



**FINAL EXAMINATION**  
**MODEL QUESTION PAPER**  
**PAPER - 16**

**SET 2**

**STRATEGIC COST MANAGEMENT**

**Time Allowed: 3 Hours**

**Full Marks: 100**

The figures in the margin on the right side indicate full marks.  
Where considered necessary, suitable assumptions may be made and  
clearly indicated in the answer.

**SECTION – A : STRATEGIC COST MANAGEMENT FOR DECISION MAKING**

Answer to Question No. 1 & 6 in Section A, are compulsory.

Further, answer **any 3** from Question nos. 2, 3, 4 & 5.

1. (a) Choose the most appropriate answer to the following questions with justification. 1 mark will be awarded for correct answer and 1 mark for justification.: [8 × 2 = 16]

- (i) Which one of the following is not true for a Blue Ocean Strategy?
- Create uncontested market space
  - Make the competition irrelevant
  - Exploit existing demand
  - Create and capture new demand
- Briefly state a reason supporting your selection.
- (ii) One of the following is not an advantages of cost control are mainly as:
- Achieving the expected return on capital employed by maximizing or optimizing profit.
  - Increasing the productivity of the available resources.
  - Delivering the product or service to the customers at a reasonable price.
  - It is a corrective function, thus corrects an existing situation.
- Briefly justify your answer.
- (iii) The rules governing the application of the Value Analysis (VA) approach are
- No cost can be removed if it compromises the quality of the product or its reliability.
  - Marketability is another issue that cannot be compromised.
  - Any activity that reduces the maintainability of the product increases the cost of ownership to the customer and can lower the value attached to the product.
  - None of the above
- Briefly state a reason in support of your selection.



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- (iv) Which of the following is not a term normally used in value analysis and why?
- Exchange value
  - Use value
  - Esteem value
  - Cost value
- (v) Which of the three principles guide Lean Accounting and form the foundation for all of accountants' work and interaction with the organization and why?
- Customer value, quality circle, respect for people
  - Supplier value, quality circle, respect for people
  - Customer value, continuous improvement, respect for people
  - Supplier value, continuous improvement, suggestion box
- (vi) The standard variable production overhead cost of product B is as follows.  
4 hours at ₹ 1.70 per hour = ₹ 6.80 per unit  
During period 3 the production of B amounted to 400 units. The labour force worked 1,690 hours, of which 30 hours were recorded as idle time. The variable overhead cost incurred was ₹ 2,950. The variable production overhead efficiency variance for period 3 is
- ₹ 102 (F)
  - ₹ 102 (A)
  - ₹ 105 (A)
  - ₹ 153 (A)
- (vii) M Co sells product L. An extract from its budget for the four-week period ended 28 October 2022 shows that it planned to sell 500 units at a unit price of ₹ 300, which would give a C/S ratio of 30%. Annual sales were 521 units at an average selling price of ₹ 287. The actual C/S ratio averaged 26%. The sales volume contribution variance (to the nearest ₹ 1) was
- ₹ 1,890 (F)
  - ₹ 1,808 (F)
  - ₹ 1,638 (F)
  - ₹ 1,567 (F)
- (viii) A technical writer is to set up her own business. She anticipates working a 40-hour week and taking four weeks' holiday per year. General expenses of the business are expected to be ₹ 10,000 per year, and she has set herself a target of ₹ 40,000 a year salary. Assuming that only 90% of her time worked will be chargeable to customers, her charge for each hour of writing (to the nearest cent) should be
- ₹ 26.04
  - ₹ 30.94
  - ₹ 28.94
  - ₹ 29.84



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2. (a) 'Lean evolved from the manufacturing philosophy of the Toyota Production System' – explain the evolution process. In this context explain Lean Accounting and its three principles. [6]
- (b) Explain the principles of Total Quality Management (TQM). Also describe the essential requirements for the implementation of Total Quality Management (TQM)? [6]
3. (a) Rags Ltd. manufactures and sells premium quality of sports shoes in India. Noted sports clubs and its members are the main customers. Finished products show some rectifiable defects. These problems can be detected and rectified during internal inspection. Inspection cost is ₹30 per unit. Rectification cost is ₹18 per unit. During 2022, 60000 pairs of shoes were manufactured and sold. After inspection defect was detected in respect of 5% of output. Inspection cost is ₹ 30 per pair. After sales, customers reported defects in respect of 6% of output. These shoes were received back from customers at a transportation cost of ₹ 10 per pair. Due to negative publicity arising out of sale of defective materials, loss in sales is expected in next year to the extent of 5% of external failures.  
Required:
- a. Calculate the cost of quality showing the elements separately.
- b. If the selling price per pair of shoes is ₹ 600 and variable cost is 60% of sales, fixed cost is ₹ 5,50,000 p.a., prepare the profitability statement for the product during 2022. [2 + 3 = 5]
- (b) ASA LLP has been approached by a customer who would like a special job to be done for him and is willing to pay ₹ 22,000 for it. The job would require materials A, B, C and D. the details of the material are given below;

Materials	Total units required	Units already in inventory	Book Value of units in stock (₹ per unit)	Realisable Value (₹ per unit)	Replacement Cost (₹ per unit)
A	1000	0	-	-	6
B	1000	600	2	2.5	5
C	1000	700	3	2.5	4
D	200	200	4	6	9

The following information are also furnished.

- (i) Material B is used regularly by X Ltd. and if stocks were required for this job, they would need to be replaced to meet other production demand.



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- (ii) Materials C and D are in stock as the result of previous excess purchase and they have a restricted use. No other use could be found for material C but material D could be used in another job as substitute for 300 units of material which currently costs ₹ 5 per unit (of which the company has no units in stock at the moment.)
- (iii) Assume all other expenses on this contract to be specially incurred besides the relevant cost of material is ₹ 550.

Analyze the relevant costs of material, in deciding whether or not to accept the contract? [7]

4. (a) Kobe Co manufactures electronic mobility scooters. The company is split into two divisions: the scooter division (Division S) and the motor division (Division M). Division M supplies electronic motors to both Division S and to external customers. The two divisions run as autonomously as possible, subject to the group's current policy that Division M must make internal sales first before selling outside the group; and that Division S must always buy its motors from Division M. However, this company policy, together with the transfer price which Division M charges Division S, is currently under review.

Details of the two divisions are given below.

**Division S**

Division S's budget for the coming year shows that 35 000 electronic motors will be needed. An external supplier could supply these to Division S for ₹ 800 each.

**Division M**

Division M has the capacity to produce a total of 60 000 electronic motors per year. Details of Division M's budget, which has just been prepared for the forthcoming year, are as follows:

Budgeted sales volume (units)	60 000
Selling price per unit for external sales of motors	₹ 850
Variable costs per unit for external sales of motors	₹ 770

Maximum external demand for the motors is 30 000 units per year.

Required:

Assuming that the group's current policy could be changed, determine, using suitable calculations, the number of motors which Division M should supply to Division S in order to maximize group profits. Calculate the transfer price or prices at which these internal sales should take place. Note: All relevant workings must be shown

The variable cost per unit for motors sold to Division S is ₹ 30 per unit lower due to cost savings on distribution and packaging. [4]



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- (b) AB Ltd. Has two divisions Alfa & Beta. Alfa produces components, two units of which are required for one unit of final product produced by Beta. Alfa has a capacity to produce 20000 units and entire quantity is supplied to Beta @ ₹ 200 per unit. Variable cost component at Alfa is ₹ 190 & fixed cost ₹ 20 per unit. For final product of Beta, per unit variable cost excluding component is ₹ 700, fixed cost ₹ 200 and selling price is ₹ 1500.

Alfa has placed a proposal for increasing the transfer price to ₹ 220 i.e. the market price. Facility at Alfa can be rented out @ ₹ 3.00 Lacs p.a. Manager at Alfa wants to opt for this alternative

- Beta can buy this component from outside market @ ₹ 210
- If capacity of Alfa is augmented to 40000 units with an additional investment of ₹ 15 lacs, it can sell 20000 units to external market and balance to Beta @ ₹ 210 per unit. Fixed cost for Alfa will be up by ₹ 1.00 lac.

Evaluate and give your opinion under the following decision options.

- a. Facility of Alfa is rented out and Beta buys from market @ ₹ 210 per unit
- b. Alfa sells to outside market @ ₹ 220 and Beta buys @ 210 per unit from market
- c. Capacity enhancement with cost of capital @ 12 %

**[8]**

5. (a) The summarized results of a company for the two years ended 31st December 2021 and 2022 are given below:

	2021 (₹ in Lakhs)	2022 (₹ in Lakhs)
Direct Materials	324	300
Sales	770	600
Direct Wages	137	120
Variable Overheads	69	60
Fixed Overheads	150	80
Profit	90	40

As a result of re-organization of production methods and extensive advertisement campaign, the company was able to secure an increase in the selling prices by 10% during the year 2022 as compared to the previous year.

In the year 2022, the company consumed 1,20,000 Kgs. of raw materials and used 24,00,000 hours of direct labour. In the year 2023, the corresponding figures were 1,35,000 kgs of raw materials and 26,00,000 hours of direct labour.

You are required to:



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Use information given for the year 2022 as the base year information to analyze the results of the year 2023 and to show in a form suitable to the management the amount each factor has contributed by way of price, usage and volume to the change in profit in 2023. **[8]**

- (b) At the beginning of 2023, ASA Inc. set a standard marginal cost for its major product of ₹ 25 per unit. The standard cost is recalculated once each year. Actual production costs during August 2023 were ₹ 3,04,000, when 8,000 units were made. With the benefit of hindsight, the management of ASA Inc. realizes that a more realistic standard cost for current conditions would be ₹ 40 per unit. The planned standard cost of ₹ 25 is unrealistically low.

*Required*

- (i) Calculate the planning and operational variances.  
(ii) What is the implication of planning and operational variances against traditional variance? State your answer in particular reference to the information given in the above situation. **[4]**

6. E Ltd manufactures a metal trimming device which has been sold at ₹ 16 per unit for a number of years. The selling price is to be reviewed and the following information is available on costs and likely demand. The standard variable cost of manufacture is ₹ 10 per unit and an analysis of the cost variances for the past 20 months show the following pattern which the production manager expects to continue in the future. Adverse variances of +10% of standard variable cost occurred in ten of the months. Nil variances occurred in six of the months. Favourable variances of -5% of standard variable cost occurred in four of the months. Monthly data Fixed costs have been ₹ 4 per unit on an average sales level of 20 000 units but these costs are expected to rise in the future and the following estimates have been made for the total fixed cost:

Monthly data Fixed costs have been ₹ 4 per unit on an average sales level of 20 000 units but these costs are expected to rise in the future and the following estimates have been made for the total fixed cost:

	₹
Optimistic estimate (Probability 0.3)	82,000
Most likely estimate (Probability 0.5)	85,000
Pessimistic estimate (Probability 0.2)	90,000



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The demand estimates at the two new selling prices being considered are as follows:

If the selling price/unit is demand would be:	₹ 17	₹ 18
Optimistic estimate (Probability 0.2)	21 000 units	19 000 units
Most likely estimate (Probability 0.5)	19 000 units	17 500 units
Pessimistic estimate (Probability 0.3)	16 500 units	15 500 units

It can be assumed that all estimates and probabilities are independent. You are required to

- Advise management, based only on the information given above, whether they should alter the selling price and, if so, the price you would recommend;
- Calculate the expected profit at the price you recommend and the resulting margin of safety, expressed as a percentage of expected sales;
- Criticize the method of analysis you have used to deal with the probabilities given in the question;
- Describe briefly how computer assistance might improve the analysis. [8]

**SECTION – B : QUANTITATIVE TECHNIQUES IN DECISION MAKING**

Answer to Question No. 7 & 11 in Section B, are compulsory.

Further, answer **any 2** from Question nos. 8, 9 & 10.

**7. Choose the most appropriate answer to the following questions giving justification.**

[2 + 2 = 4]

- (i) For a Cost Function  $TC = 3Q^2 + 7Q + 12$ , MC is –
- a. 6Q
  - b.  $6Q + 7$
  - c.  $3Q + 12$
  - d. None of the above
- (ii) Which of the following is related to Financial Data Analytics and why?
- a. Value driver analytics
  - b. Financial ratio analytics
  - c. Predictive sales analysis
  - d. All the above

**8. (a) Write the dual of the following linear programming problem:**

$$\text{Minimize } Z = 5x_1 - 6x_2 + 4x_3$$

Subject to the constraints



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$$3x_1 + 4x_2 + 6x_3 \geq 9$$

$$x_1 + 3x_2 + 2x_3 \geq 5$$

$$7x_1 - 2x_2 - x_3 \leq 10$$

$$x_1 - 2x_2 + 4x_3 \geq 4$$

$$2x_1 + 5x_2 - 3x_3 = 3$$

$$x_1 \geq 0, x_2 \geq 0, x_3 \geq 0.$$

[7]

- (b) A multi-plant company has three manufacturing plants, A, B and C. It sells products in two markets X and Y. Production cost at A, B and C is ₹ 1,500; 1,600; and 1,700 per piece respectively. Selling prices in X and Y are ₹ 4,400 and ₹ 4,700 respectively. Demands in X and Y are 3,500 and 3,600 piece respectively. Production capacities at A, B and C are 2,000; 3,000 and 4,000 pieces respectively. Transportation costs are as shown in the table below. Build a mathematical model.

Plant	Market	
	X	Y
A	1,000	1,500
B	2,000	3,000
C	1,500	2,500

[7]

9. (a) At a service station a study was made over a period of 50 days to determine both the number of automobiles being brought in for service and the number of automobiles serviced. The results are given in the adjoining table:

No. of automobiles arriving for service or completing services/day	Frequency of arrival	Frequency of daily serviced
0	4	6
1	8	4
2	20	24
3	10	6
4	6	8
5	2	2

Simulate the arrival service pattern for a ten-day period and estimate the mean number of automobiles that remain in service for more than a day.

Use the following series of random numbers:

For arrivals	09	54	42	01	80	06	06	26	57	79
For Service	49	16	36	76	68	91	97	85	56	84

[8]





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- (b) The following table gives data on normal time & cost. You need to develop the Network diagram and briefly discuss with reason the Critical Path. Also find out the Normal duration of the project and analyse the corresponding Total Cost associated with it.

. Activity	Normal	
	Time (days)	Cost (₹)
1 – 2	6	600
1 – 3	4	600
2 – 4	5	500
2 – 5	3	450
3 – 4	6	900
4 – 6	8	800
5 – 6	4	400
6 – 7	3	450

[6]

10. (a) From the following past data of Sales (in lakhs rupees) of a company estimate the same for the year 2025.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sales	15.3	14.6	16.8	17.3	17.2	20.9	22.3	20	23.1	24.5

Assume the trend line to be linear. What is the monthly rate of increase of sales.

[7]

- (b) A company produces two products x and y. The total Profit (in ₹ '000) earned by the company is expressed algebraically by the function  $\Pi = 100x - x^2 - 2xy + 200y - 3y^2$ . Critically assess the Profit maximizing quantities of the products. Also determine the maximum profit with justification in support of your determined value.

[7]

**Case Study**

11. Human performance of activities typically shows improvement when the activities are done on a repetitive basis. The time required to perform a task decreases with increasing repetitions. The degree of improvement and the number of repetitions needed to realize the major portion of the improvement is a function of the task being done. If the task is short and somewhat routine, only a modest amount of improvement is likely to occur and it generally occurs during the first few repetitions. If the task is fairly complex and has a longer duration, improvements will occur over a large number of repetitions.



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Any kind of surgery comes under the category of fairly complex or complex task. Surgeons require large number of repetitions of a particular type of surgery to master it. This is due to the fact that random complications may arise due to the patients' conditions. Hence it is important to know the number of repetitions required for a surgeon to stabilize the operating times and the complication rates.

Dr. X of ABC Hospital reported the results of 100 consecutive operations for laparoscopic hernia repair on 98 patients. Approximately two thirds of the surgeries were unilateral (left / right) and the remaining one third were bilateral involving contra lateral defects, many unsuspected before surgery. The average surgery time (from skin incision to skin closure) was 46 minutes for unilateral and 62 minutes for bilateral. Surgery times for the unilateral procedure began to level off after 50 operations. The average surgery times (in minutes) reported by the doctor for each quartile of the 100 operations, classified by the type of operation are as provided in the table below

Type of Surgery	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Unilateral	59	45	38	37
Bilateral	69	67	58	52

At the end of the study the times had levelled off at 58 minutes (operating time) including 37 minutes of surgical time for Unilateral type which are considered to be the historical times for open repair. Complication rates were also reduced in an approximately exponential manner, beginning to level off at 50 operations and becoming stable after 75. It is also reported that the 1st to 4th quartile of the Unilateral type surgery are represented by the 8th, 24th, 40th and 58th observations respectively and those of Bilateral are 4th, 12th, 20th and 28th observations respectively.

- (1) Analyse the incidence described above and formulate a set of brief explanations to ascertain which particular phenomenon of human behaviour the above incidence refers to?
- (2) How you can decide which one of the two types of surgeries was grasped faster by the surgeon? Explain.
- (3) What type of relationship exists between the Average time required to complete a particular operation with the number of operations done by the surgeon?
- (4) Design with brief reasons the procedure to determine the time required by the surgeon to complete 59th Unilateral type surgery and 27th Bilateral type surgery.

[8]