to finish new design assignments in a short time may take development resources away from efforts to optimise or re-engineer production processes. If approaching product design as an activity to be optimised independently there is a risk that target costing may not succeed to satisfactorily addressing overall performance, so in short decrease in unit production time may lead to unwanted pressure on design and its implementation stage.

Remedial Measures

As a remedial action organisation should retain strong control over the design teams headed by a good team leader. This person must have an exceptional knowledge of the design process, good interpersonal skills, and a commitment to staying within both time and cost budgets for a design project. If the time is too short even an organisation may reject a project for the time being. Later, it can be tried out with new cost reduction methods or less expensive materials to achieve target cost and control overall production activities.

(iii) Target costing is most useful in situations where *the majority of product costs are locked in during the product design phase*. This is the case for most manufactured products, but few services. In the services area, such as consulting, the bulk of all activities can be reconfigured for cost reduction during the "production" phase, which is when services are being provided directly to the customer. In the services environment, the "design team" is still present but is more commonly concerned with streamlining the activities conducted by the employees providing the service, which can continue to be enhanced at any time, not just when the initial services process is being laid out.

Question 3

Fast Cook Ltd., is a pressure cooker manufacturing company doing business through wholesalers and retailers. The company is following Activity Based Costing system. Average cost per cooker is ₹ 600 and the listed price is ₹ 1,000. But cookers are sold at a discount of 25% on listed price on orders for above 200 units and at a discount of 20% on orders for 200 units or less. The company wants to analyse the profitability of two of its wholesale customers A and B and two of its retail customers X and Y on the basis of the business with them during last year. This is to explore the opportunities to increase the profitability from the customers. The relevant data pertaining to the last year are given below:

Customer	***A***	***B***	***X***	***Y***
No. of purchase orders	*50*	*65*	*230*	*270*
No. of cookers purchased per order	*500*	*300*	*40*	*30*
No. of visits to customers place	*10*	*15*	*25*	*22*
No. of ordinary deliveries	*45*	*50*	*175*	*200*
No. of speed deliveries	*5*	*15*	*50*	*65*

The activity, cost driver and the rate are as follows:

Activity	***Cost Driver***	***Cost per unit of Driver (₹)***
Order processing	*No. of purchase orders*	*1,300*
Visiting customers	*No. of customers visited*	*7,400*
Ordinary delivery	*No. of ordinary deliveries*	*2,000*
Speed delivery	*No. of speed deliveries*	*6,000*

Required

(i) EVALUATE the customer profitability by calculating the profit per cooker from each customer. ***(12 Marks)***

(ii) RECOMMEND steps to be taken to improve profitability from less profitable customers. ***(4 Marks)***

(iii) LIST down the service organisations for which customer profitability analysis is useful. ***(2 Marks)***

(iv) EXPLAIN the specific benefits of customer profitability analysis. ***(2 Marks)***

Answer

(i) Statement Showing Profit per Customer *per unit*

Sr. No.	Particulars	A (₹)	B (₹)	X (₹)	Y (₹)	Total (₹)
1	Net Sale Proceeds (Refer Table 1)	1,87,50,000	1,46,25,000	73,60,000	64,80,000	4,72,15,000
2	Cost of Sales (Refer Table 1)	1,50,00,000	1,17,00,000	55,20,000	48,60,000	3,70,80,000
	Assignable Marketing and Administration Cost (Refer Table 2)					
3a	Order Processing Cost	65,000	84,500	2,99,000	3,51,000	7,99,500
3b	Customer Visit Cost	74,000	1,11,000	1,85,000	1,62,800	5,32,800
3	Total Assignable Marketing and Administration Cost (Step 3a + 3b)	1,39,000	1,95,500	4,84,000	5,13,800	13,32,300
	Distribution Cost (Refer Table 2)					
4a	Ordinary Delivery Cost	90,000	1,00,000	3,50,000	4,00,000	9,40,000
4b	Speed Delivery Cost	30,000	90,000	3,00,000	3,90,000	8,10,000
4	Total Assignable Distribution Cost (Step 4a + 4b)	1,20,000	1,90,000	6,50,000	7,90,000	17,50,000
5	Total Cost (Step 2+3+4)	1,52,59,000	1,20,85,500	66,54,000	61,63,800	401,62,300
6	Net Profit (Step 1 - Step 5)	34,91,000	25,39,500	7,06,000	3,16,200	70,52,700
7	Profit per Cooker per Customer (Step 6 / Step 3 of table 1)	139.64	130.23	76.74	39.04	114.12

Table 1: Customer Sales Analysis - Net Sale Proceeds and Cost of Sales

Sr. No.	Particulars	A	B	X	Y	Total
1	No. of Purchase Orders	50	65	230	270	615
2	No. of Cookers Purchased *per order*	500	300	40	30	870
3	Total Cookers Sold in the year (Step 1 × 2)	25,000	19,500	9,200	8,100	61,800
4	Listed Price *per unit* (₹)	1,000	1,000	1,000	1,000	
5	Discount as per Policy (refer note 1)	25%	25%	20%	20%	
6	Net Sale Price *per unit* (Step 4 × (1-discount rate per Step 5) (₹)	750	750	800	800	

7	Net Sale Proceeds (Step 3 × Step 6) (₹)	1,87,50,000	1,46,25,000	73,60,000	64,80,000	4,72,15,000
8	Cost of Sales (Cost per Cooker ₹600 × Step 3) (₹)	1,50,00,000	1,17,00,000	55,20,000	48,60,000	3,70,80,000

Note 1

Fast Cook Ltd. has a policy of providing discount of 25% on listed price on orders above 200 units and 20% on orders less than 200 units. Each order of customers A and B is for more than 200 units while each order of X & Y is for less than 200 units. Therefore, A and B get a discount of 25% and X and Y get a discount of 20% on the listed price per order.

Table 2: Activity Based Costing Technique

(to allocate assignable marketing, administrative and distribution cost)

Particulars	Cost per Driver unit (₹)	A (₹)	B (₹)	X (₹)	Y (₹)	Total (₹)
Order processing cost (# of orders per customer × cost per order)	1,300	65,000	84,500	2,99,000	3,51,000	7,99,500
Customer visit cost (# of visits × cost per visit)	7,400	74,000	1,11,000	1,85,000	1,62,800	5,32,800
Ordinary delivery cost (# of ordinary deliveries × cost per delivery)	2,000	90,000	1,00,000	3,50,000	4,00,000	9,40,000
Speed delivery cost (# of speed deliveries × cost per delivery)	6,000	30,000	90,000	3,00,000	3,90,000	8,10,000

Evaluation of the Customer Profitability

From the above calculations, it can be concluded that the average profit per cooker sold is ₹114.12. Sales to all the concerned customers are profitable. However, it can be observed that, sales to customers A and B, who are wholesale buyers, yield above average profit per cooker ₹139.64 and ₹130.23 respectively. While sales to customers X and Y, who are retail buyers, yield below average profit per cooker ₹76.74 and ₹39.04 respectively. Therefore, it can be concluded that sales to wholesale buyers are more profitable than sales to retail buyers. In terms of units of cookers sold, sales to A and B account for nearly 72% of the sales (Customer A 25,000 units, Customer B 19,500 units from total sales of 61,800 units). Therefore, Fast Cook Ltd. seems to have a profitable business. However, analysis to improve the profitability from sales to retail customers like customers X and Y, would enable Fast Cook to improve its overall bottom-line.

(ii) Recommendation

Steps to improve customer profitability of retail customers X and Y. Referring to Table 1, a major portion of the assignable marketing, administration and distribution cost can be traced to customers X and Y. Breaking this down into various cost heads:

(a) Order Processing Costs: A total 615 purchase orders relating to sale of 61,800 cookers have been raised by the four customers. Customer X has raised 37% of the orders to buy 9,200 (15%) cookers, Customer Y has raised 44% of the orders to buy (13%) of the cookers, while the balance 19% to buy 72% of the cookers have been raised by Customers A and B. Therefore, the retail customers X and Y are raising proportionally far more purchase orders as compared to wholesale customers. To process these orders, Fast Cook has to incur order processing charges on a higher scale. While the nature of sale to retail customers may entail sales in much smaller lots as compared to wholesale customers, *Fast Cook Ltd. may require retail customers to place a threshold of minimum order quantity to be ordered in each purchase order. Fewer orders with larger quantity will reduce resources that would be needed for order processing, which will contribute towards lowering the processing cost for Fast Cook Ltd.*

(b) Customer Visit Costs: These are marketing costs incurred by the company towards to provide support by understanding customer's needs and sorting operational issues. A total 72 visits relating to the four customers show that majority of visits have been made to customers X (25 visits) and Y (22 visits). However, sales to these customers account only for 28% of the cookers sold (Customer X 9,200 units Customer Y 8,100 of a total of 61,800 units sold). These retail customers are in need of a lot of hand-holding from the company. *Fast Cook Ltd. needs to understand the reasons for so many visits to these two customers.* Despite having so many visits, the sales are not as much as the wholesale customers. Therefore, Fast Cook has to analyze why so many visits are required to be made? This may indicate *any improvements that can be made to business operations that can provide the required level of customer support, without so many customer visits. If this can be understood and implemented, resources required for customer visits would reduce, thereby reducing these costs.*

(c) Ordinary Deliveries: Out of a total of 470 deliveries to the four customers, Customer X has 175 deliveries and Customer Y has 200 deliveries. Again, as explained above in point (a), retail customer orders lesser quantity as compared to wholesale customers. Therefore, the number of deliveries will be more. However, if *Fast Cook Ltd. requires customers to order a minimum quantity each time, this can reduce the number of deliveries. This would reduce the resources required for making deliveries, thereby reducing the costs as well.*

(d) Speed Deliveries: These are rush orders placed by customers to meet their urgent and immediate requirements. Since demand is required to be met in a short time span, Fast Cook may have to employ faster means of delivery. In the given problem,

the cost of speed delivery is thrice the cost of an ordinary delivery. Out of a total of 135 deliveries, Customer X has 50 and Customer Y has 65 speed deliveries. At the same time, they account for only 28% of cooker sales. *Fast Cook Ltd. can require these customers to place of minimum order amount as part of their regular orders. This could reduce the need for speed deliveries. It could also make speed deliveries chargeable, if the number of such orders exceed a certain threshold say 10 orders in a year. This will enable Fast Cook Ltd. to recover some portion of the costs that it incurs to make these deliveries.*

(iii) List of service organizations using customer profitability analysis:

(a) Financial institutions like Banks and Insurance Companies.

(b) Hospitality services like Hotels, Travel Agents, and Tour Operators.

(c) Professional services like Audit and Accounting Firms, Law Firms, Consultancy Firms like IT Consultancy, Management Consultancy.

(d) Hospitals and Healthcare providers.

(e) Logistics and Freight Companies that transport goods to various destinations.

(iv) Benefits of Customer Profitability Analysis:

(a) It helps the supplier to identify which customers are eroding overall profitability and which customers are contributing to it.

(b) It can help to provide a basis for constructive dialogue between buyer and seller to improve margins.

Question 4

(a) Cool Air Ltd., manufactures and sells 25,000 table fans annually. One of the components required for fans is purchased from an outside supplier at a price of ₹190 per unit. Annually it is purchasing 25,000 components for its usage. The Production Manager is of the opinion that if all the components are produced at own plant, it is possible to maintain better quality in the finished product. Further, he proposed that the in-house production of the component with other items will provide more flexibility to increase the annual production by another 5,000 units. He estimates the cost of making the component as follows:

	₹ per unit
Direct materials	*80*
Direct labour	*75*
Factory overhead (70% variable)	*40*
Total Cost	*195*

The proposal of the Production Manager was referred to the Marketing Manager for his remarks. He pointed out that to market the additional units, the overall unit price should be

reduced by 5% and additionally ₹1,00,000 p.m. should be incurred for advertising. Present selling price and contribution per fan are ₹2,500 and ₹600 respectively. No other increase or decrease in all other expenses as a result of this proposal will arise.

Since the making cost of the component is more than the buying cost, the Management asks you to:

(i) ANALYSE the make or buy decision on unit basis and total basis. ***(8 Marks)***

(ii) RECOMMEND the most profitable alternative. ***(2 Marks)***

(b) The Board of Directors meeting of T.K. Motors Ltd., a car manufacturing company is to be scheduled to be held in another ten days. One of the items, as per agenda, to be discussed in the meeting is the present budgeting system of the company. Your organisation is at present, using budgets for control which are prepared mostly on traditional basis. The CEO of your company wants to propose to the Board to use Beyond Budgeting instead of traditional budgeting in the company on experimental basis. Therefore, you, the Management Accountant has been asked by your CEO to explore the possibilities of introducing Beyond Budgeting (BB) system in the company. Specifically, you are required to PREPARE notes to your CEO to be used for his presentation at the meeting on:

(i) the major limitations of traditional budgets.

(ii) the advantages available in Beyond Budgeting.

(iii) the nature of Beyond Budgeting.

(iv) the benefits that can be enjoyed from Beyond Budgeting.

(v) the suitability of Beyond Budgeting to the company. ***(10 Marks)***

Answer

(a) (i) Cool Air Ltd. purchases 25,000 units of components to manufacture 25,000 fans annually. The external purchase price per component is ₹190 per unit. It has the option of manufacturing these components in house. The cost structure of manufacturing these components would be as below:

Cost Structure	Cost per component unit (₹)
Direct Materials	80
Direct Labor	75
Variable Factory Overhead (70% of ₹40)	28
Total	183

Analysis

If Cool Air Ltd. decides to manufacture the components in-house, the following would be the financial impact:

(a) Production Capacity will increase from 25,000 fans to 30,000 fans.

(b) Variable Cost of Production of fan would be ₹1,710 [(2,500 - 600) -190] per unit.

(c) Fixed Factory Overhead of ₹12 per component would be incurred irrespective of whether component is produced or not. Therefore, this cost is not considered.

(d) Increase in advertising expense would be ₹100,000 per month or ₹12,00,000 annually.

(e) Overall selling price would reduce from the current rate of ₹2,500 per fan to ₹2,375 (95% of ₹2,500) per fan.

(f) Current contribution considering a procurement price of ₹190 per component unit, is ₹600 per fan. As calculated above, if produced in house, the variable cost would be ₹183 per component unit. This would result in an increase in contribution by ₹7 per fan (procurement price of ₹190 per component unit less variable cost of ₹183 per component unit). In addition, there is an impact of ₹125 on account of reduction in selling price. Therefore, the contribution if component produced in house would be ₹482 per fan (₹600+₹7-₹125).

To summarize the above figures:

Particulars	Procurement 25,000 Components		Produce 30,000 Components	
	Per Fan ₹	Total ₹	Per Fan ₹	Total ₹
Selling price per fan	2,500	6,25,00,000	2,375	7,12,50,000
Contribution per fan	600	1,50,00,000	482	1,44,60,000

Therefore, incremental loss by switching to in house production (on a total basis) would be **₹17,40,000** (incremental loss ₹5,40,000 – additional advertising expenses ₹12,00,000). On a per unit basis, it would result in a **loss of ₹58 per fan**.

(ii) Recommendation

As explained above, if production increases from 25,000 fans to 30,000 fans, it would not be profitable to make these components in house. Overall profit decreased by ₹17,40,000. However, Company may prefer to make component, even though it could be financially beneficial to buy from outside supplier. Sometimes qualitative factors become very important and can override some financial benefit. This can be coupled with uncertainty about the supplier's ability or intention to maintain the price, quality, delivery dates of the components etc.

Alternatively, the company may continue with the sale of 25,000 units without any price reduction and advertising expenses. The component required for the 25,000

fans may be produced internally at a cost of ₹183 per unit. In this situation, the contribution shall be increased by ₹1,75,000 (₹7 × 25,000 units).

So, Cool Air Ltd. may recommend about the most profitable alternative after due and careful consideration of the facts illustrated above.

(b) (i) Limitations of Traditional Budgets

- Time-consuming and costly to put together.
- Constrain responsiveness and flexibility.
- Often a barrier to change.
- Rarely strategically focused and are often contradictory.
- Add little value, especially given the time required to prepare.
- Concentrate on cost reduction and not on value creation.
- Developed and updated too infrequently, usually annually.
- Are based on unsupported assumptions and guesswork.
- Reinforce departmental barriers rather than encourage knowledge sharing.
- Make people feel undervalued.

(ii) Advantages of Beyond Budgeting (BB)

BB identifies its two main advantages.

- It is a more *adaptive process* than traditional budgeting.
- It is a *decentralised process*, unlike traditional budgeting where leaders plan and control organisations centrally.

(iii) Nature of 'Beyond Budgeting'

- Budgeting is *evolving*, rather than becoming obsolete- it depends on trust and transparency.
- Shift from the top-down, centralised process to a more *participative*, bottom-up exercise in many firms.
- It highlights the *level of improvement* that can be achieved even with relatively simple modifications and a great deal of trust.
- Budgeting has changed, the change has been neither dramatic nor radical. Instead, *incremental improvements*, with traditional budgets being supplemented by *new tools and techniques*.
- *Forecasting* in fact is more important.

(iv) Benefits of the 'Beyond Budgeting' Model

- Beyond budgeting helps managers to work in coordination to beat the competition. Internal rivalry between managers is reduced as target shifts to competitors.
- Helps in motivating individuals by defining clear responsibilities and challenges.
- It eliminates some behavioural issues by making rewards team-based.
- Proper delegation of authority to operational managers who are close to the concerned action and can react quickly.
- Operational managers do not restrict themselves to budget limits and focus on achieving key ratios.
- It establishes customer-orientated teams.
- It creates information systems which provide fast and open information throughout the organization

(v) Suitability of Beyond Budgeting to the Company

Since T.K. Motors Ltd. is a car manufacturing company and presently adopting Traditional Costing system. Moreover, Automobile industry goes through *rapid changes* in its business environment. So, the company can definitely use Beyond Budgeting to improve the control system and beat the competition. Beyond Budgeting lies an agile, holistic approach based on self-organisation. This will also help the managers to work in close coordination with each other with motivation which in turn will beat the competition.

Question 5

(a) Sun Chemicals Co., is engaged in manufacturing many chemical products. It is using many chemicals some of which are fast moving, some are slow moving and few are in non-moving category. The company has a stock of 10 units of one non-moving toxic chemical. Its book value is ₹ 2,400, realizable value is ₹ 3,500 and replacement cost is ₹ 4,200.

One of the customers of the company asks to supply 10 units of a product which needs all the 10 units of the non-moving chemical as an input. The other costs associated with the production of the product are:

Allocated overhead expenses ₹ 16 per unit

Out of pocket expenses ₹ 50 per unit

Labour cost ₹ 40 per hour. For each unit two hours are required.

Other material cost ₹ 80 per unit.

The labour force required for the production of the product will be deployed from among the permanent employees of the company. This temporary deployment will not lead to any loss of contribution.

Required

(i) *RECOMMEND the minimum unit price to be charged to the customer without any loss to the company.* ***(4 Marks)***

(ii) *ANALYSE with reasons for the inclusion or exclusion of each of the cost associated with the production of the product.* ***(4 Marks)***

(iii) *ADVICE a pricing policy to be followed by Sun Chemical in perfect competition.*

(2 Marks)

(b) *Apple Ltd., is following three variances method to analyse and understand production overhead variances. The three variances for a particular year were reported as given below:*

	₹
Production overhead expenditure variance	*94,000 A*
Production overhead volume variance	*1,00,000 F*
Production overhead efficiency variance	*48,000 F*

The other particulars furnished from the records of the company are :

Standard machine hours for the year	*11,500*
Closing balance in the Production Overhead Control Account	*₹ 18,00,000*
Fixed overhead rate per hour	*₹ 125*
Variable overhead rate per hour	*₹80*

Required

COMPUTE the following by considering the additional information also :

(i) *Actual machine hours*

(ii) *Budgeted machine hours*

(iii) *Total Fixed Production Overhead amount*

(iv) *Applied Production Overhead amount* ***(10 Marks)***

Additional Information

- *Expenditure variance was computed totally for fixed and variable overheads.*
- *Volume variance is applicable to fixed overhead only.*
- *Efficiency variance is applicable only to variable overhead and fixed overhead efficiency variance was already included in volume variance.*

Answer

(a) (i) Sun Chemicals has the opportunity to utilize 10 units of non-moving chemical as input to produce 10 units of a product demanded by one of its customers. The minimum unit price to be charged to the customer would be–

Cost Component	Cost per unit of product (₹)
Cost of Material (Realizable value = ₹3,500 / 10 units of chemical)	350
Out of Pocket Expenses	50
Other Material Cost	80
Minimum Unit Price that can be charged	480

Therefore, the minimum unit price that can be charged to the customer, without incurring any loss is ₹480 per unit of product. As explained below in point (ii), allocated overhead expenses and labor cost are sunk costs that have been ignored while calculating the minimum unit price to be charged.

(ii) Analysis

(a) Cost of Material: Relevant and hence included at realizable value. Sun Chemicals has 10 units of non-moving chemical input that has a book value of ₹2,400, realizable value of ₹3,500 and replacement cost of ₹4,200. Realizable value of ₹3,500 would be the salvage value of the chemical had it been sold by Sun Chemical instead of using it to meet the current order. This represents an opportunity cost for the company and hence included while pricing the product. Book value would represent the cost at which the inventory has been recorded in the books, a sunk cost that has been ignored. Replacement cost of ₹4,200 would be the current market price to procure 10 units of the input chemical. This would be relevant only when the inventory has to be replenished after use. This chemical is from the non-moving category, that means that it is not used regularly in production process and hence need not be replenished after use. Therefore, replacement cost is also ignored for pricing.

(b) Labour Cost: Not relevant and hence excluded from pricing. It is given in the problem that this order would be met by permanent employees of the company. Permanent employee cost is a fixed cost that Sun Chemicals would incur irrespective of whether this order is produced or not. No additional labour is being employed to meet this order. Therefore, this cost is a sunk cost, excluded from pricing.

(c) Allocated Overhead Expenses: These expenses have been incurred at another Cost Centre, typical example would be office and administration costs. Such

costs are fixed in nature that would be incurred irrespective of whether this order is produced or not. Therefore, this cost is a sunk cost, excluded from pricing.

(d) Out of Pocket Expenses: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.

(e) Other Material Costs: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.

(iii) Advice on Pricing Policy

Under perfect competition conditions, Sun Chemical can have no pricing policy of its own, here sellers are price takers. It cannot increase its price beyond the current market price. The company can only decide on the quantity to sell and continue to produce as long as the marginal cost is recovered. When marginal cost exceeds the selling price, the company starts incurring a loss.

Since Sun Chemical cannot control the selling price individually in the market, it can adopt the *going rate pricing* method. Here it can keep its selling price at the average level charged by the industry. This would yield a fair return to the company. An average selling price would help the company attract a *fair market share* in competitive conditions.

(b) (i) Calculation of Actual Machine Hours

Efficiency Variance	=	₹48,000 (F) given
	=	Standard Variable Overhead Rate per Hour × (Standard Hours – Actual Hours)
₹48,000(F)	=	₹80 × (11,500 hrs. – Actual Hours)
Actual Hours	=	**10,900 hrs.**

(ii) Budgeted Machine Hours

Volume Variance	=	₹1,00,000 (F)
	=	Standard Fixed Overhead Rate per Hour × (Standard Hours – Budgeted Hours)
₹1,00,000 (F)	=	₹125 × (11, 500 hrs. – Budgeted Hours)
Budgeted Hours	=	**10,700 hrs.**

(iii) Total Fixed Production Overhead*

Fixed Production Overhead	=	Standard Fixed Overhead Rate per Hour × Budgeted Hours

= ₹125 × 10, 700 hrs.

= **₹13,37,500**

** Assumed Budgeted*

(iv) Applied Manufacturing Overhead

= Standard Overhead Rate per Hour × Standard Hours

= ₹205 × 11, 500 hrs.

= **₹23,57,500**

ALTERNATIVE (iii) & (iv)

(iii) Total Fixed Production Overhead

Expenditure Variance = Fixed Production Overhead (Budgeted) + Budgeted Variable Overheads for Actual Hours – Actual Overheads

₹94,000 (A) = Fixed Production Overhead + 10,900 hrs. × ₹80 – ₹18,00,000

Fixed Production Overhead = **₹8,34,000**

(iv) Applied Manufacturing Overhead

= Actual Overhead Incurred + Total Variance

= ₹18,00,000 + ₹54,000

= **₹18,54,000**

Working Notes

Total Variance = Expenditure Variance + Efficiency Variance + Volume Variance

= ₹94,000 (A) + ₹48,000 (F) + ₹1,00,000 (F)

= ₹54,000 (F)

Question 6

(a) Usha Products Co. operates a Pulp Division that manufactures Wood Pulp for use in production of various paper goods. The following informations are available:

	₹
Selling Price	*210*
Less: Variable Expenses	*126*
Contribution	*84*

Less: Fixed Expenses (Based on a capacity of 1,00,000 kgs per year)	*54*
Net Income	*30*

Usha Products has just acquired a small company that manufacturers paper cartons. This company will be treated as a division of Usha with full profit responsibility. The newly formed Carton Division is currently purchasing 10,000 kgs of pulp per year from supplier at a cost of ₹ 210 per kg. less a 10% quantity discount. Usha's President is anxious that the Carton Division begins purchasing its pulp from the Pulp Division if an acceptable transfer price can be worked out.

Required

*(Answer any **2** items from situations I, II and III below)*

Situation I

If the Pulp Division is in a position to sell all of its pulp to outside customers at the normal price of ₹ 210 per kg, will the Managers of the Carton and Pulp Division agree to transfer 10,000 kgs of pulp next year at a determined price? EXPLAIN with reasons. ***(5 Marks)***

Situation II

Assuming that the Pulp Division is currently, selling only 60,000 kgs of pulp each year to outside customers at the stated price of ₹ 210 per kg, will the Managers agree to a mutually acceptable transfer price for 10,000 kgs of pulp in next year? EXPLAIN with reasons.

(5 Marks)

Situation III

If the outside supplier of the Carton Division reduces its price to ₹ 177 per kg, will the Pulp Division meet this price? EXPLAIN. If the Pulp Division does not meet the price of ₹ 177 per kg, what will be the effects on profits of the company as a whole? ***(5 Marks)***

(b) A Company manufactures a single product, which requires three components. The company purchases one of the components from three supplier. DJ Ltd., PJ Ltd. and ZJ Ltd. The following informations are available:

	DJ Ltd.	***PJ Ltd.***	***ZJ Ltd.***
Price quoted by supplier (per hundred units)	*₹ 240*	*₹ 234*	*₹ 260*
% of Defective of total receipts	*3%*	*5%*	*2%*

If the defectives are not detected they are utilized in production causing a damage of ₹ 200 per 100 units of the component. Total requirements is 12,000 units of the components.

The company intends to introduce a system of inspection for the components on receipt. The inspection cost is estimated at ₹ 26 per 100 units of the components. Such as

inspection will be able to detect only 90% of the defective components received. No payment will be made for components found to be defective in inspection.

Required

(i) ADVICE whether inspection at the point of receipt is justified. ***(8 Marks)***

(ii) Which of the three supplier should be asked to supply? ***(2 Marks)***

Answer

(a) Situation I

The lowest acceptable transfer price from the perspective of the selling division is given by the following formula:

$$\text{Transfer price} \geq \underset{\text{per unit}}{\text{Variable cost}} + \frac{\text{Total contribution margin on lost sales}}{\text{Number of units transferred}}$$

The Pulp Division has no idle capacity, so transfers from the Pulp Division to the Carton Division would cut directly into normal sales of pulp to outsiders. Since the costs are the same whether the pulp is transferred internally or sold to outsiders, the only relevant cost is the lost revenue of ₹210 per kg from the pulp that could be sold to outsiders. This is confirmed below:

$$\text{Transfer Price} \geq ₹126 + \frac{(₹210 - ₹126) \times 10{,}000}{10{,}000} = ₹210$$

Therefore, the Pulp Division will refuse to transfer at a price less than ₹210 per kg.

The Carton Division can buy pulp from an outside supplier for ₹210 per kg, less a 10% quantity discount of ₹21, or ₹189 per kg. Therefore, the Division would be unwilling to pay more than ₹189 per kg.

Transfer Price ≤ Cost of Buying from Outside Supplier = ₹189

The requirements of the two divisions are incompatible. The Carton Division won't pay more than ₹189 and the Pulp Division will not accept less than ₹210. Thus, there can be **no mutually agreeable transfer price and no transfer will take place**.

Situation II

The Pulp Division has idle capacity, so transfers from the Pulp Division to the Carton Division do not cut into normal sales of pulp to outsiders. In this case, the minimum price as far as the Carton Division is concerned is the variable cost per kg of ₹126. This is confirmed in the following calculation:

$$\text{Transfer price} \geq ₹126 + \frac{₹0}{10{,}000} = ₹126$$

The Carton Division can buy pulp from an outside supplier for ₹189 per kg and would be unwilling to pay more than that for pulp in an internal transfer. If the managers understand their own businesses and are cooperative, they should agree to a transfer and should settle on a transfer price within the range:

$$₹126 \leq \text{Transfer price} \leq ₹189$$

Situation III

Yes, ₹177 is a bona fide outside price. Even though ₹177 is less than the Pulp Division's ₹180 "full cost" per unit, it is within the range and therefore will provide some contribution to the Pulp Division.

If the Pulp Division does not meet the ₹177 price, it will lose ₹5,10,000 in potential profits.

Price *per kg*	₹177
Less: Variable Costs	₹126
Contribution margin *per kg*	₹51

10,000 kgs × ₹51 per kg = ₹5,10,000 potential increased profits.

This ₹ 5,10,000 in potential profits applies to the Pulp Division and to the company as a whole.

☞

For situation III also considered that "the Pulp Division is currently selling only 60,000 kgs of pulp each year to outside customers".

(b) (i) A. Statement Showing Effective Cost before Inspection

Particulars	DJ Ltd.	PJ Ltd.	ZJ Ltd.
Units Supplies (No.s)	12,000	12,000	12,000
Defectives Expected (No.s)	360	600	240
Costs:			
Purchase of Components	28,800	28,080	31,200
Add: Production Damage on Defective Components (@ ₹200 per 100 components)	720	1,200	480
Total	29,520	29,280	31,680
Good Components (Nos.)	11,640	11,400	11,760
Cost per 100 Good Components	**253.61**	**256.84**	**269.39**

B. Statement Showing Effective Cost after Inspection

Particulars	DJ Ltd.	PJ Ltd.	ZJ Ltd.
Units Supplies (No.s)	12,000	12,000	12,000
Defects Not Expected (No.s)	36	60	24
Defectives Expected (No.s)	324	540	216
Components Paid For	11,676	11,460	11,784
Costs:			
Purchase of Components	28,022.40	26,816.40	30,638.40
Add: Inspection Cost	3,120.00	3,120.00	3,120.00
Add: Production Damage on Defective Components (@ ₹200 per 100 components)	72.00	120.00	48.00
Total	31,214.40	30,056.40	33,806.40
Good Components (Nos.)	11,640	11,400	11,760
Cost per 100 Good Components	**268.16**	**263.65**	**287.47**

ADVICE Whether Inspection at the Point of Receipt is Justified

On comparing the cost under situation, A and B shown above, we find that it will not be economical to install a system of inspection.

Further we also need to consider that presently many organizations are undergoing Just in Time (JIT) implementation. JIT aims to find a way of working and managing to eliminate wastes in a process. Achievement of this is ensured through eliminating the need to perform incoming inspection. Inspection does not reduce the number of defects, it does not help in improving quality. In general inspection, does not add value to the product. It simply serves as a means of identifying defects the supplier has failed to recognize subsequent to the manufacturing of the product.

As a matter of fact, organizations implementing JIT are seeking eventually to eliminate the need for performing incoming inspection activities through a combination of reducing the supplier base, selection through qualification and vendor development. Vendor development and its proper management seeks to assist the supplier who maintains an interest in striving to provide 100% defect-free materials and parts.

So, to decision whether inspection at the point of receipt is justified or not will also depend on Qualitative factors as well.

(ii) On comparing the buying cost of components under different situations, as analysed and advised above, if company decides not to install a system of inspection, supplier DJ would be cheaper otherwise supplier PJ would be cheaper and company may choose supplier accordingly.

This question can also be solved by assuming receipt of **good components** as requirement i.e. 12,000 units.