Paper- 15: MANAGEMENT ACCOUNTING – ENTERPRISE PERFORMANCE MANAGEMENT

Time Allowed: 3 Hours **Full Marks: 100**

The figures in the margin on the right side indicate full marks.
Attempt Question No. 1 (carrying 25 marks), which is compulsory and any five more questions (each carrying 15 marks) from the rest.

Please: (i) Answer all part of a question at one place only.
(ii) Open a new page for answer to a new question.
Working Notes should form part of the answer.
Whenever necessary, suitable assumptions should be made and indicated in answer by the candidates.

1. (a) In each of the cases given below, only one is the most appropriate option. Indicate the correct answer (=1 mark) and show your workings/reasons briefly in support of your answer (=1 mark): [2×5=10]

(i) SUVAM LTD., has the capacity of production of 80,000 units and presently sells 20,000 units at ₹ 100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹ 10 in selling price, the demand is doubled. What should be the target cost at full capacity if profit margin on sale is taken as 25%?
A. ₹ 67.50
B. ₹ 60.00
C. ₹ 45.00
D. None of the above

Answer:
B: ₹ 60.

Demand	Price (₹)
20,000	100
40,000	90
80,000	80

Target Cost = ₹ 80 – (80 × 0.25) = ₹ 60

(ii) ASHLIN LTD. has developed a new product and just completed the manufacture of first four units of the product. The first unit took 2 hours to manufacture and the first four units together took 5.12 hours to produce. The Learning Curve rate is
A. 83.50%
B. 80.00%
C. 75.50%
D. None of (A), (B) or (C)

Answer:
B = 80%
Let the learning rate be X.
Since the first unit took 2 hours, average time for the first two units = 2X and
The average time for the first 4 units = $2X \times X = 2X^2$
$\therefore 2x^2 = 5.12 \div 4 = 1.28$
Or, $x = \sqrt{1.28 \div 2} = \sqrt{0.64}$
= 0.80 i.e. 80%

(iii) ANKIT LTD., operates Throughput Accounting System. The details of Product A per unit are as Under:
Selling Price ₹ 75
Material Cost ₹ 30

Conversion Cost ₹ 20
Time to bottleneck resources 10 minutes
The return per hour for Product A is
A. ₹ 270
B. ₹ 150
C. ₹ 120
D. ₹ 90

Answer:
A: ₹ 270
(Selling Price – Material Cost) / Time on bottleneck resources.
= [(₹ 75 – ₹ 30)/ 10 minutes] × 60 = ₹ 270

(iv) ABC Ltd. has current PBIT of ₹19.20 Lakhs on total assets of ₹96 Lakhs. The company proposes to increase assets by ₹24 Lakhs, which is estimated to increase operating profit before depreciation by ₹8.40 Lakhs-a net increase in Depreciation by ₹4.80 Lakhs. This will result in ROI.
A. To decrease by 1%
B. To increase by 1%
C. To remain same
D. None of the above.

Answer:
(A) To decrease by 1%

Computation of ROI (₹ in lakhs)

Particulars	With Investment (₹ in lakhs)	Without Investment (₹ in lakhs)	
PBIT	19.20	(19.20+8.40-4.80)	22.80
Total Assets	96.00	(96.00+24.00)	120.00
ROI (PBIT / Total Assets) [%]	20%		19%

Hence ROI decreases by 1%

(v) Division A of a company manufactures a single product and the following data are provided: Sales = 25,000 units Fixed Cost = ₹ 4,00,000
Depreciation = ₹ 2,00,000 Residual Income = ₹ 30,000
Net Assets = ₹10,00,000
Head Office assesses divisional performance by the method of Residual Income and uses cost of capital of 12%.
The average contribution per unit for Division A is:
A ₹25
B. ₹30
C. ₹35
D. None of these.

Answer:
(B) ₹30.
Total contribution required:
(12% of ₹10 Lakhs) ₹1,20,000 + 30,000 + 2,00,000 + 4,00,000
(RI) (Depr.) (FC)
= ₹7,50,000 ÷ 25,000 = ₹30.

(b) Expand the following abbreviation: [1×5]
(i) PLCM
(ii) HRP
(iii) COSU
(iv) EFQM

(v) PDCA

Answer:

(i) PLCM: Product Life Cycle Management.
(ii) HRP: Human Resources Planning.
(iii) COSU: Committee of Sponsoring Organizations.
(iv) EFQM: European Foundation for Quality Management.
(v) PDCA: Plan-Do-Check-Act.

(c) Define the following terms: [1×5]

(i) Bench Marking
(ii) McKinney's 7-S Framework
(iii) Capacity Planning
(iv) Supply Chain Management
(v) Data Mining.

Answer:

(i) Bench Marking: Bench marking is a process of continuously comparing an organization's business process against the business leader anywhere in the world to gain information that will help the organization to take action to improve performance.
(ii) Mckinsey's 7-S Framework: Mckinsey's 7-S Framework includes Strategy, Structure, System, Style, Staff, Skills and Super Ordinate Goals.
(iii) Capacity Planning: is the process of determining the production capacity needed by an organization to meet changing demands for its products. In this context, "capacity" is the maximum amount of work that an organization is capable of completing in a given period.
(iv) Supply Chain Management: Supply Chain Management encompasses the planning and management of all activities involved in sourcing, procurement, conversion and logistics management activities.
(v) Data Mining: is the process of analyzing empirical data. It also enables the extrapolation of information. Such extrapolated results are then used in forecasting and defining trends.

(d) State whether the following statements given below are 'True' or 'False'. If True, simply rewrite the given statement (1 mark). If False, state it as False (½ mark) and rewrite the correct statement (½ mark): [1x5]

(i) Value Chain Concept and Value Added Concepts are fundamentally same.
(ii) Value Analysis Process is a less important tool than Function Analysis System Technique.
(iii) Effector is another name for Management Information System.
(iv) JIT manufacturing based on 'Push Through Philosophy', helps to provide the right parts at the right time and in right quantity.
(v) A company's approach to make or buy decision depends on whether the company is operating at or below normal volumes.

Answer:

(i) False. Value Chain concept is fundamentally different from the Value Added Concept.
(ii) True. Value Analysis (VA) Process is less important tool than Function Analysis System Technique (FAST)
(iii) False. 'Detector' is another name for Management Information System (MIS).
(iv) False. JIT manufacturing operates as a demand-pull system, producing on demand i.e., making to order.
(v) False. A company's approach to make or buy decision involves an analysis of

avoidable costs.

2. (a) What is Intranet? What are its advantages?

(b) An engineering company produces two products A and B. The cost data are as under:

Particulars	A (₹)	B (₹)
Selling Price	175	220
Direct Material	40	80
Direct Labour	60	40
Variable Overheads	30	20

Each product undergoes an operation in the two departments, viz. cutting and finishing, before it emerges as a finished product. The unit time taken by the products and the maximum available hours in the cutting and finishing operations are given below:

Product	Cutting hours	Finishing Hours
A	5	10
B	20	15
Maximum hours available	400	450

Required:

Formulate the above problem in a linear programming problem.

(c) Dry Twigs and Fresh Blossoms Ltd. is always discarding old lines and introducing new lines of products and is at present considering three alternative promotional plans for ushering in new products. Various combinations of prices, development expenditures and promotional outlays are involved in these plans. High, medium and low forecasts of revenues under each plan have been formulated; and their respective probabilities of occurrence have been estimated. These budgeted revenues and probabilities along with other relevant data are summarized as under:

Particulars	₹ in lakhs		
	Plan I	Plan II	Plan III
Budgeted Revenue with probability:			
– High	30(0.3)	24(0.2)	50(0.2)
– Medium	20(0.3)	20(0.7)	25(0.5)
– Low	5(0.4)	15(0.1)	0(0.3)
Variable cost as % of Revenue	60%	75%	70%
Initial Investment	25	20	24
Life in years	8	8	8

The company's Cost of Capital is 12%; the income tax rate is 40% (say). Investments in promotional programmes will be amortized by the straight-line method. The company will have net taxable income in each year, regardless of the success or failure of the new products. The present value of an annuity of ₹ 1 at 12% for 8 years is 4.9676.

(i) Substantiating with figures makes a detailed analysis and find out which of the promotional plans is expected to be the most profitable.

(ii) In the event the worst happened, which of the plans would result in the maximizing profit? [(1+4)+3+7]

Answer:

(a) An Intranet is a private computer network that uses internet protocols and network-connectivity to securely share part of an organization's information or operations with its employees. Briefly it can be understood as a "private version of an internet" or as a "version of the Internet confined to an organization". Through such devices and systems, off-site employees can access company information, computing resources and internal communications.

Advantages of Intranets: The following are some of the important advantages of Intranets:

- **Work-force productivity:** Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities. Users can access data held in any data base the organization wants to make available, anytime and from anywhere within the company work-stations.
- **Time:** With Intranets, organizations can make more information available to employees on a "pull" basis (i.e., employees can link to relevant information at a time which suits them) rather than being deluged indiscriminately by e-mails.
- **Communication:** Intranets can serve as powerful tools for communication within an organization – both vertically as well as horizontally.
- **Enhance Collaboration:** With information easily accessible by all authorized users, team-work is enabled.
- **Promote Corporate Culture:** Every user is viewing the same information within the Intranet.
- **Cost-effective:** The Intranet enables the system to become cost-effective.
- **Knowledge Management:** Web publishing allows 'cumbersome' corporate knowledge to be maintained and easily accessed throughout the company using hypermedia and Web technologies.
  Examples include: employee manuals, benefits documents, company policies, business standards, news feeds, and even training, can be accessed using common Internet standards (Acrobat files, Flash files, CGI applications). Because each business unit can update the online copy of a document, the most recent version is always available to employees using the intranet.
- **Business operations and management:** Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the internetworked enterprise.

(b)

Contribution per unit

Particulars	A (₹)	B (₹)
Selling Price	175	220
Less: Variable Cost	130	140
Contribution	45	80

Let Product A = X_1 and Product B = X_2

The objective function is Max Z = $45x_1 + 80x_2$

Subject to

$5x_1 + 20x_2 \leq 400$ (available hours contrained)

$10x_1 + 15x_2 \leq 450$ (available hours contrained)

$x_1, x_2 \geq 0$ (non- negative)

(c) Statement showing Present Value & Profitability Index:

Particulars	Plan I	Plan II	Plan III
Expected Value of Revenue	17.000	20.300	22.50
Profit %	40%	25%	30%
Profit Before Tax	6.800	5.075	6.75
(-)tax@40%	2.720	2.030	2.70
PAT@60%	4.080	3.045	4.05

(+)tax savings(25/8)×0.4 /(20/8)x0.4/(24/8)x0.4	1.250	1.000	1.20
Total inflows	5.330	4.045	5.24
P.v. factor for 8 years at 12%	4.9676	4.9676	4.9676
Present value of inflows	26.477	20.094	26.08
(-)outlays	25.000	20.000	24.000
NPV	1.477	0.094	2.08
Profitability Index (inflows/ outflows)	1.039	1.005	1.087

The measures indicate that Plan III is the most profitable.

If worst happens:

Particulars	Plan I	Plan II	Plan III
Sales	5,00,000	15,00,000	
Contribution	2,00,000	3,75,000	
PAT	1,20,000	2,25,000	
(+)Tax Advantage	1,25,000	1,00,000	1,20,000Q
Inflows	2,45,000	3,25,000	1,20,000
Present value of inflow(4.9676)	12,17,062	16,14,470	5,96,112
(-) outlays	25,00,000	20,00,000	24,00,000
(NPV)	12,82,938	3,85,530	18,04,000

If a maximum criterion were used, Plan II would be the most attractive as it would maximize the minimum profit in the event that the lowest forecasted revenues were realized

3. (a) Explain the role of Cost and Management Accountant into a Target Costing Environment.

(b) Raja Automobiles Pvt. Ltd., manufactures around 150 scooters. The daily production varies from 146 to 154 depending on the availability of raw material and other working conditions.

The following data is available:

Production (units)	146	147	148	149	150	151	152	153	154
Probability	0.04	0.09	0.12	0.14	0.11	0.10	0.20	0.12	0.08

The completed units of scooters are transported in a specially arranged truck accommodating 150 scooters.

The Despatch will be equal to the opening stock plus daily production or 150 scooters, whichever is less. Empty Space are applicable only when the despatch is less than 150 scooters. Assume that the opening stock on day-1 is Nil.

Using the following random numbers:

80,81,76,75,64,43,18,26,10,12,65,68,69,61and 57.

Simulate for 15 days to find out:

(i) The average number of scooters waiting in the factory and

(ii) The average number of empty space on the truck. [5+10]

Answer:

(a) A Cost and Management Account can play a significant role in Target Costing Environment, as detailed below:

- To track the gap between current cost and target cost
- To provide details of items where cost-savings can be achieved.
- To understand the capital budgeting request generated by the design team based on the types of equipment needed for the anticipated product design.

- Help in understanding the nature of various costs, as well as the cost benefits trade-off of using different design or cost operations in the new product.
- Helps in making coordination between different departments to achieve the desired goals and ultimately the organizational goals.

(b)

Random number table for production

Production (units)	146	147	148	149	150	151	152	153	154
Probability	0.04	0.09	0.12	0.14	0.11	0.10	0.20	0.12	0.08
Cumulative Probability	0.04	0.13	0.25	0.39	0.50	0.60	0.80	0.92	1.00
Random No.	00-03	04-12	13-24	25-38	39-49	50-59	60-79	80-91	92-99

Simulation Table

Day	Random No.	Production (Units)	No. of Scooters waiting	No. of empty spaces in the lorry
1	80	153	3	-
2	81	153	3	-
3	76	152	2	-
4	75	152	2	-
5	64	152	2	-
6	43	150	0	0
7	18	148	-	2
8	26	149	-	1
9	10	147	-	3
10	12	147	-	3
11	65	152	2	-
12	68	152	2	-
13	69	152	2	-
14	61	152	2	-
15	57	151	1	-
Total for the period			21	9

(i) Average number of scooters waiting = 21/15 = 1.4 per day
(ii) Average number of empty spaces = 9/15 = 0.6 per day

4. (a) Explain briefly the different perspective of a Balanced Score Card.
(b) N LTD., has adopted a Standard Costing System. The Standard output for 20,000 units. The Standard Cost and Profit per unit is given below:

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

Actual production and sales for a period was 14,400 units. The following are the variance worked out at the end of the period:

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

You are required to:

(i) Ascertain the details of cost and prepare the Profit and Loss Account in the statement for the period, showing actual profit.

(ii) Reconcile the actual profit with the standard profit. [(1+4)+{(5+3)+2}]

Answer:

(a) The perspective of Balanced Score Card (BSC) varies from business to business. A well designed BSC combines financial measures of past performance with measures of firm's drivers of future performance.

The specific objectives and measures of an organization's BSC are derived from the firm's vision and strategy. Generally the BSC has the following perspective from which a company's activity can be evaluated:

(i) **Customer Perspective:** i.e., How customer see us? The Customer Perspective considers the business through the eyes of the customers, measuring and reflecting upon customer satisfaction.

(ii) **Internal Business Perspective:** i.e., In what processes must the firm excel? The Internal Business Perspective focuses attention on the performance of the key internal processes of the business.

(iii) **Learning and Growth Perspective:** i.e., Can we continue to improve and create value? This perspective is a measure of potential future performance. It drives attention to the basis of all future success the organization's people and its infrastructure.

(iv) **Financial Perspective:** i.e., How we look to our shareholders? The Financial Perspective measures the results that the organization delivers to its stockholders.

(b)

N LTD.

ASCERTAINMENT OF DETAILS OF COSTS of 14,400 units:

Particulars	Variance (₹)	Standard Cost (₹)	Actual Cost (₹)
Directs Materials (14,400x9)		1,29,600	
Price Variance (Adv)	8,500		
Usage Variance (Fav)	(2,100)	6,400	1,36,000
Direct Labour (14,400x6)		86,400	
Rate Variance (Adv)	8,000		
Efficiency Variance (Fav)	(6,400)	1,600	88,000

Direct Expenses: (14,400 x 1)		14,400	14,400
Factory Overheads:			
Variable (14,400 x 0.50)		7,200	
Fixed (14,400x0.60)		8,640	
Variable Expenditure (Fav)	(800)		
Fixed Expenditure (Fav)	(800)		
Fixed Volume (Adv)	3,360	1,760	17,600
Administrative Overheads:			
(14,400x0.60)		8,640	
Expenditure (Adv)	800		
Volume Variance (Adv)	3,360	4,160	12,800
Total Cost (14,400 x 17.70)		2,54,880	2,68,800

Profit and loss Account of N Ltd.
for the year ending..

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

(ii) Statement of reconciliation of actual profit with standard profit

Particulars	₹	₹
Standard Profit		33,120
Add: Favourable Variance :		
Direct Materials Usage	2,100	
Direct Labour Efficiency	6,400	
Variable OH Expenditure	800	
Fixed OH Expenditure	800	10,100
		43,220
Less : Adverse Variance :		
Direct Material Price	8,500	
Direct Labour Rate	8,000	
Fixed OH Volume	3,360	
Admn. OH Expenditure	800	
Admn. OH Volume	3,360	
		24,020
Profit (Actual)		19,200

5. (a) Write a note on Total Quality Management.
(b) Differentiate between Quality Planning, Quality Control & Quality Improvement.
(c) State the uses of Learning Curve. [5+5+5]

Answer:

(a) Quality is considered a by-product of the manufacturing system, i.e. each individual process has some variation that will lead to the production of some defective units. If

the resulting defective rate is too high, compared to the established quality standards, quality inspectors will identify and send them back for rework. The approach is expensive and does not guarantee the desired quality, because quality maintenance and ensuring itself cannot be inspected into a product. This approach assigns the responsibility for quality to quality control managers.

A more approach to quality emphasizes building quality into the product by studying and improving activities that affect quality, from marketing through design to manufacturing. This new approach is referred to as Total Quality Management (TQM). It is an active approach encompassing a company-wide operating philosophy and system for continuous improvement of quality. It demands co-operation from everyone in the company, from the top management down to workers.

The principles of TQM are as follows:

(i) Customer focus,

(ii) Managerial Leadership,

(iii) Belief in continuous improvement.

(iv) The current thinking on TQM is moving from Quality of product and service to Quality of people to embrace also Quality of environment. ISO 14000 standard supports this.

(b) Difference between Quality Planning, Quality Control & Quality Improvement :

Quality Planning	Quality Control	Quality Improvement
Determine who the Customers are.	Choose control subjects what to Control?	Establish the infrastructure needed to secure annual quality improvement.
Determine the needs of the Customers	Choose units of measurements Evaluate Measurements	Identify the specific needs for improvement - the improvement projects
Develop product features that respond to the customer's needs.	Establish standards of performance	For each project establish a project team with clear responsibility for bringing the project to a successful conclusion.
Develop processes that are able to product feature	Measure actual performance	Diagnose the causes
Transfer the resulting plans to the operating forces.	Interpret the difference (actual versus standard)	Stimulate establishment of a remedy

(c) The learning curve theory has gained significant importance as a technique for cost prediction and cost control. Some of the uses to which the learning rate may be put to are as follows:-

(i) Developing bid prices for contracts

(ii) **Work Scheduling** – The learning curve concept assists the management in work scheduling and production control in three ways :

- It predicts man-hours and the workforce required for meeting the production plan so that timely action may be taken to procure the required workforce.
- It indicates the time required for production so that schedule deliveries can be maintained.
- It enables production control to take advantage of reducing the time per unit of production by increasing the product lot sizes.

(iii) **Planning Inventory** – The learning curve indicates how with increased efficiency of the worker, the pace of production increases consequent to which more materials are required and work-in-progress and finished goods stocks grow rapidly in size. Awareness of the growth rate enables the management to plan the inventories properly.

(iv) **Planning working capital** – When unit prices are based on average cumulative cost per unit, the cost of the first few units produced will be higher than the cost on which the bid price was based. As a result, the profit level may not be high enough to provide sufficient working capital. In such a situation, the learning curve will indicate the quantum of the shortage of working capital so that suitable action may be taken on time to meet the shortfall.

(v) **Make or buy decision** – The learning curve is useful in make or buy decision-making. While purchasing from outside on long term basis, it is to be seen whether the supplier has already reached the maximum efficiency in which case no learning curve will apply and no reduction in price in future can be expected. In another situation where instead of purchasing, internal production is speeded up, new inexperienced workers may have to be employed resulting in high costs now but gradual lower costs may be expected when the improvement process operates.

6. (a) Sturdy Horse Ltd., a cycle manufacturing company has drawn up a programme for the manufacture of a new product for the purpose of fuller utilisation of its capacity. The scheme envisages the manufacture of baby tricycle fitted with a bell. The company estimates the sales of tricycles at 20,000 during the first year and expects that from the second year onward the sales estimates will stabilise at 10,000 tricycles. Since the company has no provision for the manufacture of the small bells specially required for the tricycle, the requirement of the bells is initially proposed to be met by way of purchase from the market at Rs. 8 each. However, if the company desires to manufacture the bell in its factory by installation of new equipment, it has two alternative proposals as under:

Particulars	Installation of Super-X Machine	Installation of Janta Machine
Initial Cost of Machine	₹ 3,00,000	₹ 2,00,000
Life	10 years	10 years
Fixed overheads other than depreciation on machines (per annum)	₹54,000	₹28,000
Variable expenses per bell	₹4.00	₹ 5.00

Depreciation on machine should be charged on straight line basis.

Required:

(i) For each of the two levels of output namely 10,000 and 20,000 bells state with suitable workings whether the company should purchase the bells from market or install new equipment for manufacture of bells. If your decision is in favour of the installation of new equipment, which of the two new machines should be installed.

(ii) What would be your decision in case the forecast of requirement from the second year onwards is estimated at 40,000 bells instead of 2,0,000 bells?

(iii) At what volume of bells will the installation of the two machines break even?

(b) Briefly explain about the "Kaizan Costing". [10+5]

Answer:

(a)

(i)

Comparative Statement of Cost

Particulars	Super X ₹	Janta ₹	Purchase ₹
(a) Output : 10,000 bells			
Fixed overheads	54,000	28,000	-
Depreciation	30,000	20,000	-
Total Fixed Cost	84,000	48,000	-

Fixed Cost per bell	8.40	4.80	-
Variable cost per bell	4.00	5.00	-
Total cost per unit	12.40	9.80	8.00

Decision: Since at an output of 10,000 bells, the cost per bell, in case of purchasing machine from market is cheaper as compared to manufacturing the bells. It will be better to purchase the bells from market.

Particulars	Super X ₹	Janta ₹	Purchase ₹
(b) Output : 20,000 bells			
Fixed Cost per bell (84,000/20,000) and (48,000 /20,000)	4.20	2.40	-
Variable cost per bell	4.00	5.00	-
Total cost per unit	8.20	7.40	8.00

Decision: Since at an output of 20,000 bells, the cost per bell, in case of Janta machine from market is least. It will be better to appropriate to install the Janta Machine.

(ii)

Comparative Statement of Cost: Output 40,000 bells

Particulars	Super X ₹	Janta ₹	Purchase ₹
Output : 40,000 bells			
Fixed Cost per bell (84,000/40,000) and (48,000 /40,000)	2.10	1.20	-
Variable cost per bell	4.00	5.00	-
Total cost per unit	6.10	6.20	8.00

Decision: Install Super X machine when demand is 40,000 units

(iii)

Computation of Break – Even Point

Particulars	Super X ₹	Janta ₹	Difference ₹
Differential Fixed Cost	84,000	48,000	36,000
Variable cost per bell	4.00	5.00	1.00
Breakeven point (36,000 /1) = 36,000 bells			

Decision: When the requirement is 36,000 bells, the company can produce in either of the two machines.

(b) Kaizen Costing

Kaizen Costing is a modification of Standard Costing, which is essential to realize the planned cost reductions in continuous time. This is a Japanese contribution to cost accounting. Kaizen Costing is a continuous improvement applied to cost reduction in the manufacturing stage of a product's life. Like that of Standard Costing Programme, the aim of Kaizen Costing is to remove inefficiencies from the production processes.

Kaizen Costing tracks the cost reduction plans on a monthly basis. The Kaizen Costing Targets are expressed in the physical resources terms. If the head of a group fails to achieve the Kaizen Costing target by 1%, review by the seniors will start. Resources consumption is very tightly controlled in many Japanese firms. Thus the planned cost reductions are planned and monitored through Kaizen Cost targets, in terms of physical resources.

While implementing the concept of Kaizen costing, the following few rules are to be remembered:

- List down your own problems.

- Grade your problems as to minor, difficult or major.
- Select the smallest minor problem to start with. After tackling it move on to the next graded problem and so on.
- Always remember that improvement is a part of daily routine.
- Never accept status quo.
- Never reject any idea before trying it.
- Share the experiments with colleagues.
- Eliminate already tried but failed experiments, while sharing the problems with your colleagues.
- Never hide problems, always highlight them.

7. (a) The standard cost card of a product X is as under:

	₹	₹
Direct Material - Item A 10 kg@₹ 10	**100**	
- Item B 5 kg @₹ 5	**25**	**125**
Direct Wages - 5hrs.@₹ 4		**20**
Fixed Production Overheads		**25**
Total Standard Cost		**170**
Standard Gross Profit		**30**
Standard Selling Price		**200**

During the month just concluded, the following were the actual results for the production of 800 units.

	₹
Sales 800 units @ 200 per unit	**1,60,000**
Direct Material ItemA7800Kg.	**79,950**
Item B 4200 Kg.	**20,160**
Direct Wages 4200 hrs.	**12,075**
Fixed Overheads	**23,500**
	1,35,685
Gross Profit	**24,315**

Material Price Variance is calculated at the point of issue.
Material purchased were Item A 9000 Kg @₹ 10.25 per Kg and Item B @₹ 4.80 per Kg.
There was no Opening Stock.
You are required to calculate:
(i) Material Price Variance
(ii) Material Usage Variance
(iii) Labour Rate Variance and
(iv) Labour Efficiency Variance.

(b) A company has two divisions one producing an intermediate for which there is external market and another using this intermediate in finished product and it sells in the market. Each unit of finished product uses one unit of intermediate. The sales quantity is sensitive to the price charged and the selling division has developed the following sales schedule:

Selling price per unit (₹)	500	450	400	350	300	250
Sales units (No)	1,000	2,000	3,000	4,000	5,000	6,000

Cost details are as:

Particulars	Production Division	Selling Division
Variable Cost Per unit (₹)	55	35
Fixed Cost Per annum (₹)	3,00,000	4,50,000

The transfer price is ₹ 175 based on the full cost basis.

(i) Prepare a statement of profit for each division and the company as a whole.

(ii) Determine the selling price that will maximize the selling division profit and the price that will maximize the company's profit.

(iii) Determine the which transfer price policy will maximize the overall company's profit. [(2x4)+7]

Answer:

(a) Computation of Variances:

(i) Material Price Variance:

Material	Qty Consumed Kg.	Std. Price ₹	Act. Price ₹	Std. Cost ₹	Act. Cost ₹	Price Variance ₹
A	7,800	10	10.25	78,000	79,950	1,950 (A)
B	4,200	5	4.80	21,000	20,160	840 (F)
						1,110 (A)

(ii) Material Usage Variance:

Material	Std. Qty of actual output Kg.	Act. Qty Kg.	Std. Price ₹	Std. Cost of Std. Qty. ₹	Std. Cost of act. Qty. ₹	Usage Variance ₹
A	8,000	7,800	10.00	80,000	78,000	2,000 (F)
B	4,000	4,200	5.00	20,000	21,000	1,000 (A)
						1,000 (F)

(iii) Labour Rate Variance:

Act. Hrs.	Std. Rate (₹)	Act. Rae (₹)	Std. Wages (₹)	Act. Wages (₹)	Rate Variance(₹)
4,200	4	2.875 (12075/4200)	16,800	12,075	4,725 (F)

(iv) Labour Efficiency Variance:

Std. Hrs. for act. Output	Act. Hrs.	Std. rate (₹)	Std. cost of Std. hrs. (₹)	Std. Cost of Act. Hrs.	Efficiency Variance (₹)
4,000	4,200	4	16,000	16,800	800 (A)

(b) (i)

Profit statements

₹ Thousand

Selling division					Production division		
Sales (units)	Revenue	Variable cost	Transfer price	Profit	Revenue	Variable cost	Profit
1000	500	35	175	290	175	55	120
2000	900	70	350	480	350	110	24
3000	1200	105	525	570	525	165	36
4000	1400	140	700	560	700	220	48

5000	1500	175	875	450	875	275	600
6000	1500	210	1050	240	1050	33	720

Overall company's profitability = selling division profit + production division profit

Sales units (No.)	1,000	2,000	3,000	4,000	5,000	6,000
Profit in (₹ '000)	410	720	930	1,040	1,050	960

(ii) It may be seen that the selling division has the maximum profit at a volume of sales at 3000 @ ₹ 400 per unit and whereas overall company's profit is maximum at 5000 units @ ₹ 300 per unit.

(iii) When there is no market for the intermediate and there is no capacity constraint the correct transfer price is the marginal cost of the supplying division for that output at which the marginal cost equals the receiving department's net marginal revenue from converting the intermediate. When unit variable cost is constant and fixed cost do not change the marginal cost will be the same as the supplying division's variable cost of producing division viz. ₹ 55 per unit. The selling division will have the following marginal cost and revenue schedule at the transfer price of ₹ 55 per unit.

in ₹ thousand

Output (units)	**Marginal cost**	**Marginal Revenue**
1,000	90	500
2,000	90	400
3,000	90	300
4,000	90	200
5,000	90	100
6,000	90	Nil

Marginal cost = transfer price + own variable cost = 55+35 = ₹ 90

Thus it is seen that at an output of 5000 units (approximate) (price ₹ 300 per unit) the marginal cost equals the marginal revenue and this is the price - volume that will maximize the overall company's profitability

8. Write short notes on any three out of the following: [5x3]

(a) Distribution Requirement Planning

(b) Theory of Constraints

(c) Basic elements of a control system

(d) Crowned Prince Syndrome

Answer:

(a) Distribution Requirement Planning

Systematic process for determining which goods, in what quantity, at which location, and when are required in meeting anticipated demand. This inventory related information is then entered into a manufacturing requirements planning (MRP-I) system as gross requirements for estimating input flows and production schedules.

A supply channel is composed of three structures. At one end of the channel is the manufacturer. The manufacturer focuses on the development and production of products and originates the distribution process. The terminal point in the channel is the retailer who sells goods and services directly to the customer for their personal, non-business use. In between the two lies a process called distribution.

Distribution involves a number of activities centered around a physical flow of goods and information. At one time the term distribution applied only to the outbound side of supply chain management, but it now includes both inbound and outbound. Management of the inbound flow involves these elements:

- Material planning and control
- Purchasing
- Receiving
- Physical management of materials via warehousing and storage
- Materials handling

Management of the outbound flow involves these elements:

- Order processing
- Warehousing and storage
- Finished goods management
- Material handling and packaging
- Shipping
- Transportation

Distribution channels are formed to solve three critical distribution problems: functional performance, reduced complexity, and specialization.

(b) Theory of constraint:

The Theory of Constraints (TOC) is also known as 'Optimized Production Technology'. TOC is a management philosophy developed by Dr. Goldratt. According to this theory, the strength of any chain, process, or system is dependent upon its weakest link. TOC is systematic and strives to identify constraints to system success and to effect the changes necessary to remove them. TOC focuses its attention on constraints and bottlenecks within the firm that hinder speedy production. The main concept is to maximize the rate of manufacturing output i.e., the throughput of the firm. This requires examination of the bottlenecks and constraints. A Bottleneck is an activity, within the firm, where the demand for the resource is more than its capacity to supply. A Constraint is a situational factor, which makes the achievement of objectives more difficult than it would otherwise be, eg., lack of skilled employees, lack of orders etc., A Bottleneck is always a constraint but a constraint need not always be a bottleneck

The main aim of TOC is to increase throughput contribution. This can be done by techniques such as –

i. Linear Programming

ii. Use of shadow pricing

iii. Variance Analysis using ABC Techniques.

The main objective of TOC is to maximize Throughput Contribution (i.e., Sales Revenue less Direct Materials) – subject to Supply Constraints and demand constraints.

(c) Basics elements of Control Systems

The basic elements of a control system are the following:

- A control object or variable to be controlled- is the variable of the systems behavior chosen for monitoring and control.
- A detector or scanning sub-system-tracks the performance and can be visualized as a scanning system and it feeds on information.
- A comparator/Assessor- The output of the scanning system constitutes the energizing input of the comparator.
- An effecter or action taking sub system shall constitute the true decision maker. It evaluates alternative course of corrective action in the light of the significance of the deviations transmitted by the comparator.
- Communication Network – are devices that transmit information between the detector and the assessor and between the assessors and the effectors.

(d) Crowned Prince Syndrome:

The first potential problem in Succession Planning is the „Crowned Prince Syndrome", which occurs when the upper management only considers for advancement, those employees, who have become visible to them. In other words, rather than looking at a wide array of individual employees and their capabilities, upper management focuses only on one person – the would be "crowned Prince". This person is often one who has been involved in high-projects, has a powerful and prominent mentor or has networked well with the organizational leaders.

There are often employees throughout the organization who are capable of and interested in promotion who may be overlooked because of the more visible and obvious "crowned prince", who is likely to be promoted, even if these other employees are available. Not only are performance problems a potential outcome of this syndrome but also the motivation of current employees may suffer, it they feel that their high performance has been overlooked. This may result in turnover of high quality employees, who have been overlooked for promotion due to the "crown Prince" syndrome.