

PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

Question No.1 is compulsory.

Candidates are also required to answer any **four** questions from the remaining **five** questions.

Working notes should form part of the respective answers.

Question 1

Style Activewear is one of the largest sports and athleisure brand that is involved in the design, development, manufacturing and marketing and sales of apparel, footwear, accessories, equipment, and services.

Mission: "To bring inspiration and innovation to every athlete in the country".

We champion continual progress for athletes and support by taking action to help athletes reach their potential. This is achieved by our drive product innovation for athletes everywhere. Countless ideas are tested in pursuit of aiding performance, injury risk reduction, enhancing perception and feel, and delivery of innovative products to athletes.

Vision: "To contribute to the sustainable development of society and that of the environment with which we interact."

Style believes in the ideology that in order to expand its horizon in the global market, it needs to have a sustainable business strategy. The company is committed to focusing as much on social and environmental concerns as they do on profits. Style follows 'Triple Bottom Line' (TBL) which is an accounting framework which aims to measure the social, environmental, and economic performance of the company over a period of time. As a part of its sustainable business strategy the company has undertaken the following initiatives:

- 100% waste was diverted from the landfill in the company's extended supply chain with at least 80% being recycled back into Style products.
- Maintain 100% pay equity across all employee levels on an annual basis.
- 70% absolute reduction of greenhouse gas (GHG) emissions in owned or operated facilities through 100% renewable electricity and fleet electrification.
- Marketing strategy to communicate its commitment to the Triple Bottom to help win customers and continue to grow its loyal base of consumers.
- 25% reduction in freshwater usage per litre for textile dyeing and finishing.
- Cover 100% of employees' health insurance costs.

Style is deeply committed to achieving sustainable growth and financial success. However, since past three years the company has observed a decline in both top-line and bottom-line figures which is a matter of utmost importance. This decline serves as a critical signal to evaluate and address the challenges.

Decline in revenue (top-line) has resulted from various factors such as:

- *The major issue faced by Style is a high level of competition by various other players in the market which are more or less of equal size. The market for products in apparel, sportswear, and supplements is anticipated to go on, and there exist several other companies which are involved in the same apparel industry as Style. This has posed a competitive challenge for the Style Limited as the consumer can opt to go for the alternative companies which offer the same products.*
- *Style predicts that emergence of new players is probable due to the potential attractiveness of the apparel industry.*
- *Style's clients and consumers involve both wholesale clients and retail clients. Wholesale clients, such as PQR Sporting Goods and the Sports Authority, have a height of negotiating influence, as they have a capability of substituting Style's merchandise for other companies with the same products to get the huge surplus.*

The company does its retail business through retailers who stock other brands as well. This means that the diligently cultivated exclusivity is sometimes sacrificed because it has not yet spread its wings to include exclusive retailer outlets as part of its business strategy.

- *Counterfeiting is a serious threat that causes Style to lose many potential sales. Style knock offs are easily found in a lot of markets.*

Decrease in profitability (bottom-line) may be attributed to the following:

- *Due to intense competition in the market, Style is forced to undertake strategies that will attract customers into the business. The on-going recession has also taken a heavy toll on Style with consumers becoming more price conscious and retailers demanding higher margins. The combination of retailing in third party outlets and competing brands cutting prices has made the going tough for Style.*

One of the basic strategies undertaken by Style in the face of intensive competition is a price reduction. The price reduction affects the profitability margins resulting in low profit.

- *Other major issues faced by Style are increased operating costs, inefficiencies in processes and fluctuation in raw material prices.*

The CEO of Style, Mr. Aariv has remarked, "Declines in top-line and bottom-line figures are not uncommon in the business world, and our management team is diligently working to identify the root causes of this decline and formulate a comprehensive plan to reverse the trend."

The Management team of Style has proposed a few initial suggestions to be implemented with immediate effect:

- *The ultimate objective of Style should be, to achieve superior performance in comparison to their competitors and attain a definitive competitive advantage.*
- *A Brands and organizations are normally different, as well as customers, therefore there is the requirement for brand strategy.*
- *The company needs to open exclusive retail outlets across the country.*

- The company should outsource major aspects of its production to overseas facilities. Style's merchandise will be produced by a lot of manufacturers who are situated across different nations.

Required

- (i) Evaluate the company's mission statement. **(2 Marks)**
- (ii) Categorize the six sustainable business strategy initiatives undertaken by Style forming part of Triple Bottom Line' (TBL) framework mentioned above into social bottom line, environmental bottom line or economic bottom line. Discuss very briefly the reason for classifying the initiative under a specific category. **(6 Marks)**
- (iii) Advise on the relevance of "Brand Strategy" in the context of Style. **(3 Marks)**
- (iv) Evaluate how industry structure analysis (Porter's five forces analysis) is helpful to assess the threat of new entrants into the market. Do you believe that the industry in which Style operates would be an easy welcome for the new entrants? **(2 Marks)**
- (v) "Wholesale clients, such as PQR Sporting Goods and the Sports Authority, have a height of negotiating influence, as they have a capability of substituting Style's merchandise for other companies with the same products." Discuss what does this statement convey. **(2 Marks)**
- (vi) Do you foresee any challenges with outsourcing major aspects of production? Explain. **(2 Marks)**
- (vii) Advise how IS/IT strategy would be appropriate to counter Porter's five forces to help an organisation have a more comfortable existence than its competitors. **(3 Marks)**

Answer

- (i) **Mission Statement** is a statement of an organization's purpose, answering the question of why a company exists, its reason to be. The Mission statement of Style is "To bring inspiration and innovation to every athlete in the country." The mission statement is **consumer focussed** rather than being a product focussed statement.

The statement can be understood through the following points:

- (a) **Product/ Services offered:** Style Activewear is a well-established brand in sportswear, footwear, accessories, equipment, and services.
- (b) **Primary Market for the product or service** would be the **sporting goods industry** where the **primary customers are athletes, pursuing various sports either professionally or a serious hobby (athleisure).**
- (c) Style wishes to support and partner with its customers in their sports journey by aiding their performance, reducing the risk of injury, designing innovative products that enhance the ability of the athlete to achieve excellence in their pursuit.

- (d) The company wishes to have a wide presence in the sports goods industry.

The Mission statement of Style Activewear thus has a **holistic outlook** of what its business is about and **how it wishes to participate in the athlete's development** as a sportsperson.

- (ii) **Categorization of initiatives under Triple Bottom Line reporting are as below –**

The **environmental bottom line** measures the impact on resources, such as air, water, ground, and emissions to determine the environment impact and ecological footprints.

The **social equity bottom line** relates to corporate governance, motivation, incentives, health and safety, human capital development, human rights, and ethical behaviour.

The **economic bottom line** refers to measures maintaining or improving the company's success in term of adding value to shareholders.

- (a) **100% waste was diverted from the landfill in the company's extended supply chain with at least 80% being recycled back into Style products** – Waste diverted from landfill, majority of which is further recycled back into the company's products reflects a positive impact that this initiative is having on the environment. Therefore, this will get reflected under **environment bottom line**.
- (b) **Maintain 100% pay equity across all employee levels on an annual basis** – Pay equity across all employee levels will boost employee morale and motivation. Therefore, this will get reflected under **social bottom line**.
- (c) **70% absolute reduction of greenhouse gas (GHG) emission in owned or operated facilities through 100% renewable electricity and fleet electrification** – This has a positive impact on the environment as it results in cleaner surroundings, reduction of carbon footprints. Therefore, this will get reflected under **environmental bottom line**.
- (d) **Marketing strategy to communicate its commitment to the Triple Bottom to help win customers and continue to grow its loyal base of customers** – Growing and maintaining customer base has an impact on the market share of the company, which ultimately improves the company's financial performance. Therefore, this will get reflected under **economic bottom line**.
- (e) **25% reduction in freshwater usage per litre for textile dyeing and finishing** – This has a positive impact on the environment as this results in conservation of scarce resources of the planet. Therefore, this will get reflected under **environmental bottom line**.
- (f) **Cover 100% of employees' health insurance costs** – This has a positive impact on maintaining the health and safety of the employees, thereby contributing to human capital development. Therefore, this will get reflected under **social bottom line**.

(iii) Relevance of Brand Strategy Analysis

A brand becomes a common, well recognized symbol using which an organization channels its efforts to provide value to its customers. Brand strategy requires sophisticated understanding of the marketplace, knowing exactly how the brand and its offerings fit into it, knowing the audience in the market, and utilizing resources wisely to market its products in a targeted and effective way. Therefore, a branding strategy helps in establish a product within a market and will help it grow and mature with time.

The management team of Style Activewear has an initiative that says, “Brands and organizations are normally different, as well as its customers, therefore the requirement for brand strategy.”

Style Activewear is operating in an increasingly competitive market, that still has potential to grow. It is facing serious issues in establishing itself in the market due to the presence of substitutes. Substitutes provide wholesale buyers the negotiating power to lower the prices, and this is hurting Style’s revenue growth. On the retail front, again a crowded marketplace with many players, the **lack of brand power is lowering the visibility of Style’s products**. Due to recession the customers have become price conscious and are unwilling to pay high prices for its products, at the same time retailers are demand higher margins. Both of this is again hurting Style’s growth.

A brand strategy that helps establish Style’s products in the marketplace **would prominently communicate the value that the products bring to the final customer, who is the athlete. A brand strategy will help Style differentiate its products from its competitors/ substitutes.**

Style Activewear can **own different brands for its products at the same time**. Each range of product be it accessory, equipment, apparel could have a different brand. **Each brand can target different types of customers, a brand developed for premium customers who want quality versus a brand for the cost-conscious customers who can compromise on quality.** Each type of product and each type of customer segment can be targeted to communicate the value that Style Activewear is offering to its target audience. This will *improve the visibility of the product* and help it establish itself in different market spaces. Depending on a successful brand strategy, the *company can use the brand to grow its market share*. This can help **counter the negotiating power of wholesale buyers to whom Style can justify the need for charging premium for some of its popular products. It also increases the product’s visibility in the retail space.**

Style ***could leverage e-commerce*** and reach out directly to customers, thereby establishing direct contact with the end user. This strategy will be more successful if it has a clear brand strategy in place. Direct interaction with the customers can help it save costs spend on intermediaries, while also helping it grow its market share.

(iv) Industry Structure Analysis as per Porter's Five Forces

Industry structure (or environment) analysis highlights the profitability potential of any industry using Porter's five force model. **Higher the intensity of competition results in lower potential profitability and vice-versa.** The five forces include the threat of new entrants into the market. **New entrants to the market bring new capacity and resources that may ultimately eat into the market share of the existing incumbent firms.** Barriers to entry in the form of capital requirement, technology, economies of scale, reaction of existing firms to competition etc.

The market in which Style operates has a **high threat of new entrants** Style knock offs, which are counterfeit products are easily found in a lot of markets. This has posed a serious threat to the company. This means that the **barriers to entry are low.** The counterfeit products affect the brand identity and pose as a substitute of the original product. This has begun to reduce the market share of players like Style and hence pose a threat to the company. Given the information in the scenario, it seems that the market in which Style operates does have low entry barriers and has a high threat of new entrants. **Not just counterfeit products, but good margins can also pose a threat of new entrants.** For example, the sportswear apparel has attractive margins which can attract new players in the market.

- (v) Wholesale clients such as PQR Sporting Goods and the Sports Authority have a high negotiating power over Style. Therefore, these **buyers have higher bargaining power.** **The negotiating or bargaining power stems from the fact that Style's products have equivalent substitutes within the market.** It seems that the cost of switching between the products is low. Hence, despite Style manufacturing and designing products that may have differentiating features, **it may not be able to command a premium price that it might want to sustain its margins due to the availability of equivalent substitutes.**
- (vi) In order to improve its profitability, Style's management has decided to outsource major aspects of its production to overseas facilities spread across different nations. Style should outsource its production *only when the* **incremental cost savings (including any benefit from costs foregone due to outsourcing) is greater than the incremental costs from outsourcing.** This is the quantitative(financial) aspect of outsourcing decision. The company also needs to consider **qualitative factors such as quality of goods produced by the outsourcing vendors, reliability of these vendors, impact on customers etc.** before deciding on whether to outsource major portion of its production to overseas facilities.

(vii) IS/IT and Porter's Five Forces

- (a) **Threat of new entrants:** For existing players sophisticated IT applications can be used to create a barrier for entry for new entrants. This is **because sophisticated IT applications are expensive and take time to develop and imitate.** This would be **a barrier for a new entrant.** Also, computer-controlled production **can increase the economies of scale** for the existing firms, which can create another barrier of entry

for the new firms. On the other hand, new entrants can also use IS/IT to break down existing barriers in an industry.

For example, in banking industry, Internet Banking, Mobile Banking and Use of Automated teller machines (ATMs) reduced the banking at branch hence cost of establishing branches can be saved by new entrants.

- (b) **Supplier's bargaining power:** IS/IT can be used to prevent cartelisation of suppliers by facilitating **e-procurement** or helping to identify new suppliers. Internet has helped firms with better price discovery for its raw material and service requirements. IT is intensively used to realise the **concept of integrated supply chain** as a reality. **Strategic or operational alliance are formed with the vendors and access of ERP extended to include them** as part of larger supply chain.
- (c) **Buyer's bargaining power:** IT maybe used to **reach out directly to the end customers of a product**, thereby reducing the bargaining power of intermediaries. Companies can cater to the final customers directly **through online portals**. This has improved customer service as well as market reach. Customer data warehousing and mining provides large volume of data about customer choice, preference, buying pattern which can be used by the company to provide personalized service to its customers.
- (d) **Threat of substitutes:** Companies can use **computer aided design and manufacturing to develop new products** ahead of their competitors and then patent them in order to prevent its rivals from imitating its innovation. **Intellectual property rights and research and development** can help companies restrict other firms from doing the same business and can create barriers to entry. This reduces the threat of substitutes.
- (e) **Competitive Rivalry:** Profitability or market share is determined by the intensity of competition within the industry. A company **can use IT resources to gain cost leadership**. IT resources can help in the execution of strategies like Just in Time systems, Enterprise Resource Systems etc. IT can also be used for **collaborative venture** that make organisation too big to fail or reduced the competitor's motivation and effect.

For example, A reputed travel agency and a hotel chain come together as travelling and stay partner. IT can also be used for relationship building with client and customers so that they remain engaged with organisation this automatically reduce the threat from rivals, for these online notifications may be used.

To conclude, Business Organisation can use IT/ IS to transform business and its aspects to reduce and counter five forces, while outperform its peers or rivals.

*Conceptually correct **brief explanations are sufficient** for each step. **Alternate Points or Reasoning are also possible**. However, issue must be addressed properly, and the answer must respond to the requirement.*

Question 2

- (a) *The Management of a Company aims to streamline its cost structure related to quality management while focusing on quality improvement. They have identified the following cost elements associated with quality:*

Cost Elements	Amount (₹)
<i>Product Returns and Replacements</i>	2,40,000
<i>Incoming Raw material Inspections</i>	2,10,000
<i>Packaging Material Inspection</i>	1,05,000
<i>Quality Audits</i>	1,80,000
<i>Materials Rejection and Disposal</i>	95,000
<i>Product Acceptance</i>	1,55,000
<i>Education of Suppliers</i>	1,45,000
<i>Rework of Defective products</i>	1,40,000
<i>Outside Certification</i>	1,10,000
<i>Cost of Recalls</i>	90,000
<i>Post-purchase Customer support</i>	1,10,000
<i>Supplier Evaluation and Selection</i>	90,000
<i>Production line testing</i>	75,000
<i>Downtime due to quality issues</i>	2,15,000

Required

- (i) *Categorise each cost element into prevention, appraisal, internal failure, and external failure categories. (7 Marks)*
- (ii) *Determine the percentage of total costs of quality incurred in each cost category by utilizing the provided cost breakdown for the company. (1 Mark)*
- (iii) *Interpret the distribution of costs across different quality-related categories and suggest potential strategies the company could adopt to enhance its quality management practices while optimizing costs, with a focus on prevention, appraisal, and addressing failure costs. (2 Marks)*
- (b) *PQ Company, a manufacturer of computer games, has developed a new game called the 'WIN'. This is an interactive 3D game and is the first of its kind to be introduced to the market. PQ Company is going to launch the 'WIN' in time for the peak selling season.*

The following cost details relate to 'WIN' are:

	Development	Launch	Growth	Maturity	Decline
Time period	Finished	1 year	1 year	1 year	1 year
R&D Costs (₹ in lakhs)	200				
Marketing Costs (₹ in lakhs)		50	40	30	9
Production cost per unit (₹)		250	225	200	225
Production volume (lakhs units)		1	5	10	4

The launch price is proving a contentious issue between managers. The Marketing Manager is keen to start with a low price of around 300 to gain new buyers and achieve target market share. The Account's Manager is concerned that this does not cover cost during launch phase and has produced the following schedule to support this:

Launch Phase	₹ in lakhs
Amortized R&D costs (200/4)	50
Marketing Costs	50
Production Costs (250*1)	250
Total Costs	350
Total production (units in lakhs)	1
Cost per unit (₹)	350

Traditionally PQ Company has priced its games based on standard manufacturing cost plus selling and administration cost plus a profit margin. However, the management team of PQ Company has recently attended a computer games conference where everyone was talking about life cycle costing and market based pricing approaches. The Managing Director of PQ Company would like more details on the topics they heard about and how they could have been applied to 'WIN'.

Required

- (i) Calculate cost per unit for the whole life cycle of the product 'WIN' and comment on the implications of this cost with regards to the pricing of the product during the launch phase. **(6 Marks)**
- (ii) Evaluate any one issue the management team will need to consider at each stage in the product life cycle of 'WIN'. **(4 Marks)**

Answer**(a) (i) Categorisation of Cost Elements**

Costs	Prevention Cost (₹)	Appraisal Cost (₹)	Internal Failure Cost (₹)	External Failure Cost (₹)
Product Returns and Replacements	---	---	---	2,40,000
Incoming Raw Material Inspections	---	2,10,000	---	---
Packaging Material Inspection	---	1,05,000	---	---
Quality Audits	1,80,000	---	---	---
Material Rejection and Disposal	---	95,000	---	---
Product Acceptance	---	1,55,000	---	---
Education of Suppliers	1,45,000	---	---	---
Rework of Defective Products	---	---	1,40,000	---
Outside Certification	---	1,10,000	---	---
Cost of Recalls	---	---	---	90,000
Post-purchase Customer Support	---	---	---	1,10,000
Supplier Evaluation and Selection	90,000	---	---	---
Product line testing	---	75,000	---	---
Downtime due to quality issues	---	---	2,15,000	---
Total	4,15,000	7,50,000	3,55,000	4,40,000

(ii) Percentage of Total Costs of Quality

Costs	Prevention Cost	Appraisal Cost	Internal Failure Cost	External Failure Cost
Total Cost	₹ 4,15,000	₹ 7,50,000	₹ 3,55,000	₹ 4,40,000
% of Total Cost	21.17%	38.27%	18.11%	22.45%

(iii) Interpretation

The company's cost for prevention accounts for 21.17% of the total, while appraisal cost accounts for 38.27%. The combined cost of both quality

conformance costs is close to 60%. Thus, 40% of the cost is attributed to non-conformance. A substantial portion of the entire cost—nearly 17%—is attributed to product recalls and returns, which is not a positive indication.

If company wants to continue to improve its reputation for quality, it needs to reduce the number of units rejected by customers, which means it will need to increase conformance costs. Higher spending on conformance led to lower costs of non- conformance.

(b) (i) **Statement Showing Life Cycle Cost**

Particulars	Amount
R& D Costs (₹ in lakhs)	200
Marketing Costs (₹ in lakhs)	129
Production Cost (₹ in lakhs)	4,275
Total (₹ in lakhs)	4,604
Production Volume (lakhs units)	20
Cost per unit	230.2

Comment on implications

The cost was calculated at ₹ 350 per unit during the launch phase. Based on this cost the accountant was right to be concerned about the launch price being set at ₹ 300 per unit. However, **looking at that whole life cycle the marketing manager’s proposal seems more reasonable.** The average cost per unit over the entire life of the product is only ₹ 230.20 per unit. Therefore, a starting price of ₹ 300 per unit would seem reasonable and would result in a profit of **₹ 69.80 per unit.**

If PQ were to implement life cycle costing, it would provide an overview of the “WIN” 's performance. This would provide vital information when **assessing potential cost reduction opportunities as well as revenue extension opportunities for the game.**

As the “WIN” is the first of its type to the market, PQ could pursue one of the Market-based pricing strategies -

Price Skimming

This method of pricing sets high initial prices in an attempt to exploit those sections of the market which are relatively insensitive to price changes. **As demand for computer games is generally highly inelastic, PQ would be advised to follow a market skimming strategy and set a high price to take advantage of the new game and the timing of its launch.**

Penetration pricing

This method sets in very low prices the initial stages of a product's life cycle to gain rapid acceptance of the product and therefore a significant market share.

This method of pricing is followed if a company wishes to discourage new entrants to the market. There may also be significant economies of scale to be gained if the low pricing leads to high volume and therefore cost reduction.

Target pricing

This method would mean that PQ would first undertake some market research to determine the target selling price for the "WIN." It would then use this target selling price to arrive at a target cost.

(ii) Issue the management team will need to consider**Introduction**

The product is introduced to the market. The product has been designed. Developed and packaged. Large amounts of money have already been spent on WIN up to this point.

Advertising and Marketing: When the product is first launched on the market demand is likely to be small. A lack of familiarity with the new product and its sources of availability will work against large initial sales, and it will usually be necessary to spend heavily on advertising to bring the product to the attention of potential customers.

A combination of relatively high costs, relatively low sales volume, and the potential problem of rejection by the market conspire to make this *the riskiest stage* in the life cycle.

Growth

Assuming the product successfully negotiates the perils of the introduction stage, it will enter the growth phase, where demand for the product increases steadily and average costs fall, with the economies of scale that a company the greater production volume.

This stage should offer the greatest potential for profit to the producer, even though competitors will be prompted to enter the growing market.

Cost reduction and control: As volume increases and unit cost begins to fall, managers should avoid assuming that the product is cost efficient. The target cost (if used) should continually be reduced during this stage and staff should continue to develop new cost-efficient production methods.

Maturity

By this stage the WIN will have reached the mass market and the increase in demand will begin to slow down. The sales curve will flatten out and eventually start to decline. Profitability will generally to at a lower level than in the growth phase.

Product development: In order to generate higher profits, PQ Company may try to extend the phase in the product’s life cycle. The product may be modified or improved, as a means of sustaining its demand. Managers may try to reach new market segments.

Decline

The fall in sales accelerates when the market reaches saturation point. It is likely that new technology will mean that superior interactive games are being launched. Although it is still possible to make profits for a short period during this stage, it is only a matter of time before the rapidly dwindling sales volumes herald the onset of losses for all producers who remain in the market. The product has effectively reached the end of this life cycle and more profitable opportunities must be sought elsewhere.

The final decision that must be reached is when to **withdraw the product from the market**.

Conceptually correct **brief explanations are sufficient** for each step. **Alternate Points or Reasoning are also possible**. However, issue must be addressed properly, and the answer must respond to the requirement.

Question 3

- (a) Violet Limited comprises of two divisions, Division P and Division M, both of which are resident in a country where company profits are subject to taxation at 30%.

Division P is the Production division which assembles desktop computers and sells to several industry sectors. Many of the components used in these desktop computers are purchased from Division M.

Division M manufactures components from raw materials, many of which are imported. The components are sold globally. Some of the components are sold to Division P.

Both Division P and Division M are profit centers.

Operating results of both the divisions for the year ended 31st March 2023 are as follows:

Particulars	Division P	Division M
	Amount (₹)	Amount (₹)
External Sales	63,00,00,000	20,00,00,000
Sales to Division P	-	17,50,00,000

Total Sales	63,00,00,000	37,50,00,000
Less: Cost of Sales	45,00,00,000*	12,50,00,000
Administration costs	11,00,00,000	6,50,00,000
Operating Profit	7,00,00,000	18,50,00,000

[*Cost of Sales in Division P includes the cost of components purchased from Division M.]

The current policy of the company is to allow the managers of each division to negotiate with each other concerning the transfer prices.

The manager of Division M charges the same price internally for its components that it charges to its external customers. The manager of Division M argues that this is fair because if the internal sales were not made, he could increase his external sales. An analysis of the market demand shows that currently Division M satisfies only 80% of the external demand for its components.

The manager of the production division, Division P believes that the price being charged by Division M for the components is too high and is restricting Division P's ability to win orders.

Recently Division P failed to win a potentially profitable order which it priced using its normal gross profit mark-up. The competitor who won the order set a price that was 10% lower than Division P's price.

An analysis of the cost structure of Division M indicates that 40% of the cost of sales is fixed costs and the remaining costs vary with the value of sales.

Required

- (i) Evaluate how the present transfer pricing policy is affecting the overall performance of the group. **(2 Marks)**
 - (ii) Recommend, with appropriate calculations, the transfer price, or prices at which the components should be supplied by Division M to Division P. (Assume that if division M sells components internally, there is a chance of saving on distribution costs, bad debts risk and currency risk up to 10% of the sales amount. Another assumption is that if internal transfer is done at variable cost, then a small saving incentive of 10% may be added to the variable cost). **(6 Marks)**
 - (iii) The company's CEO is considering relocating Division M to a country that has a much lower rate of company taxation than that in its current location. Explain the potential tax consequences of the internal transfer pricing policy if Division M were to relocate. **(2 Marks)**
- (b) V-Air is one of the growing number of low-cost airlines in the country of YZ. V-Air's strategy is to operate a low-cost, high efficiency airline, and it does this by:
- Operating mostly in secondary cities to reduce landing costs.

- *Using only one type of aircraft in order to reduce maintenance and operational costs. These planes are leased rather than bought outright.*
- *Having only one category of seat class.*
- *Having no pre-allocated seats or in-flight entertainment.*
- *Focusing on e-commerce with customers both booking tickets and checking in for flights online.*

The airline was given an A+ grading by the country's aviation authority, which rank all of the country's airlines based on the number of flights which arrive on time at their destinations. Fifty eight V- Air flights were cancelled in 2022 compared to forty four in 2021. This increase was due to an increase in the staff absentee rate at V-Air from 4 days per staff member per year to 5.3 days.

The average 'ground turnaround time' for airlines in the country of YZ is 50 minutes, meaning that, on average, planes are on the ground for cleaning, refuelling etc. for 50 minutes before departing again. Customer satisfaction surveys show that 85% of customers are happy with the standard of cleanliness on V-Air's planes.

The number of passengers carried by airline has grown from 4,00,000 passengers on a total of 3,850 Flights in 2021 to 9,75,000 passengers on 7,560 flight in 2022. The overall growth of V-Air has been helped by the limited route licensing policy followed by the government of country YZ. This has given V-Air almost monopoly status on some of its routes. However, the government is now set to change this policy with almost immediate effect and it has become more important than ever to monitor performance effectively.

Required

- (i) *Discuss advantages of using financial measure as a performance measure.*
- (2 Marks)**
- (ii) *Construct a Balanced Score Card table such that, for each perspective, TWO goals together with corresponding performance measures are identified for V- Air. Also evaluate why those goals and performance measures are relevant to V- Air.*

(8 Marks)

Answer

- (a) (i) Currently Division P, the desktop manufacturing unit, purchases some of its components from Division M, the component manufacturing unit. Both have an external market for its products. The current transfer pricing policy allows each division to negotiate with each other concerning transfer prices on internal sales. Internal sales amount to ₹ 17,50,00,000 for the year ended March 31st 2023. Both Divisions are profit centers, therefore there is accountability on the manager of each division for the profit the division generates. Consequently, the manager of Division M wants to reflect maximum sales revenue in his books, which will in turn boost the

profits shown by Division M. The revenue generated by Division M on internal sales will be reflected as cost of sales in the books of Division P. Since Division M is charging a higher external sale price, the costs that Division P needs to recoup from its sales to the external market increases. Pricing for Division P is based on gross profit mark up, which is based on its cost price. **Since the cost of procurement from Division M is high, the pricing for Division P's desktop computers is also higher. This is affecting Division P's ability to compete in the external market. The internal transfer pricing policy resulted in the loss of a potential order due to inability of Division P to lower its price in order to compete with its competitor.**

The manager of Division P may be unwilling to lower the price of its desktop because he has an accountability for the profit reflected in the division's books. **Overall, the transfer pricing policy is not promoting goal congruence for Violet Limited as each manager wants to reflect the maximum divisional profit. This has resulted in loss of market share, revenue and profits for the company as a whole.**

- (ii) **Recommended Transfer Price for internal sales of components from Division M to Division P.**

The cost structure of Division M is composed on fixed component 40% of cost of sales and the balance being variable cost. Total cost of Division M is ₹ 19,00,00,000 for the year comprising of cost of sales ₹ 12,50,00,000 and administration costs ₹ 6,50,00,000. The cost structure in terms of fixed and variable cost is summarized below in Table 1.

Table-1: Cost Structure Analysis of Division M

	Amount in ₹
Total cost of Division M (Cost of Sales + Administration Cost)	19,00,00,000
<i>Less: Administration Costs (assumed fixed hence irrelevant)</i>	6,50,00,000
<i>Less: Fixed Cost (40% of cost of sales)</i>	5,00,00,000
Variable Cost	7,50,00,000

Therefore, the variable cost component for Division M is ₹ 7,50,00,000 for the year.

The calculation of contribution margin earned by Division M from its sales is summarized in Table 2. It is given in the problem that internal sales of Division M are also priced at external sale price for each unit. Therefore, the contribution earned on both internal and external sales is the same.

Table-2: Calculation of Contribution Margin for Division M

	Amount in ₹
Total Sales of Division M	37,50,00,000

Less: Variable Cost (refer to table 1)	7,50,00,000
Contribution	30,00,00,000
Contribution Margin = Contribution / Total Sales × 100	80%

Note 1: Variable cost related to internal sales = Total variable cost × internal sales / total sales

$$= ₹ 7,50,00,000 \times (\text{₹ } 17,50,00,000 / \text{₹ } 37,50,00,000)$$

$$= ₹ 3,50,00,000$$

Division M is currently catering to only 80% of its external sales. Its current external sales for the year are ₹ 20,00,00,000. The calculation for lost external sales on account of internal transfer to Division P is shown in Table 3.

Table-3: Lost External Sales of Division M

	Amount in ₹
Current External Sales (80% of external demand) ... (A)	20,00,00,000
Total External Demand for Division M's Components (₹ 20,00,00,000/ 80%) ... (B)	25,00,00,000
Lost Sales due to internal transfer to Division P ... (B)- (A)	5,00,00,000
Contribution on Lost Sales @ 80%	4,00,00,000

Note 2: The contribution margin on lost sales amounting to ₹ 4,00,00,000 is currently being recouped from Division P as full external price is charged by Division M even on internal transfers. Therefore, Division M is not suffering loss of profitability on account of internal sales.

It is important to analyse the capacity utilization of Division M. The level of capacity utilization will determine whether Division M is justified in charging any opportunity cost, in the form of contribution lost from external sales. The analysis of Division M's capacity utilization is shown in Table 4.

Table-4: Capacity utilization Assessment of Division M

	Amount in ₹
Internal Sales to Division P	17,50,00,000
Lost External Sales of Division M due to Internal Transfer	5,00,00,000
Excess of Internal Demand over and above Lost Sales	12,50,00,000
Contribution on Sales charged on "Internal Sales" using unutilized excess capacity at Division M @ 80%	10,00,00,000

Division M is currently catering to internal sales of ₹ 17,50,00,000 while the external sales lost due to this internal order is only ₹ 5,00,00,000. Division M is justified in charging the contribution margin on ₹ 5,00,00,000 lost external sales, amounting to ₹ 4,00,00,000 for the year, as this represents an opportunity cost for the Division.

The rest of the internal sales to Division P that is the balance ₹ 12,50,00,000 sales is being generated from unutilized capacity lying idle at Division M.

Note 3: If Division M catered to only external demand and had not catered to internal demand for Division P. it would still have excess unused capacity. Instead of remaining idle this excess unused capacity is used to cater to Division P's requirements to generate sales worth ₹ 12,50,00,000 for Division M.

Note 4: In order to promote goal congruence, Division M should not charge contribution on the internal sales generated using its excess unutilized production capacity. Therefore, Division M should not charge contribution on such sales. This will result in a reduction in internal transfer price amounting to ₹ 10,00,00,000.

Therefore, it can be concluded that there is scope for Division M to reduce the internal transfer price that it charges to Division P. There is scope for reduction in the following areas:

- (1) Savings in variable cost on internal transfers on account of lower risk of bad debts, distribution cost, currency risk etc. that amounts to 10% of sale value. This amounts to ₹ 1,75,00,000 for this year.
- (2) As discussed in the capacity utilization analysis, lower the sale price on internal transfers by ₹ 10,00,00,000 on production made from unused idle capacity at Division M.

Transfer Price from Division M to Division P

Variable Cost on Internal Sales	3,50,00,000
Less: Savings in Variable Cost (due to internal transfer distribution cost, bad debt risk, currency risk = 10% of internal sales) (assumed 'complete amount' is included in the variable cost of sales)	1,75,00,000
Revised Variable Cost on Internal Sales	1,75,00,000
Add: Markup (for unutilised capacity - transfer) [1,75,00,000 (revised VC) × 12,50,00,000 (internal transfer)/ 17,50,00,000 (total transfer)] @10%	12,50,000
Add: Contribution Margin on Lost Sales (for lost external sale)	4,00,00,000
Transfer Price	5,87,50,000

As shown above, the transfer price that can be agreed upon between Division M and Division P will be ₹ 5,87,50,000.

This part can also be solved by considering that Division M (profit center) will transfer the unsatisfied external demand at market price less savings on distribution costs, bad debts risk and currency risk up to 10% of the lost sales amount then the transfer price will be –

Transfer at Market price due to unsatisfied external sales	5,00,00,000
Less: Saving in distribution cost, bad debt risk, currency risk @10%	50,00,000
Value of transfer at market price less small savings (A)	4,50,00,000

The balance portion can be transferred at variable cost plus a small saving incentive of 10% being added to the variable cost.

Variable Cost on Internal Sales (17,50,00,000-5,00,00,000) X 20%	2,50,00,000
Add: Markup (for unutilised capacity - transfer) @10%	25,00,000
Value of transfer price for unutilised capacity (B)	2,75,00,000

In such a situation the maximum range of transfer price may be computed as 7,25,00,000 [4,50,00,000 +2,75,00,000]

- (iii) Potential tax consequences of internal transfer policy if Division M were to relocate to a country with lower company tax rate.

The tax rate at current location is 30% for Division M. Therefore, 30% of taxable profit of Division M. **By relocating Division M to a country with lower company tax rate, the tax impact on earnings can be reduced. This will increase the overall after-tax profits of the company. Also, where the tax rate is lower, Division M can charge a higher rate on its internal transfers. The result of this would be that revenue at Division M would be charged at a lower rate. Meanwhile Division P can claim a higher cost of procurement which can be used to reduce its taxable profit, which is charged at a higher rate of 30%. Again, this will increase the overall after-tax profits of the company.**

The goal of such tax planning decisions should be to reduce the tax impact on earnings for the company within the legal prescribed framework and not tax avoidance.

Conceptually correct **brief explanations are sufficient** for each step. This question can also be solved **by assuming 'Administration Costs' as variable.**

- (b) (i) Financial measures can be quantified and provide definite information to key stakeholders like management, shareholders, and lenders about the impact of the company's strategic decisions on the revenue and earnings of the company.

- Focus on financial objectives is linked to the overall objective of wealth creation of shareholders. External users of accounts recognise financial measures as a tool to identify the success or failure of the policies of the directors who, as stewards of the assets, are entrusted with the task of increasing the wealth of shareholders.
- Such measures are objective. Terms like earnings per share are easily understandable and shareholder clearly understands what his / her gain is.
- Quantification of results is possible.
- The measures are comparable across companies of a particular industry.
- The framework to measure financial performance is established in most of the cases.

(ii) **Balanced Scorecard Table for V Air, a low-cost high efficiency airline –**

Perspective	Strategic Objective	Measure	Relevance to V Air
Financial Perspective	Goal-1: To use fewer planes to transport customers	Lease costs of plane per - customer	Operating efficiency will be driven by getting more customers on fewer planes. This goal and measure cover the cost side of this. V Air strategy is to win market through cost leadership. Hence lower cost is of paramount importance to the airline.
	Goal-2: To increase seat revenue per plane	Revenue per available passenger mile Revenue per average seat kilometre	This covers the first part of achieving operating efficiency – by having fewer empty seats on planes
Customer Perspective	Goal-1: To ensure that flights are on time.	'On time arrival' ranking from the aviation authority	V Air is currently number A+ in the rankings. If it becomes known as a particularly reliable

			airline, customers are more likely to use it, which will ultimately increase revenue.
	Goal-2: To reduce the number of flights cancelled	The number of flights cancelled	Again, if flights are seen to be cancelled frequently by V Air, customers will not want to use it. Number of flight cancellations increased from 44 in 2021 to 58 in 2022. This can affect customer perception of the airline and affect customer ranking.
Internal perspective	Goal-1: Cycle time optimization	'On the ground' time	Cycle time optimization to increase flying hours for each aircraft. Currently the average "ground turnaround time" is 50 minutes. Less time spent on the ground means fewer planes are needed, which will reduce plane leasing costs. However, it is important not to compromise the quality of cleaning or make errors in refuelling as a consequence of reducing on the ground time.
	Goal-2: To improve the cleanliness of V-Air's planes	The percentage of customers happy with the	Currently 85% of customers are satisfied with the

		standard of the planes, as reported in the customer satisfaction surveys.	standard of cleanliness on V Air's planes. This could be causing loss of revenue.
	Goal-3: To develop the online booking system	Percentage downtime	Since the company relies entirely on the booking system for customer booking of flights and check-in, it is critical that it can deal with the growing number of customers.
	Goal 4: Flight Safety	No. of instances of serious lapses in flight safety	Number of flights operated by V Air has nearly doubled from 3,850 flights in 2021 to 7,560 flights in 2022. The passengers serviced have also doubled. Ensure flight safety should be a priority for V Air.
Learning and Growth	Goal-1: Route Network Development	Number of Routes expected to be with drawn Number of New Routes % of Load for New Route Time period to break-even	V Air's monopoly on certain routes can change due to change in government policy. This could increase competition. Therefore, it would explore new revenue streams.
	Goal-2: Staff Motivation and Loyalty	The number of days absent per employee	V Air should allow for personal growth of employees to combat staff attrition and staff absenteeism. Staff absenteeism increased from 4 days per staff per year to

			5.3 days this year. Employee feedback should be taken to understand the reason. Motivated staff promotes customer focused culture.
	Goal-3: Functional excellence and Leadership skills	Number of days' training per ground crew member Number of training programs	V Air should improve and maintain its strategic skill ratio through training and development programs Improve job readiness through training by making employees multi skilled. For example, If ground crew are better trained, they can reduce the number of minutes that the plane stays on the ground, which will result in fewer planes being required and therefore lower costs.

Conceptually correct **brief explanations are sufficient** for each step. **Alternate classifications, measures or reasoning are also possible.** However, the issue must be addressed properly, and the answer must respond to the requirement. Only two goals together, along with corresponding performance measures and relevance, are sufficient.

Question 4

- (a) DP Capital Advisors Private Limited is an investment advisory company which offers a wide variety of services on succession, real estate, insurance, and wealth management advisory services which is customizable to fit the client's individual needs. Over the past three years, DP has seen increased competition, evolving customer preferences, and rising costs. As a result, its profit margins have been steadily declining.

The Board of Directors of DP recognizes the urgent need to improve profitability. They believe that there is a need for Business Process Reengineering (BPR) effort which can help identify and address inefficiencies, streamline operations and ultimately boost profits.

Required:

- (i) Explain very briefly what is meant by business process Reengineering (BPR). What is the purpose of business process reengineering? **(2 Marks)**
- (ii) Recommend the main stages of Business Process a Reengineering (BPR) exercise. **(2 Marks)**
- (iii) Advise how Business Process Reengineering (BPR) could help to improve the profits of DP Capital. **(1 Mark)**
- (b) PQC owns and operates a chain of popular cocoa shops that serve over 50 different varieties of cocoa based beverages. The constraint at the cocoa shops is the amount of time required to fill an order, which can be considerable for the more complex beverages. Sales are often lost because customers leave after seeing a long waiting line to place an order. Intensive analysis of the company's existing products has revealed that the opportunity cost of order filling time is ₹ 180 per minute. The company is considering introducing a new product 'Dark Choco bar', to be made with dark cocoa, milk, cream and sugar. The variable cost of the standard size 'Dark Choco bar' would be ₹ 20 and the time required to fill an order for the beverage would be 40 seconds.

Required:

- (i) Recommend the minimum acceptable selling price for the 'Dark Choco bar' product. **(3 Marks)**
- (ii) List the situations where 'minimum pricing approach would be useful. **(2 Marks)**

OR

'Sweda' is a small proprietary firm that engages in trading activities. In the last few months, 'Sweda' has witnessed significant growth in its business and is now considering whether to administer its own internal service department for maintaining books or use an external accounting service.

It has obtained the following cost estimates for each option:

Internal Service Department

	Amount (₹)
Purchase Hardware / Software	5,000 per annum
Hardware / Software Maintenance	2,500 per annum
Accounting Stationery	1,500 per annum
Part- time Accounting clerk	60,000 per annum

External Service Department

	Amount (₹)	Volume
<i>Processing of invoices /credit notes</i>	<i>2.5 per document</i>	<i>5,000 per annum</i>
<i>Processing of cheque payments</i>	<i>2.5 per cheque</i>	<i>4,000 per annum</i>
<i>Reconciling supplier accounts (Uniform through -out the year)</i>	<i>50 per supplier per month</i>	<i>150 suppliers</i>

Required:

- (i) Calculate the net benefit/loss of outsourcing the accounting activities and advise on the course of action to be taken. **(3 Marks)**
- (ii) Evaluate the qualitative factors involved in this outsourcing decision. **(2 Marks)**
- (c) CAL Limited is a steel manufacturing company. The company has major expansion plans to make a global presence. The company recently automated its plant at the beginning of the current year and installed a flexible manufacturing system. CAL hired XYZ Consultants, a leading business consultancy firm to review its business processes and recommend suitable action plan.

XYZ Consultants have informed the management that several adjustment problems have been encountered, including problems relating to performance measurement. They have recommended the company to use performance measures for its operations such as throughput time, delivery cycle time and manufacturing cycle efficiency. In this connection, they have gathered data relating to these measures for the first four months of operations.

Particulars	Month 1	Month 2	Month 3	Month 4
<i>Percentage of on-time deliveries</i>	<i>93%</i>	<i>88%</i>	<i>85%</i>	<i>81%</i>
<i>Total Sales (units)</i>	<i>3,310</i>	<i>3,172</i>	<i>3,015</i>	<i>2,906</i>

Further, the following average times have been logged over the last four months:

Particulars	Average per month (days)			
	1	2	3	4
<i>Move time per unit</i>	<i>0.5</i>	<i>0.4</i>	<i>0.5</i>	<i>0.5</i>
<i>Process time per unit</i>	<i>2.2</i>	<i>2.1</i>	<i>2.0</i>	<i>1.9</i>
<i>Wait time per order before start of production</i>	<i>16.5</i>	<i>18.0</i>	<i>19.5</i>	<i>21.0</i>
<i>Queue time per unit</i>	<i>4.4</i>	<i>5.1</i>	<i>5.9</i>	<i>6.8</i>
<i>Inspection time per unit</i>	<i>0.7</i>	<i>0.8</i>	<i>0.8</i>	<i>0.7</i>

Required

- (i) Calculate the throughput time, Manufacturing Cycle Efficiency (MCE) and the delivery cycle time for each month. **(5 Marks)**
- (ii) Evaluate the company's performance over the last four months with respect to the three parameters as calculated in (i) above. **(3 Marks)**
- (iii) XYZ Consultants have suggested in their report to management that "application of MCE (Manufacturing Cycle Efficiency) can be done in reducing the Non-Value-Added Activities." Advise how? **(2 Marks)**

Answer

- (a) (i) **BPR is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement in critical contemporary measures of performance, such as cost, quality, service, and speed.** In other words, BPR is concerned with the result of the process (i.e., with those activities that add value to the process).

- (ii) **To implement BPR, firstly, each business process of DP Capital needs to be divided into a series of processes. Then, each business process requires to be documented and analysed to find out whether it is essential, whether it provides support to other valuable processes and whether it is adding value.**

Any process which does not add value or does not provide essential support to the value adding activities must be removed. Those processes that remain require to be re-engineered/ re-structured so that can be as efficient as possible.

- (iii) For DP Capital, new technology should be introduced to improve these processes. However, DP Capital must ensure that the statutory compliances regarding these processes are not undermined. DP is facing a hyper-competitive marketplace where customers expect a superior experience. *BPR activities would help DP Capital in understanding those processes which DP's customers value the most and remove those that are not valued.* Now a days various firms are offering diverse range of services such as direct access to executive management, a single point of contact to coordinate all their needs, appointment consultancy to save time, free online services 24/7 etc. Clearly these are valuable business processes valued by the customer. DP Capital should incorporate all these facilities in their processes to enhance customer satisfaction and service level. ***It is likely that BPR may increase costs in short-term as investment in technology. However, this would also reduce substantial levels of manual activities and processes thereby providing speedy services to customers. In the long term, this would result in high levels of efficiency, profitability and better levels of customer satisfaction and retention.***

Conceptually correct **brief explanations are sufficient.**

- (b) (i) The selling price of the new ‘Dark Choco bar’ product should at least cover its variable cost and its opportunity cost. The variable cost of the new product is ₹20, and its opportunity cost can be computed by multiplying the opportunity cost of ₹180 per minute of order filling time by the amount of time required to fill an order for the new product.

Minimum Selling Price for ‘Dark Choco bar’

Cost Component	₹
Variable Cost	20
Add: Opportunity Cost (180/ 60 × 40)	120
Relevant costs of manufacturing	140

Hence, the selling price of the new product should at least cover both its variable cost of ₹ 20 and its opportunity cost of ₹ 120, for a total of ₹ 140.

- (ii) **The minimum pricing approach is a useful method in situations where there is a –**
- lot of intense competition,
 - surplus production capacity,
 - clearance of old inventories,
 - getting special orders and/ or
 - improving the market share of the product.

OR

- (i) **Calculation of the net benefit/ loss of outsourcing**

	Internal Service Department Cost ₹ Per annum	External Service Department Cost ₹ Per annum
Purchase Hardware/ Software	5,000	---
Hardware/ Software Maintenance	2,500	---
Accounting Stationery	1,500	---
Part-time Accounting Clerk	60,000	---
Processing of Invoices/ Credit Notes	---	12,500
Processing of Cheque Payments	---	10,000
Reconciling Supplier Accounts (Uniform through-out the year)	---	90,000
	69,000	1,12,500

It would not be cost effective to outsource the accounting activities as the cost of outsourcing exceeds internal processing costs.

(ii) The following qualitative factors must be taken into account when outsourcing the accounting task:

- **Reliability and the trust** for outsourcing the accounting function to the third party as the payment cycles, processing of invoices, and supplier accounts have to be maintained with secrecy and has to be managed well.
- The **time required** for the accounting activity and the potential impact on the overall productivity of the business if this activity is outsourced.
- **Compliance with the various laws** is achievable when outsourced.
- The outside company must be able to communicate clearly and in a timely manner along with providing a **proactive approach to resolving issues**.

Alternate Points or Reasoning are also possible. However, the issue must be addressed properly, and the answer must respond to the requirement.

(c) (i) Calculations

Particulars	Month 1	Month 2	Month 3	Month 4
Throughput time	= 0.5 + 2.2 + 4.4 + 0.7 = 7.8 days	= 0.4 + 2.1 + 5.1 + 0.8 = 8.4 days	= 0.5 + 2 + 5.9 + 0.8 = 9.2 days	= 0.5 + 1.9 + 6.8 + 0.7 = 9.9 days
Manufacturing Cycle Efficiency	= 2.2/ 7.8 = 28.21%	= 2.1/ 8.4 = 25%	= 2/ 9.2 = 21.74%	= 1.9/ 9.9 = 19.19%
Delivery Cycle Time	= 7.8 + 16.5 = 24.3 days	= 8.4 + 18 = 26.4 days	= 9.2 + 19.5 = 28.7 days	= 9.9 + 21 = 30.9 days

(ii) All the performance measures display unfavourable trends.

- Throughput time per unit is increasing largely because of increase in queue time.
- Manufacturing cycle efficiency (MCE) is declining which implies that majority of the time a unit is in process is spent on activities that do not add value to the product.

Particulars	Month 1	Month 2	Month 3	Month 4
Manufacturing Cycle Efficiency	= 28.21%	= 25%	= 21.74%	= 19.19%

Non-Value-Added Activities	= 71.79%	= 75%	= 78.26%	= 80.81%
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- **Delivery cycle time is increasing. In addition, the percentage of on-time deliveries has dropped month on month basis from 93% in Month 1 to 81% in Month 4.**
- (iii) As a company reduces nonvalue added activities, the MCE increase rapidly. The goal, of course is to have an efficiency of 100%. This will be achieved when all non-value-added activities have been eliminated and process time is equal to throughput time.

Or

A manufacturing cycle efficiency of less than 1 means that there is non- value- added time in the production system. For example, 0.40 would mean that 60% of a product's time would be spent in non- value- added activities. In many manufacturing companies MCE is less than 0.10. Reducing non-value-added activities means that the seller can get the product into the hand of the customer faster (and get paid sooner) and do so at a lower cost.

To reduce or eliminate non -value-added activities,

Inspection time can be reduced by developing the concept of *total quality control* and *zero-defect manufacturing*.

Moving time can be reduced by developing the concept of *cellular manufacturing*.

Waiting time and **storage time** can be reduced by developing the concept of *JIT Inventory System*. Just in time method eliminate a significant amount of idle time (especially storage) and increase MCE. JIT also has a positive impact on engineering, purchasing, receiving, warehousing, accounting, human resource and marketing.

MCE can also be computed with the formula:

$$\frac{\text{Processing Time}}{\text{Inspection Time} + \text{Process Time} + \text{Queue Time} + \text{Move Time} + \text{Wait Time}}$$

Or say, *throughput time* also **includes Wait Time**.

All components of MCE and Delivery Cycle Time have been given based on 'per unit' except Wait time, which is given on 'per order' basis. This question has been solved by considering the same on '**per unit**' basis. **Alternate Solution is also possible.**

Question 5

- (a) CMP Chemicals have the following environmental activities and product information:

Environmental activity costs:

Activity	Costs
Design processes (to reduce pollution)	₹ 21,60,000

Test for contamination	₹ 38,40,000
Treat toxic waste	₹ 96,00,000
Maintain environmental equipment	₹ 60,00,000

Driver data:

	Solvent 'Acetone'	Solvent 'Benzene'
Design hours	4,000	2,000
Testing hours	3,500	4,500
Pounds of waste	2,000	38,000
Maintenance hours	400	9,600

Other production data:

	Solvent 'Acetone'	Solvent 'Benzene'
Non-environmental production costs	₹ 4,41,60,000	₹ 7,82,40,000
Units produced	4,00,000	4,00,000

Required

- (i) Calculate the environmental cost per unit and the total cost per unit of each product using Activity Based Costing (ABC). **(6 Marks)**
- (ii) Assume that the design costs increased to ₹ 38,40,000 and the cost of toxic waste decreased to ₹ 48,00,000 and the Solvent Benzene uses 4,000 hours out of 8,000 (total new design hours) design hours. Also assume that waste is cut by 50 per cent and that Solvent Benzene is responsible for 18,000 of 20,000 pounds of toxic waste. Evaluate the new environmental cost per unit for Solvent Benzene. **(2 Marks)**
- (iii) "The full and correct costing of products is a pre-condition for making sustainable business decisions such as the volume and choices of products to be produced. EMA converts many environmental overhead costs into direct costs and allocates them to the products that are responsible for their incurrence." In the light of this statement briefly, discuss the results of improved costing by EMA. **(2 Marks)**
- (b) SKY Limited is a well-established manufacturing company that operates in a competitive and rapidly changing industry. The company is currently using a traditional budgeting approach, preparing annual budgets based on historical data and top-down targets set by senior management. The priorities are discussed mostly or only at the senior management level as they are making decisions on the budget allocation. The finance team monitors actual vs. plan variance analysis.

However, the company is facing challenges in adapting to market fluctuations and lacks the agility to respond quickly to emerging trends. The management is considering

transitioning to a different budgeting approach i.e. Beyond Budgeting. Going forward, SKY wants to move away from the existing planning processes. This new approach will lead to a drastic mind-set change across the business. Instead of asking "Do I have the budget for this?", the organization would focus on "Is this the right thing to do for our customers?". The Finance team will now play a key role in enabling communication, based on trust across cross functional teams, sending a clear message that there is no secret budget or hidden agenda, In the spirit of transparency, reporting outcomes will be shared across the business at all levels.

This transformation will help team members acquire broader skills by moving away from being purely financial analysts to becoming holistic analysts or business analyst.

Instead of reassessing all assumptions, all the time (what would happen in traditional budgeting), SKY will focus on those which have a real impact and only involve those people from the business they really needed, allowing the rest of the business to make an impact where it mattered the most - with the customers.

Required

- (i) Discuss briefly the 'Traditional Budgeting Management Model' that SKY is following. **(1 Mark)**
- (ii) Explain very briefly the key feature of 'Beyond Budgeting Model' in the context of SKY Limited. **(2 Marks)**
- (iii) Principles for adaptive performance management are built upon foundation principles which relate to 'leadership principles' and 'management processes. Few principles/ processes have been cited below:

Particulars	Whether 'Leadership Principle' or 'Management Processes'	Brief Explanation
Plans and Forecasts		
Resource Allocation		
Autonomy		
Transparency		
Customers		

From the above information, identify the 'leadership principle' or 'management processes and discuss very briefly the principles/processes mentioned in the table.

(5 Marks)

- (iv) Discuss the key prerequisites for SKY's transitioning to Beyond Budgeting implementation. **(2 Marks)**

Answer

- (a) (i) **Calculation of environment production cost per unit and the total cost per unit for each product**

Activity	Base	Acetone	Benzene	Total Cost
Design Process Acetene = 4,000 / 6,000 × ₹ 21,60,000 Benzene = 2,000/ 6,000 × ₹ 21,60,000	Design hours	14,40,000	7,20,000	21,60,000
Test for Contamination Acetene = 3,500 / 8,000 × ₹ 38,40,000 Benzene = 4,500/ 8,000 × ₹ 38,40,000	Testing hours	16,80,000	21,60,000	38,40,000
Treat Toxic Waste Acetene = 2,000/ 40,000 × ₹ 96,00,000 Benzene = 38,000/ 40,000 × ₹ 96,00,000	Pounds of waste	4,80,000	91,20,000	96,00,000
Maintain Environmental Equipment Acetene = 400/10,000 × ₹ 60,00,000 Benzene = 9600/10,000 × ₹ 60,00,000	Maintenance Hours	2,40,000	57,60,000	60,00,000
Total Environment Production Cost		38,40,000	1,77,60,000	2,16,00,000
Add: Total Non-environment Production Cost		4,41,60,000	7,82,40,000	12,24,00,000
Total Cost of Production		4,80,00,000	9,60,00,000	14,40,00,000
Units Produced		4,00,000	4,00,000	8,00,000
Environment Production Cost per unit		9.60	44.40	
Total Cost of Production per unit		120.00	240.00	

- (ii) **Evaluation-** Revised environment production cost per unit for Benzene is ₹ 35.40 per unit. This has reduced from ₹ 44.40 per unit. The company invested more in improving the design of Benzene, due to which its share of design costs went up to 50% (4,000 hours out of 8,000 hours) while previously it was 33.33 % (2,000 hours out of 6,000 hours). Hence, the **share of design costs for Benzene has increased**. However, this investment has resulted in **reduction of toxic waste**, it has halved to

20,000 pounds from 40,000 pounds. Due to the investment in better design, the share of Benzene in generation of toxic waste reduced to 90% of total waste (18,000 pounds out of 20,000 pounds) from previously being 95% of total waste (38,000 pounds out of total 40,000 pounds). The cost of treating toxic water reduced dramatically to ₹ 48,00,000 from ₹ 96,00,000. Since Benzene's share in total toxic water production reduced, lower cost has been allocated to it.

It can thus be concluded that by investing in better design of Benzene, the company has reduced the toxic waste produced. Therefore, the total environment cost by ₹ 31,20,000 for the year, primarily benefitting reduction in the cost of production of Benzene.

Workings

Calculation for revised cost of production

Activity	Base	Acetone	Benzene	Total Cost
Design Process Acetene = 4,000 / 8,000 × ₹ 38,40,000 Benzene = 4,000/ 8,000 × ₹ 38,40,000	Design hours	19,20,000	19,20,000	38,40,000
Test for Contamination Acetene = 3,500 / 8,000 × ₹ 38,40,000 Benzene = 4,500/ 8,000 × ₹ 38,40,000	Testing hours	16,80,000	21,60,000	38,40,000
Treat Toxic Waste Acetene = 2,000/ 20,000 × ₹ 48,00,000 Benzene = 18,000/ 20,000 × ₹ 48,00,000	Pounds of waste	4,80,000	43,20,000	48,00,000
Maintain Environmental Equipment Acetene = 400/10,000 × ₹ 60,00,000 Benzene = 9600/10,000 × ₹ 60,00,000	Maintenance Hours	2,40,000	57,60,000	60,00,000
Total Environment Production Cost		43,20,000	1,41,60,000	1,84,80,000
<i>Add:</i> Total Non-environment Production Cost		4,41,60,000	7,82,40,000	12,24,00,000
Total Cost of Production		4,84,80,000	9,24,00,000	14,08,80,000
Units Produced		4,00,000	4,00,000	8,00,000
Environment Production Cost per unit		10.80	35.40	
Total Cost of Production per unit		121.20	231.00	

- (iii) Environment Management Accounting (EMA) is the process of collection and analysis of information related to environmental cost for internal decision making. Most of the environmental cost get accounted as overheads (indirect expenses) in the accounting records. EMA culls out these costs by identifying and estimating environmental related activities and seeks to control these costs. The focus of EMA is not on financial costs, but it also considers the environmental cost or benefit of any decisions made. Due to better transparency of cost structure, EMA enables better strategic decision making. It provides information on environmental impact that if actioned upon in the correct way can improve the environmental efficiency of the business thereby improving its sustainability. **The major areas of application of EMA are product pricing, budgeting, investment appraisal, calculating costs and setting quantified performance targets.**

OR

The results of improved costing by EMA may include:

- Different pricing of products as a result of re-calculated costs;
 - Re-evaluation of the profit margins of products;
 - Phasing-out certain products when the change is dramatic;
 - Re-designing processes or products in order to reduce environmental costs and
 - Improving housekeeping and monitoring of environmental performance.
- (b) (i) **Traditional Budgeting Model** followed at SKY Limited is an annual exercise controlled centrally by the senior management alone. It has a top-down approach, targets are set by the senior management which is communicated further down to the middle and lower-level management of the company. The primary focus is on **managing the financials, to set targets for revenue, profits, and growth**. Targets are primarily based on **historical data and not on the current cost information and business requirements**. Therefore, targets are incremental in nature and actual performance is compared with them using variance analysis. Allocation of finances (budgets) is centrally co-ordinated.
- (ii) **Beyond Budgeting is an adaptive, decentralized process that with focus on improving future results especially those create value for the customer**. The organization culture is more externally focussed fostering competitive success. It encourages an organization **to adapt to the changing business scenario and constantly innovate in order to provide value to the customers**. Rather the achieving just financial targets and limiting spends based on historic budgets, the lower-level management is encouraged to take up projects if they create the right value for the customer. Therefore, there is more **decentralized functioning that makes the organization more agile to changes**.
- Resource allocation is based on demand for the project / activity and may include allocation to multiple teams across the organization rather than being**

restricted to one specific department as it was in the case of traditional budgeting model. This requires dynamic co-ordination across multiple teams in the organization.

While goals may be set at a lower level based on current existing scenario, the process involves continuous planning through rolling budgets and KPIs. This allows for more timely allocation of resources and encourages a culture of innovation.

(iii) Process classification as Leadership Principle or Management Principle.

Particulars	Leadership Principle / Management Process	Brief explanation
Plans and Forecasts	Management Process	Shift in focus is on creation of value for the customer. Focus in on beating competitors. Reduces internal rivalry and biases. Rolling budgets, incorporating current business needs and KPIs make plans and forecasts more lean and flexible . Predictions are more realistic and unbiased.
Resource Allocation	Management Process	Resources are made available as needed . This makes teams more cost conscious . Spending becomes more value added.
Autonomy	Leadership Principle	Participative, bottom-up approach by giving proper authority to operational managers. Due to their involvement in the daily operations, they can react more quickly to changing situations making the organization more agile. Clear authority and responsibilities also help in motivating employees in overcoming challenging situations as it builds more trust within the organization.
Transparency	Leadership Principle	Creates information systems which provide fast and open information throughout the organization . This increases the agility of the organization, making it more adaptive to change. It also helps to

		build cross-functional teams whose focus is not on internal performance measures but on beating competitors of the organization.
Customers	Leadership Principle	Focus of Beyond Budgeting is on customer value creation and competitive success. Organization has more customer-oriented teams making them more reactive and adaptive to changing customer requirements .

(iv) **Pre-requisites to transition to Beyond Budgeting implementation –**

- (a) Define the case for change and provide an outline vision. Beyond Budgeting is particularly useful in industries **undergoing rapid change** which require the company to be agile or those that use techniques like Total Quality Management that require continuous improvement to be successful. **In the case of SKY Limited, the industry is subject to rapid changes making a case for Beyond Budgeting.**
- (b) Be Prepared to convince the Board. SKY is moving from a centralized top-down traditional budgeting model to a more participative bottom-up approach. **This requires a drastic change in mind set across the business.** For this to be successfully implemented, the senior management and the Board need to be convinced and receptive to decentralized approach of operations.
- (c) A clear Vision is needed to know what exactly is required from Beyond Budgeting. Accordingly **design and implement new processes in a participative manner** involving appropriate levels of management and oversight. Train and educate employees across the organization to help them understand the new system. Beyond Budgeting requires empowerment, collaboration, trust and transparency.
- (d) Finance moves from a traditional role of finance provider. It now plays a more participative role where their role will move from being **financial analysts to more holistic business analysts**. This requires them to acquire broader skills and knowledge about the business.
- (e) Processes should be in place to **evaluate results and consolidate gains**. Authority and responsibility of roles require **continuous oversight** to ensure that the system works effectively. This is another reason why the senior management should be agreeable to the change; **have a clear vision of the outcomes** they need from transitioning to Beyond Budgeting and being able to

guide the organization in its transition from traditional budget-based model to a more dynamic budgeting model.

Conceptually correct **brief explanations are sufficient** for each step. **Alternate Points/ Reasoning are also possible.** However, the issue must be addressed properly, and the answer must respond to the requirement.

Question 6

(a) 'Kitchen Comfort (KC)' is a Company which manufactures innovative appliances to help the modern nuclear family in managing their cooking and cleaning needs. KC continually reviews its product range and enhances its existing products by developing new models to satisfy the demands of its customers. The company intends to always have products at each stage of the product lifecycle to ensure the company's continued presence in the market.

KC is currently reviewing its two flagship products, Product X and Product Y.

I. Product X was introduced to the market some time ago and is now about to enter the maturity stage of its life cycle. The maturity stage is expected to last for 10 weeks. Each unit has a variable cost of ₹ 570 and takes 3 standard hours to produce. Market Research has identified four possible prices at which Product X could be sold and the expected demand at those prices.

Selling Price Per Unit (₹)	1,500	1,275	1,200	1,125
Weekly Demand (Unit)	1,200	1,600	2,400	2,600

The Sales Director is confused which of four possible prices the company should charge in the next ten weeks.

II. Product Y was introduced to the market two months ago using a penetration pricing policy and is now about to enter its growth stage. This stage is expected to last for 20 weeks. Each unit has a variable cost of ₹ 600 and takes 5 standard hours to produce. Market research has indicated that there is a linear relationship between its selling price and the number of units demanded, of the form $P = a - bx$. At a selling price of ₹ 1,250 per unit, demand is expected to be 1,500 units per week. For every ₹ 50 increase in selling price the weekly demand will reduce by 100 units and for every ₹ 50 decrease in selling price, the weekly demand will increase by 100 units.

The Company currently has a production facility which has a capacity of 12,000 standard hours per week. This facility is being expanded but the extra capacity will not be available for 10 weeks.

Required

(i) Recommend which of the four selling prices should be charged for Product X, in order to maximize its contribution during its maturity stage. **(3 Marks)**

- (ii) Assuming that product X is produced as recommended in (i), calculate the selling price of Product Y during its growth stage (for first 10 weeks and following 10 weeks).

(5 Marks)

- (b) SED Electronics is an Indian company specializing in the design, development and global distribution of electronic gadgets. Established in 1999 by Mr. ACE, the company has a global footprint, offering a diverse range of communication devices such as Bluetooth accessories, Infrared gadgets, Modems, Network cards, Smartphones, and Wi-Fi innovations.

In pursuit of incentivizing the sales team's performance within the smartphone division, the company's managing director has initiated a reward program for the month of December 2022. Among the accomplished sales managers, Mr. Zen has been singled out for his remarkable achievements during this period.

Mr. Zen encountered an unfavourable Sale Price Variance for the SM 20 smartphone model (featuring a 12 MP camera) amounting to ₹ 22,33,000. However, he skillfully countered this setback by strategically adjusting the pricing of the SM 50 smartphone variant (featuring a 50 MP camera). While the unit sales for SM 20 aligned with expectations, the exceptional performance in SM 50 led to a favourable Sale Margin Volume Variance of ₹ 22,50,000.

Given these insights, the company's managing director seeks your expert analysis to evaluate Mr. Zen's performance comprehensively, aiding in the fair allocation of incentives among the sales managers. For the month December 2022, the following budgeted and actual data for the company's smart phone segment were taken from its records:

Smartphone	Budgeted data			Actual data	
	Sales (units)	Selling price (per system) ₹	Standard cost (per system) ₹	Sales (units)	Selling price (per system) ₹
SM 20 (Camera 12MP)	1,750	21,500	14,500	1,750	20,224
SM 50 (Camera 50MP)	625	52,000	29,500	725	55,080

The total market demand for SM 20 smartphone (Camera 12 MP) was as budgeted but as a result of suppliers reducing the price of supporting headphone devices, the total market demand for SM 50 smartphone (Camera 50 MP) rose by 40% in December 2022.

The company had sufficient capacity to meet the revised market demand for 875 units of its SM 50 smartphone (Camera 50 MP) and therefore maintained its market share.

Required

- (i) Calculate the following variances for both products:

- (a) Sales Margin Mix Variance

(2 Marks)

- (b) Sale Margin Quantity Variance (2 Marks)
- (c) Market Size Variance (2 Marks)
- (d) Market Share Variance (2 Marks)
- (ii) Evaluate the performance of Mr. Zen considering the Planning Variance and Operational Variance. (4 Marks)

Answer

(a) (i) Statement Showing Contribution at Different Prices for Product X

Selling Price per Unit ₹	Weekly Demand (units)	Variable Cost ₹	Contribution ₹	Total Contribution ₹
1,500	1,200	570	930	11,16,000
1,275	1,600	570	705	11,28,000
1,200	2,400	570	630	15,12,000
1,125	2,600	570	555	14,43,000

Sales Director should charge ₹ 1,200 in the next ten weeks for Product X for a demand of 2,400 units.

(ii) Demand Equation:

$$P = a - bx$$

At a Selling Price of ₹ 1,250 per unit, Demand is expected to be 1,500 units. Therefore, Demand Equation:

$$1,250 = a - 1,500 b$$

For every ₹ 50 increase in selling price the weekly demand will reduce by 100 units. Therefore, Demand Equation:

$$1,300 = a - 1,400 b$$

Now, Solving Both Equations:

$$1,250 = a - 1,500 b$$

$$1,300 = a - 1,400 b$$

$$\begin{array}{r} - \\ - \\ + \end{array}$$

$$- 50 = - 100 b$$

Or, b = 0.50

On putting value of 'b' in the equation, the value of 'a':

$$1,250 = a - 1,500 b$$

$$1,250 = a - 1,500 \times 0.50$$

$$a = 2,000$$

Now the Demand Equation of Product Y will be:

$$P = 2,000 - 0.50x$$

First 10 Weeks

Standard Hours Available per week = 12,000

Utilised for Product 'X' per week = Weekly Demand \times 3 Std. Hours
 $= 2,400 \times 3 = 7,200$ Hrs.

Balance Hours Available per week = $12,000 - 7,200 = 4,800$ Hours

Possible Production of 'Y' per week = $4,800$ Hours / $5 = 960$ units

Demand Equation for Product 'Y'

$$P = 2,000 - 0.50x$$

Now putting the weekly production figure in demand equation:

$$P = 2,000 - 0.50 \times 960$$

$$P = ₹ 1,520/-$$

Following 10 Weeks

Standard Hours Available per week = 12,000

Possible Production of 'Y' per week = $12,000$ Hours / $5 = 2,400$ units

Demand Equation for Product 'Y'

$$P = 2,000 - 0.50x$$

Now putting the weekly production figure in demand equation:

$$P = 2,000 - 0.50 \times 2,400$$

$$P = ₹ 800/-$$

$$MR = 2,000 - x$$

$$MC = 600$$

Profit is Maximum at $MC = MR$

$$2,000 - x = 600$$

$$x = 1,400$$

Demand Equation for Product 'Y'

$$P = 2,000 - 0.50x$$

Now putting the weekly production figure in demand equation:
 $P = 2,000 - 0.50 \times 1,400$
P = ₹ 1,300/-

Summary

Particulars	Price	Volume	First10 Weeks	Next 10 Weeks
Selling Price of 'Y' at Growth Stage First 10 Weeks	₹ 1,520	960 units	Feasible	NA
Profit Maximisation level of 'Y' at Growth Stage	₹ 1,300	1,400 Units	Not Feasible	Feasible*
Selling Price of 'Y' at Growth Stage Following 10 Weeks	₹ 800	2,400 units	NA	Feasible

*Best Option

(b) (i) Margin Volume Variance (For reference Only)

Product	Standard Margin per unit (₹)	Actual Qty.	Budgeted Quantity	Difference	Variance (₹ '000)
SM 20	7,000	1,750	1,750	---	---
SM 50	22,500	725	625	+100	2,250 (F)
Total		2,475	2,375	+100	2,250 (F)

Margin Mix Variance

Product	Standard Margin per unit (₹)	Actual Qty.	Revised Actual Quantity	Difference	Variance (₹'000)
SM 20	7,000	1,750	1,650	+100	700 (F)
SM 50	22,500	725	825	-100	2,250 (A)
Total		2,475	2,475		1,550 (A)

Margin Quantity Variance

Product	Standard Margin per unit (₹)	Revised Actual Quantity	Budgeted Quantity	Difference	Variance (₹'000)
SM 20	7,000	1,650	1,750	- 100	700 (A)
SM 50	22,500	825	625	+ 200	4,500 (F)
Total		2,475	2,625		3,800 (F)

Market Size Variance

$$SM\ 20 = (1,750\ \text{units} - 1,750\ \text{units}) \times ₹\ 7,000 = \text{NIL}$$

$$SM\ 50 = (875\ \text{units} - 625\ \text{units}) \times ₹\ 22,500 = ₹\ 56,25,000\ (F)$$

Market Share Variance

$$SM\ 20 = (1,650\ \text{units} - 1,750\ \text{units}) \times ₹\ 7,000 = ₹\ 7,00,000\ (A)$$

$$SM\ 50 = (825\ \text{units} - 875\ \text{units}) \times ₹\ 22,500 = ₹\ 11,25,000\ (A)$$

(ii) Evaluation of performance of Mr. Zen considering the Planning and Operational Variances

A Planning Variance simply compares a revised standard (that should or would have been used if planners had known in advance what was going to happen) to the original standard. A planning variance is considered as not to be controllable by management.

The market size is not within the control of the sales manager and therefore variances caused by changes in the market size would be regarded as planning variances.

However, variances caused by changes in the selling prices and consequently the selling price variances and market shares would be within the control of the sales manager and treated as operating variances.

The market size variance compares the original and revised market sizes. This is unchanged for SM 20 Phone so the only variance that occurs relates to the SM 50 Phone and is ₹ 56,25,500 (F). It is vital to make this distinction because as can be seen from the scenario the measurement of the 'Zen's performance is incomplete if the revised market size is ignored.

The favourable volume variance of ₹ 22,50,000 referred to in the scenario is made up of following elements,

- (1) **Market Size Variance ₹ 56,25,000 (F) which is a planning variance and is outside the control of sale manager.**
- (2) **Market Share Variance ₹ 18,25,000 (A) which is an Operational variance that is within his control.**
- (3) **Mix Variance ₹ 15,50,000 (A). In some situation management may be able to control the mix via allocation of advertising and promotion budget etc.**

It is this that has caused the overall volume variance to be favourable, and thus 'Zen' is not responsible for the overall favourable performance and does not deserve performance incentive.

Alternative**(i) Margin Volume Variance (For reference Only)**

Product	Standard Margin per unit (₹)	Actual Qty.	Budgeted Quantity	Difference	Variance (₹'000)
SM 20	7,000	1,750	1,750	---	---
SM 50	22,500	725	875*	-150	3,375 (A)
Total		2,475	2,625	-150	3,375 (A)

* Based on Revised Market Demand

Margin Mix Variance

Product	Standard Margin per unit (₹)	Actual Qty.	Revised Actual Quantity	Difference	Variance (₹'000)
SM 20	7,000	1,750	1,650	+100	700 (F)
SM 50	22,500	725	825	-100	2,250 (A)
Total		2,475	2,475		1,550 (A)

Margin Quantity Variance

Product	Standard Margin per unit (₹)	Revised Actual Quantity	Budgeted Quantity	Difference	Variance (₹'000)
SM 20	7,000	1,650	1,750	- 100	700 (A)
SM 50	22,500	825	875*	- 50	1,125 (A)
Total		2,475	2,625		1,825 (A)

*Based on Revised Market Demand

Market Size Variance

The market size variance compares the original and revised market sizes. This is **unchanged for SM 20 Smartphone** so the only variance that occurs relates to the **SM 50 Smart Phone** and is ₹ 56,25,500 (F) [250 phones × ₹ 22,500].

Market Share Variance ('000)

$$\begin{aligned}
 &= \text{Margin Quantity Variance} - \text{Market Size Variance} \\
 &= 1,825 (A) - 5,625.5 (F) \\
 &= ₹ 3,800.50 (A)
 \end{aligned}$$

(ii) Evaluation

A Planning Variance simply compares a revised standard (that should or would have been used if planners had known in advance what was going to happen) to the original standard. A planning variance is considered as not to be controllable by management.

The market size is not within the control of the sales manager and therefore variances caused by changes in the market size would be regarded as planning variances.

However, variances caused by changes in the selling prices and consequently the selling price variances and market shares would be within the control of the sales manager and treated as operating variances.

The market size variance compares the original and revised market sizes. This is unchanged for SM 20 Phone so the only variance that occurs relates to the SM 50 Phone and is ₹ 56,25,500 (F).

It is vital to make this distinction because as can be seen from the scenario the measurement of the 'Zen's performance is incomplete if the revised market size is ignored.

The favourable volume variance of ₹ 22,50,000 referred to in the scenario is made up of two elements, one of which, the market size, is a planning variance which is outside his control. It is this that has caused the overall volume variance to be favourable, and thus 'Zen' is not responsible for the overall favourable performance.

Other Alternative Solution is also possible.