FINAL EXAMINATION

June 2025

P–16(SCM)
Syllabus 2022

STRATEGIC COST MANAGEMENT

Time Allowed: 3 Hours

Full Marks: 100

The figures in the margin on the right side indicate full marks.

Working notes should form part of the respective answers.

Wherever necessary, candidates may make appropriate assumptions and clearly state them in the respective answer.

***Answer* to Question No. 1 in Section A *is compulsory. Further answer* any five *from* Question No. 2 *to* Question No. 8 in Section B.**

SECTION – A (Compulsory)

1. Choose the correct option from the given alternatives: **2×15=30**

(i) Which of the following primary activities of Porter's Value Chain deliver the Product or Service to the Customer?

(A) Operations

(B) Outbound Logistics

(C) Infrastructure

(D) Services ✓

(ii) Which of the following is/are not the quality parameter(s) for manufacturing organisations?

(A) Reliability

(B) Durability

(C) Service ability

(D) Courtesy/Friendliness ✓

(iii) The companies that would benefit from backflush costing include companies

(A) which have fast manufacturing lead time.

(B) whose inventory vary from period to period.

(C) Company requires that audit trails.

(D) None of the above

(iv) Which of the following is related to Financial Data Analytics?

(A) Value driver analytics

(B) Financial ratio analytics

(C) Predictive sales analysis

(D) All of the above ✓

(v) Python can be used on Linux, Windows, Macintosh, Solaris and many more. What category of language features of Python it comes under?

(A) Robust

(B) Embeddable ✓

(C) High Level Language

(D) Platform Independent

(vi) AON Ltd., a manufacturer of doors using a Throughput Costing System, is experiencing a bottleneck in its plant. Set up time at one of its Work Stations has been identified as the offender. The Manager (Finance) has proposed a plan to reduce the set up time at a cost of ₹ 5,24,000. The change will result in 500 additional doors. The Direct Labour costs are ₹ 2,400 per door and the cost of Direct Materials is ₹ 8,000 per door. All units produced can be sold. If the change will result in an increase in the Throughput Contribution of ₹ 56,50,000, what will be the selling price per door?

(A) ₹ 19,300

(B) ₹ 18,500

(C) ₹ 13,700 ✓

(D) ₹ 21,700

(vii) In marking assignments which of the following should be preferred?

(A) Only row having single zero

(B) Only column having single zero

(C) Column having more than one zero

(D) Only row/column having single zero ✓

(viii) The Cost function of TNZ PIC is given by $C = X^3 - 4X^2 + 7X$ in terms of Output X. Assess at what level of output the average cost is minimum.

(A) 3

(B) 2

(C) 4

(D) None of the above

(ix) The break-even point of a manufacturing company is ₹1,60,000. Fixed cost is ₹ 48,000. Variable cost is ₹12 per unit. The PV ratio will be

(A) 20%

(B) 40%

(C) 30%

(D) 25%

(x) The pay-off matrix of game for Firm A and Firm B is given below:

FIRM B

$$\text{FIRM A} \begin{bmatrix} 30 & 15 & 12 & 35 \\ 20 & 13 & 8 & 10 \\ 40 & 4 & 11 & 6 \end{bmatrix}$$

What is the value of game (using Maximin – Minimax Principle)?

(A) 6

(B) 10

(C) 12

(D) None of the above

(xi) In a factory where standard costing system is followed, the production department consumed 1100 kgs of material @ ₹ 8 per kg for product X resulting in material price variance of ₹ 2,200 (Fav) and material usage variance of ₹ 1,000 (Adv). What is the standard material cost of actual production of product X?

(A) ₹ 11,000

(B) ₹ 20,000

(C) ₹ 14,000

(D) ₹ 10,000

(xii) A factory of MONZ Ltd., can make only one of the three products A, B or C in a given production period. The following informations are given:

Per Unit (₹)	A	B	C
Selling price	1,500	2,000	2,500
Variable Cost	700	1,100	1,500

Assume that there is no constraint on resource utilization or demand and similar resources are consumed by A, B and C. The opportunity cost of making one unit of C is

Cont 800 900 1000

(A) ₹ 900 ✓

(B) ₹ 800

(C) ₹ 1,800

(D) ₹ 1,500

(xiii) When 24 hours is required to produce a condenser of a particular type then the time required to produce the 16th unit with 85% Learning Curve is

(A) between 9 and 10 hours. ✓

(B) between 12 and 14 hours.

(C) between 15 and 17 hours.

(D) between 18 and 20 hours.

1 24
2 20.4
4 17.34
8 14.739
16 12.52815
32 10.648927

(xiv) A PERT Network has four activities on its Critical Path. The Standard Deviation of each activity on the Critical path is 4 days. What will be the standard deviation of the CRITICAL PATH?

(A) 8 days

(B) 4 days

(C) 2 days ✓

(D) None of the above

(xv) SONT Ltd., has fixed costs of ₹ 5,00,000 and variable costs are 70% of the selling price. To realize profits of ₹ 1,00,000 from sales of 400000 units, the selling price per unit must be

(A) ₹ 5 ✓

(B) ₹ 6

(C) ₹ 7

(D) ₹ 4

Sales ₹ unit
− VC
Cont- 6,00,000
− FC 5,00,000
Profit 1,00,000

SECTION-B

(Answer any Five Questions)

Each question carries 14 marks 14×5=70

2. AIRWAY Ltd. has hired an aircraft to specially operate between cities A and B. All the seats are economy class. The following information is available:

Seating capacity of the aircraft	:	260 passengers
Average number of passengers per flight	:	240 passengers
Average one-way fare from A to B	:	₹ 5,000 per passenger
Fuel costs per flight from A to B	:	₹ 90,000
Food cost (A to B sector) (no charge to passenger)	:	₹ 300 per passenger
Commission to travel agents (All tickets are through agents)	:	10% of the fare
Annual lease costs allocated to each flight	:	₹ 2,00,000
Ground services, baggage handling/checking in service costs per flight A to B	:	₹ 40,000
Flight crew salaries per flight A to B	:	₹ 48,000

There is an offer from another airlines operator, ZOMB Ltd. for a stop-over at destination D, which is on the way from A to B. Due to this, the flight will operate from A to D, then from D to B.

The following terms are considered for the stop-over:

50 seats from D to B will be booked by ZOMB Ltd. at ₹ 2,700 per ticket, whether or not ZOMB Ltd. is able to sell them to its customers. No agents' commission is payable on these tickets. However, snacks must be provided to these passengers also by Airway Ltd. at no further charge to the passengers.

A maximum of 60 tickets can be sold by Airway's travel agents for A to D sector at a fare of ₹ 3,000 per passenger.

Since the stop-over wastes more time, 25 of Airway's original passengers in the A to B sector will voluntarily drop out in favour of other airlines offering direct flights between A and B.

Due to the stop-over, fuel costs will increase from ₹ 90,000 to ₹ 1,35,000. Additional airport landing/baggage, handling charges of ₹ 19,000 per stop-over will have to be incurred by Airway Ltd.

Airway Ltd. will have to serve snacks to all the passengers in the D to B sector at no charge to passengers. Each snack will cost Airway ₹ 200. This will be in addition to the original food at ₹ 300 served in the A to D sector.

(Assume that fuel costs are not affected by the actual number of passengers in the flight, ignore non-financial considerations, additional wear and tear to aircraft due to extra landing/take-off.)

Required:

(a) Without considering ZOMB Ltd.'s offer:

(i) Analyze the Profit earned by AIRWAY Ltd., per flight from city A to B.

(ii) Assess the Break–even number of passengers for each flight from city A to B.

(b) Considering the effects of ZOMB Ltd's offer:

(i) Analyze the additional Profit earned by AIRWAY Ltd., from ZOMB Ltd's offer.

(ii) Advise with the justification whether the AIRWAY Ltd. should accept the offer of ZOMB Ltd. or not. 14

[**NOTE:** A detailed Profitability Statement is not essential. Only figures relevant to the cost-revenue analysis are required.]

3. (a) REGAL Ltd., is organised into two divisions. Division X produces a component, which is used by division Y in making of a final product. The final product is sold for ₹ 540 each. Division X has capacity to produce 2500 units and division Y can purchase the entire production. The variable cost of division X in manufacturing each component is ₹ 256.50.

Division X informed that due to installation of new machines, its depreciation cost had gone up and hence wanted to increase the price of component to be supplied to division Y to ₹ 297, however division Y can buy the component from outside the market at ₹ 270 each. The variable cost of division Y in manufacturing the final product by using the component is ₹ 202.50 (excluding component cost).

Required:

Analyze and Present the statement indicating the position of each Division and the company as whole taking each of the following situations separately:

(i) If there is no alternative use for the production facilities of division X, will the company benefit, if division Y buys from outside suppliers at ₹ 270 per component?

(ii) If there is no alternative use for the production facilities of division X and the selling price for the component in the outside market drops by ₹ 20.25, should division Y purchase from outside supplier?

(iii) What transfer price would be fixed for the component in each of the above circumstances? 7

(b) ASLIN Company has the capacity of production of 80000 units and presently sells 20000 units at ₹ 100 each. Demand is sensitive to selling price and it has been observed that for every reduction of ₹ 10 in selling price, the demand is doubled.

Required:

(i) Calculate the Target Cost at full capacity, if profit margin on sale is 25%.

(ii) Assess the Cost Reduction Scheme at full capacity if at the present level 40% of the cost is variable and total fixed cost is ₹ 36 lakhs.

(iii) If Rate of Return desired is 16%, evaluate the maximum investment at full capacity. 7

4. (a) PASN Ltd., manufactures four products, namely A, B, C and D using the same plant and process. The following information relates to a production period:

Product	A	B	C	D
Output in Units	720	600	480	504

The four products are similar and are usually produced in production runs of 24 units and sold in batches of 12 units. The total overheads incurred by the company for the period are as follows:

	₹
Machine operation and maintenance cost	63,000
Setup costs	20,000
Store receiving	15,000
Inspection	10,000
Material handling and dispatch	2,592

During the period the following cost drivers are to be used for the overhead cost:

Cost	Cost Driver
Setup cost	No. of production runs
Store receiving	Requisitions raised
Inspection	No. of production runs
Material handling and dispatch	Orders executed

It is also determined that:

- Machine operation and maintenance cost should be apportioned between setup cost, store receiving and inspection activity in the ratio 4 : 3 : 2.
- Number of requisition raised on store is 50 for each product and the number of orders executed is 192, each order being for a batch of 12 units of a product.

Required:

(i) Analyse the Activity Based Costing Recovery Rate.

(ii) Integrate the total overhead cost per unit of each Product using Activity Based Costing. 7

(b) "Quality is the degree to which a set of inherent characteristics fulfils requirements." – In this context, explain the concept of quality and append the cost of quality under different categories briefly explaining them. 7

5. ZINTECH Ltd., operating a system of Standard Costing, makes and sells a single product "JULAM" for which the standard cost is as follows:

		₹ per unit
Direct materials	4 kilograms at ₹ 12.00 per kg	48.00
Direct labour	5 hours at ₹ 7.00 per hour	35.00
Variable production overhead	5 hours at ₹ 2.00 per hour	10.00
Fixed production overhead	5 hours at ₹10.00 per hour	50.00
		143.00

The variable production overhead is deemed to vary with the hours worked.

Overhead is absorbed into production on the basis of standard hours of production and the normal volume of production for the period just ended was 20000 units (100000 standard hours of production).

For the period under consideration, the actual results were :

Production of " JULAM "	18000 units
Direct material used :- 76000 kgs. at a cost of	₹ 8,36,000
Direct labour cost incurred :- for 84000 hours worked	₹ 6,04,800
Variable production overhead incurred	₹ 1,72,000
Fixed production overhead incurred	₹ 10,30,000

Required:

(i) Assess and show, by element of cost, the standard cost of the output for the period.

(ii) Analyze the relevant variances of all costs (Material, Wages, Overheads).

(iii) Prepare a statement showing the reconciliation of standard cost with the actual cost.

Note: Fixed production overhead sub-variance of capacity and volume efficiency (productivity) are not required.

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6. (a) CNG Ltd., (CNGL), a compressed natural gas (CNG) company, has three plants producing gas and four outlets. The cost of transporting gas from different production plants to the outlets, production capacity of each plant and requirement at different outlets is shown in the following cost-matrix table:

Plants	Outlets				Capacity of Production (Units)
	A	B	C	D	
X	4	6	8	6	700
Y	3	5	2	5	400
Z	3	9	6	5	600
Requirement (Units)	400	450	350	500	1700

(The cost in the cost-matrix is given in thousand of rupees.)

Required:

(i) Analyze and show the production and distribution schedule in a way which minimizes the transportation costs of the company using Vogel's Approximation Method (VAM).

(ii) Assess the total costs of transporting gas of the company. 7

(b) The management of PIKON LTD. is considering the proposal of marketing a new product. The fixed cost required in the project is ₹ 4,000. Three factors are uncertain viz. the selling price, variable cost and the annual sales volume. The product has a life of only one year. The management has the data on these three factors as under:

Selling Price (₹)	Probability	Variable cost (₹)	Probability	Sale Units	Probability
3	0.20	1	0.30	2000	0.30
4	0.50	2	0.60	3000	0.30
5	0.30	3	0.10	5000	0.40

Consider the following sequence of fifteen random numbers:

81, 32, 60	04, 46, 31	67, 25, 24	10, 40, 02	39, 68, 08

Required:

Using the sequence (first 3 random numbers for the first trial, etc), simulate the average profit for the above project on the basis of 5 trials. 7

7. SIMCON,a construction company has an opportunity to submit a bid for the construction of Administrative Building of LNP Ltd. From the specifications provided, project manager has estimated most likely,optimistic and pessimistic completion time (in days) for each activity of the project as under:

Activity	Immediate Predecessor	Time (days)		
		Most likely	Optimistic	Pessimistic
A	—	5	4	6
B	—	12	8	16
C	—	5	4	12
D	A, B	3	1	5
E	B	2	2	2
F	C	5	4	6
G	B, C	14	10	18
H	D, E, G	20	18	34

Required:

(i) Assess the expected duration for each activity.

(ii) Design the PERT Network and indicate all paths through it.

(iii) Identify the Critical path and assess the expected completion time (in days) and its standard deviation.

(iv) Assess the probability that the project will be completed in 54 days.

(v) There is evidence that managers are poor in estimating extreme values. It is suspected that in this project the times for tasks A, B, C and F underestimate the pessimistic times by 1 day and overestimate the optimistic time by 1 day. In the case of tasks G & H, the under/over estimation is put at 2 days.

In consideration of above aspects, assess the new probability of completing the project in 54 days.

Given: Table for areas under Normal Curve from 0 to Z

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Z = 0 to Z	0.50	1	1.3	1.42	1.84	2.00
Table Value	0.0915	0.3413	0.4032	0.4222	0.4667	0.4772

8. (a) ROLEX Ltd., a monopolist can effectively segment the market into two Sub-markets with the demand functions, $P_1 = 400 - 2Q_1$ and $P_2 = 300 - 2Q_2$, where $Q = Q_1 + Q_2$ = Total production of two Sub-markets. Total Cost Function of two Sub-markets are given as $C = 3000 + 60Q$.

Required:

If price discrimination is allowed, assess the maximum possible profit that can be earned by the Monopolist (ROLEX Ltd.) from two Sub-markets. 7

(b) TONIB Ltd., dealing in logistics business, has a business wing, named Ship Unloading. During the year 2023 and 2024 they have the following quarterly figures (in tonnage) of material unloading from ships:

YEAR	2023				2024			
Quarter	I	II	III	IV	I	II	III	IV
Material Unloading	200	188	179	195	210	225	200	202

(Use a Smoothing Co-efficient of 0.1)

Required:

If the forecast for the first quarter of 2023 is 195 tons, Assess the forecast figure for the first quarter (1) of 2025. (Using Exponential Smoothing). 7
