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) A company makes and sells a single product. The selling price and marginal revenue equations are :
Selling Price = ₹ 100 – ₹ 0.001X
Marginal Revenue = ₹ 100 – ₹ 0.002X
Where X is the product the company makes. The variable costs amount to ₹20 per unit and the fixed costs are ₹2,00,000.
In order to maximize the profit, the selling price should be:
A. ₹ 25
B. ₹ 30
C. ₹ 40
D. ₹ 60

Answer:

D. — ₹ 60.

Selling price = ₹ 100 – ₹ 0.001X
Marginal Revenue = ₹ 100 – ₹ 0.002X
Variable Cost per unit = Marginal Cost per unit = ₹ 20
Optimal output for maximum profit: 20 = 100 – 0.002X,
Hence, X = 80/0.002 = 40,000 units
SP = 100 – 0.001X = 100 – 0.001(40,000) = 100 – 40 = ₹ 60.

(ii) A particular job requires 1,600 kgs of material - X.
1,000 kgs. of the particular material is currently in stock.
The original price of the material - X was ₹ 600 but current resale value of the same has been determined as ₹ 400. If the current replacement price of the material - X is ₹ 1.20 per kg., the relevant cost of the material - X required for the job would be :
A. ₹ 1,920
B. ₹ 600
C. ₹1,120

D. None of these.

Answer:

C. — ₹ 1,120.

1,000 kgs. of material in stock at resale value	= ₹ 400
Balance 600 kgs. of material at current price of ₹ 1.20	= ₹ 720
Relevant Cost of the material	= ₹ 1,120.

(iii) Vipul Ltd., is preparing its Sales Budget for the coming 3 months. The Sales Department has given an estimate that Sales will be 2,40,000 units, if the monsoon is good and 1,60,000 units if the monsoon is poor. The probability that the monsoon will be poor is 0.3. The expected Sales Volume for next quarter would be:

A. 1,68,000 units
B. 1,60,000 units
C. 2,16,000 units
D. None of these.

Answer:

C. — 2,16,000.

[1,60,000 x 0.30] + [2,40,000 x 0.70]
= 48,000 + 1,68,000 = 2,16,000.

(iv) Kalpit Ltd., developing a new product, makes a model for testing and goes for regular production. From past experience of similar models, it is known that a 90% learning curve applies. If the time taken to make the model is 300 hours, what will be the total time taken to produce 3rd to 4th unit of the product?

A. 540 hours
B. 486 hours
C. 432 hours
D. None of the above.

Answer:

C. — 432 hours.

Cumulative output	Average time/unit (hrs.)	Total time (hrs.)	Incremental Time (hrs.)
1	300	300	
2	270 (0.9 x 300)	540	
4	243 (0.9 x 270)	972	432 (972 – 540)

(v) A company has budgeted break-even sales revenue of ₹16,00,000 and fixed costs of ₹6,40,000 for the next period. The sales revenue needed to achieve a profit of ₹1,00,000 in the period will be

A. ₹ 7,40,000
B. ₹ 9,25,000
C. ₹ 6,40,000

D. ₹ 18,50,000

Answer:

D .— ₹18,50,000.

P/V Ratio = Fixed cost/ BE Sales = 6,40,000/ 16,00,000 = 40%
Contribution required = FC + Profit = ₹ (6,40,000 + 1,00,000) = ₹7,40,000.
Sales = 7,40,000/ 40% = ₹18,50,000.

(b) Define the following terms in one/two sentences: **[1×5=5]**

(i) Vat analysis;
(ii) Detector;
(iii) Control Chart ;
(iv) Query tools;
(v) Generic Benchmarking.

Answer:

(i) Vat analysis: determines the general flow of parts and products from raw materials to finished products. It conceptualises an organization in terms of the interaction of its individual components parts, products and processes.

(ii) Detector: tracks the performance and can be visualised as a scanning system and it feeds on information. In fact the Detector is another name for Management Information System.

(iii) Control Chart: is a quality control tool to maintain a process under statistical control.

(iv) Query tools: allow the users to find the information needed to perform any specific function.

(v) Generic Benchmarking: is an application of functional benchmarking that compares a particular business function at two or more organizations, selected without regard to their industry.

(c) Expand the following abbreviations: **[1×5=5]**

(i) CPOF;
(ii) EMS;
(iii) CER;
(iv) FMECA;
(v) FAST.

Answer:

(i) CPOF: Capacity Planning using Overall Factors;
(ii) EMS: Environmental Management System;
(iii) CER: Cost Estimating Relationships;
(iv) FMECA: Failure Mode, Effects, Criticality Analysis;
(v) FAST: Functional Analysis System Techniques.

(d) Fill in the blanks with the appropriate word out of the options indicated in the bracket against each statement: [1×5=5]

(i) Instead of (accepting / not accepting) the current practice, Zero Base Budgeting creates a challenging and questioning attitude.
(ii) Finite Capacity Scheduling (FCS) is an extension of [Capacity Requirement Planning (CRP)/ Manufacturing Resource Planning (MRP)].
(iii) Marginal Cost is a (constant/ variable) ratio which may be expressed in terms of an amount per unit of output.
(iv) In a Transportation Problem, when the quantities are allocated to cost cells within the matrix and if such allocations are less than the number of rows plus number of columns plus one, such situation is known as (unbalanced/ degeneracy).
(v) A relative measure of (standard deviation/dispersion) is the coefficient of variation.

Answer:

(i) accepting;
(ii) Capacity Requirement Planning;
(iii) constant;
(iv) degeneracy;
(v) dispersion.

2. (a) What are the stages involved in the creation of a Balanced Score Card? [5]

Answer:

The stages involved in the creation of a balanced score card are enumerated below:

(i) To Identify a vision i.e., where an organization is going?
(ii) To Identify Organisation's strategies: i.e., how an Organization is planning to go there?
(iii) Define Critical success factors and perspectives: i.e., what we have to do well in each Perspective? i.e. Customer perspective, Internal perspective, Innovation and Learning perspective and Financial perspective.
(iv) Identify measures which will ensure that everything is going in the expected way.
(v) Evaluation of Balanced score card i.e., ensuring what we are measuring is right.
(vi) Create action plans and plan reporting of the Balanced score Card.
(vii) Follow up and manage i.e., which person should have reports and what reports should look like?

(b) Yummy Food have observed from a market survey that they can sell a special type of packed snack at a price of ₹ 50 per pack during festive season only.

However, for this purpose they will have to make a fresh investment of ₹3,00,000 in equipment. The variable cost of production would be ₹25 p.u. The variable cost of production would come down to ₹20 if the investment is made for ₹6,00,000.The likely sales to be achieved are as under:

Volume	Probability
10,000	0.30

20,000	**0.50**
30,000	**0.20**

There will be no residual value of investments at the end of the festive season. Should the company go ahead and invest? [3]

Answer:

Expected Volume of Sales = [0.30×10,000]+[0.50×20,000]+[0.20×30,000]=19,000 units

Expected Revenue=19,000 × ₹50=₹9,50,000

Particulars	Option I	Option II
	₹	₹
Cost of Investment	3,00,000	6,00,000
Variable Cost @₹25/₹20	4,75,000	3,80,000
Total Revenue	9,50,000	9,50,000
Net Gain/Loss	1,75,000	(30,000)
The company can go ahead and invest ₹3,00,000.		

(c) A Mutual Fund has cash resources of ₹200 million for investment in a diversified portfolio. Table below shows the opportunities available, their estimated annual yields, risk factor and term period details.
Formulate a Linear Programming Model to find the optimal portfolio that will maximize return, considering the following policy guidelines:

- **All the funds available may be invested.**
- **Weighted average period of at least five years as planning horizon.**
- **Weighted average risk factor not to exceed 0.20**
- **Investment in real estate and speculative stocks to be not more than 25% of the monies invested in total.**

Investment type	Annual yield (percentage)	Risk factor	Term period (years)
Bank deposit	**9.5**	**0.02**	**6**
Treasury notes	**8.5**	**0.01**	**4**
Corporate deposit	**12.0**	**0.08**	**3**
Blue-chip stock	**15.0**	**0.25**	**5**
Speculative stocks	**32.5**	**0.45**	**3**
Real estate	**35.0**	**0.40**	**10**

[7]

Answer:

Mathematical formulation:

Let x_1, x_2, x_3, x_4, x_5 and x_6 represent the six different investment alternatives, i.e., x_1 is bank deposit, x_2 is treasury note. x_3 is corporate deposit, x_4 is blue chip stock, x_5 is speculative stock and x_6 is real estate.

The objective is to maximize the annual yield of the investors (in number of units) given by the

Linear expression.

Maximise $Z = 9.5x_1+8.5x_2+12.0x_3+15.0x_4+32.5x_5+35.0x_6$ subject to the constraints:

$x_1 + x_2 + x_3 + x_4 + x_5 + x_6 \leq 1$ (Investment decision)

$0.02x_1 + 0.01x_2 + 0.08x_3 + 0.25x_4 + 0.45x_5 + 0.40x_6 \leq 0.20$(weighted average risk of the portfolio)

$6x_1 + 4x_2 + 3x_3 + 5x_4 + 3x_5 + 10x_6 \geq 5$(weighted average length of investment)

$x_5+x_6 \leq 0.25$ (limit on investment in real estate and speculative stock)

$x_1, x_2, x_3, x_4, x_5, x_6 \geq 0$ [non-negativity condition].

3. (a) The frequency distribution of Contribution per Unit, Annual Demand and Investment requirement of a manufacturing Company were found as below –

Contribution per Unit (₹)	**3**	**5**	**7**	**9**	**10**
Relative frequency	**0.1**	**0.2**	**0.4**	**0.2**	**0.1**

Annual demand (in 1000 units)	**20**	**25**	**30**	**35**	**40**	**45**	**50**
Relative frequency	**0.05**	**0.10**	**0.20**	**0.30**	**0.20**	**0.10**	**0.05**

Required Investment (₹000s)	**1,750**	**2,000**	**2,500**
Relative frequency	**0.25**	**0.50**	**0.25**

Consider the random number 93, 03, 51, 59, 77, 61, 71, 62, 99, 15 for simulating 10 run, to estimate the Percentage of Return on Investment (ROI = Cash inflow ÷ Investment × 100) for each run. Find the average ROI. [10]

Answer:

A. Random Number Allocation

Table 1: Random Number for Demand

Event	Prob.	Cum Prob	Random Nos.
20	0.05	0.05	00-04
25	0.10	0.15	05-14
30	0.20	0.35	15-34
35	0.30	0.65	35-64
40	0.20	0.85	65-84
45	0.10	0.95	85-94
50	0.05	1.00	95-99

Table 2: Random Number for contribution

Event	Prob	Cum Prob	Random Numbers
3	0.10	0.10	00-09
5	0.20	0.30	10-29
7	0.40	0.70	30-69
9	0.20	0.90	70-89
10	0.10	1.00	90-99

Table 3: Random number for Investment

Event	Prob	Cum Prob	Random Numbers
1750	0.25	0.25	00-24
2000	0.50	0.75	25-74
2500	0.25	1.00	75-99

B. Simulation Table

Trial (a)	Random No (b)	Demand (₹) (c)	Contri p.u.(₹) (d)	Investment (₹) (e)	Cash inflow (₹) (f) = (c) × (d)	ROI (g) = (f) ÷ (e) ×100
1	93	45	10	2,500	450	18.00%
2	03	20	3	1,750	60	3.43%
3	51	35	7	2,000	245	12.25%
4	59	35	7	2,000	245	12.25%
5	77	40	9	2,500	360	14.40%
6	61	35	7	2,000	245	12.25%
7	71	40	9	2,000	360	18.00%
8	62	35	7	2,000	245	12.25%
9	99	50	10	2,500	500	20.00%
10	15	35	5	1,750	150	8.57%
Total				21,000	2,860	131.40

Result: Simple Average ROI = Total ROI ÷10 = 131.40 ÷10 = 13.14%.

Weighted Average ROI = Total Cash Inflow ÷Total Investment = [2,860÷21,000](₹000s) = 13.62%.

(b) What is lean manufacturing? Briefly describe the lean/JIT system. [5]

Answer:

Just in time (JIT) philosophy was first developed in Japan. Toyota introduced it in 50's and later, other companies in Japan have adopted it.

The overriding feature of JIT is that materials or parts are generated in the exact quantity required and just at the time they are needed. A classic JIT system consists of a series of manufacturing units each delivering to one another in successive stages of production. The amount delivered by each unit to the next unit is exactly what the needs for the next production period (usually one day). There are no safety margins in the form of buffer stock, live storage or work-in-progress. JIT is a sophisticated approach in eliminating wastage in the process of manufacturing in different stages, say, from the production design stage to the stage of delivery of finished product. JIT is sometimes regarded as an inventory control technique or a purchasing method. It aims at eliminating all activities which do not add 'value' to the product.

JIT seeks to achieve the following goals :

- Elimination of non value added activities
- Zero inventory
- Zero defects
- Batch size of one
- Zero Breakdown
- A 100% on time delivery service

Schonberger defines JIT as being 'to produce and deliver finished goods just in time to be sold, sub assemblies just in time to be assembled into finished goods, fabricated parts just in time to go into sub assemblies and purchased materials just in time to be transformed into fabricated parts'.

4. (a) A Company paid ₹2,00,000 and acquired a machine on 1-10-2010. Its annual operation cost is ₹ 15,000 excluding depreciation. The machine will have a 5-year useful life with zero terminal value.

The machine was just put on trial and was used for one day when the supplier offered a different model to do the same job. The annual operating cost of the revised model is ₹ 9,000 exclusive of depreciation. The new machine will cost ₹24,000. The old machine can be sold for ₹10,000. The cost of removal of the old machine is ₹2,000. The new machine will also have a five-year life with zero terminal value. Sales will be ₹2,50,000 per annum and all other cash costs will be ₹2,10,000 per annum regardless of the decision to change the machine. The machine is installed in a separate building and the written down value of the building is ₹5,00,000. If this building is sold now, it will fetch ₹10 lakhs but the company proposes to use the building for installing the machine.

You are required to explain whether each item of income or expense or cost stated above is relevant or not in deciding on the replacement of the machine. [4]

Answer:

Statement showing relevancy of income or expenditure for replacement decision:

Item of Expenditure	Relevancy
i. Cost of machine ₹2,00,000.	It is a sunk cost and is not relevant for replacement decision.
ii. Operation costs ₹15,000 & ₹ 9,000	These will affect the future cash outflows and relevant.

iii. Cost of new machine ₹ 24,000.	There is a cash outflow and is relevant for decision making.
iv. Sale proceeds of old machine ₹10,000.	This will lead to cash inflow and is relevant.
v. Removal of old machine ₹2,000.	It will affect the future cash outflow and is relevant.
vi. Future sales of ₹2,50,000 p.a. and operating costs of ₹ 2,10,000 p.a.	It is common to both the machines and is not relevant.
vii. WDV of building of ₹ 5,00,000.	It is sunk cost is not relevant.
viii. Sale value of machine ₹ 10,00,000.	There is no intention to sell the machine and it is not relevant for replacement decision.

(b) Five Swimmers are eligible to compete in a relay team that should have four swimmers swimming different styles- backstroke, breaststroke, free style and butterfly. The time taken for the five swimmers - Anand, Balu, Chandru, Deepak and Eswar – to cover a distance of 100 metres in various swimming styles are given below in minutes: seconds. Anand swims backstroke in 1:09, breaststroke in 1:15 and has never competed in free style or butterfly. Balu is a free style specialist averaging 1:01 for 100 metres but can also swim breaststroke in 1:16 and butterfly in 1:20. Chandru swims all styles, backstroke 1:10, breaststroke 1:12, free style 1:05 and butterfly 1:20. Deepak swims only butterfly at 1:11 while Eswar swims backstroke 1:20, breaststroke 1:16, free style 1:06 and butterfly 1:10. Which swimmers should be assigned to which swimming style? Who will not be in the team? [8]

Answer:

I. The Time taken matrix is first derived (in seconds)

Swimmers	Backstroke	Breaststroke	Freestyle	Butterfly
Anand	69	75	-	-
Balu	-	76	61	80
Chandru	70	72	65	80
Deepak	-	-	-	71
Eswar	80	76	66	70

The objective is minimization of time taken. The combinations not available for assignment are indicate by M where M = infinity. A dummy column is introduced in the above matrix.

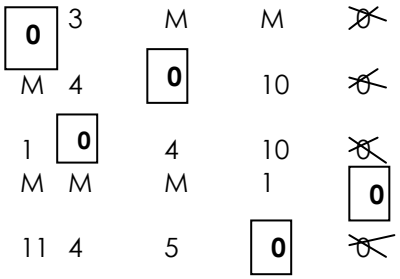
II. Inserting Dummy Column

69	75	M	M	0
M	76	61	80	0
70	72	65	80	0
M	M	M	71	0
80	76	66	70	0

III. Row and Column Operations

~~0~~	~~3~~	~~M~~	~~M~~	~~0~~
~~M~~	~~4~~	~~0~~	~~10~~	~~0~~
~~1~~	~~0~~	~~4~~	~~10~~	~~0~~
M	M	M	1	0
~~11~~	~~4~~	~~5~~	~~0~~	~~0~~

IV. Inserting Dummy Column



Total Time taken will be 272 seconds or 4 min and 32 seconds.

Swimmer	Anand	Balu	Chandru	Deepak	Eswar
Style	Backstroke	Freestyle	Breaststroke	Dummy - will not be in the race.	Butterfly
Time Taken	69	61	72		70

(c) State what is Cause – Effect Diagram and when should it be used? [3]

Answer:

The Cause –effect Diagram is one of the powerful tools for quality control. It is called a Fishbone Diagram, because of its shape, or an Ishikawa Chart, after its originator Kaoru Ishikawa, who first used it in 1943.
The Cause – Effect Diagram is used to identify and structure the causes of a given effect.

It is used:

- when investigating a problem, to identify and select key problem causes to investigate or address.
- when the primary symptom (or effect) of a problem causes are not all clear.
- when working in a group, to gain a common understanding of problem causes and their relationship.
- to find causal relationship, such as potential risks or causes of desired effects.

5. (a) What are the characteristics and Principles of Business Re-engineering Process? [5]

Answer:

Following are the characteristics of Business Re-engineering Process:

i. Several jobs are combined into one
ii. Often workers make decisions
iii. The steps in the process are performed in a logical order
iv. Work is performed, where it makes most sense
v. Quality is built in
vi. Manager provides a single point of contact
vii. Centralized and decentralized operations are combined.

Seven Principles of Business Re-engineering Process:

i. Processes should be designed to achieve a desired outcome rather than focusing on existing tasks.
ii. Personnel who use the output from a process should perform the process
iii. Information processing should be included in the work, which produces the information
iv. Geographically dispersed resources should be treated, as if they are centralized
v. Parallel activities should be linked rather than integrated.
vi. Doers should be allowed to be self-managing
vii. Information should be captured once at source.

(b) Best Ltd. manufactures and sells 15,000 Units of a product. The Full Cost per Unit is ₹200. The Company has fixed its price so as to earn a 20% Return on an Investment of ₹18,00,000.
Required:

i. Calculate the Selling Price per unit from the above. Also, calculate the Mark-up % on the Full Cost per unit.
ii. If the Selling Price as calculated above represents a Mark-up % of 40% on Variable Cost per unit, calculate the variable cost per unit.
iii. Calculate the Company's Income if it had increased the Selling Price to ₹230. At this price, the Company would have sold 13,500 units. Should the Company have increased the selling price to ₹230?
iv. In response to competitive pressures, the Company must reduce the price to ₹210 next year, in order to achieve sales of 15,000 units. The Company also plans to reduce its investment to ₹16,50,000. If a 20% Return on Investment should be maintained, what is the Target Cost per unit for the next year? [6]

Answer:

i. Target Sale Price per unit = Full Cost + Target Profit = ₹200 + $\frac{18,00,000 \times 20\%}{15,000 \text{ units}}$	₹224
So, Mark-up on Full Cost = ₹24 ÷ ₹200	12%
ii. Above Sale Price ₹224 = VC + 40% thereon, i.e. 140% on VC. So, Var. Cost = $\frac{224}{140\%}$	₹160
iii. Present Contribution at 15,000 units = (₹224 – ₹160) × 15,000 units = Revised Contribution at 13,500 units = (₹230 – ₹160) × 13,500 = Hence, Increase in Sale Price is not beneficial, due to reduction in Contribution by	₹9,60,000 ₹9,45,000 ₹15,000
iv. Target Profit for next year = $\frac{16,50,000 \times 20\%}{15,000 \text{ units}}$ = ₹22 So, Target Cost for next year = New Sale Price less Target Profit = ₹210 – ₹22	 ₹188

(c) What are the options for Demand Stimulation? [4]

Answer:

Different options for Demand Stimulation are:

Pricing: Varying (lowering) pricing to increase demand in periods when demand is less than peak e.g., off-season rates for hotels.
Promotion: Advertising, direct marketing, bulk purchase discounts, bonus, free offers are used to shift demand.
Back ordering: By postponing delivery on current orders, demand is shifted to period when capacity is not fully utilized.
New demand creation: A new, but complementary demand is created for a product or service when restaurant customers have to wait, they are frequently diverted into a complementary service the bar.

6. (a) For a particular product, the following output is planned for the next 6 months:-

Month	Output in units
1	100
2	150
3	300
4	300
5	500
6	150

The constant capacity of production per month in normal time is 200 units at an output cost of ₹15 per unit. Production carried out by overtime working, which will have to be limited to 50 units per month, will incur an output cost of ₹25 per unit. Any excess requirement of production unit will have to be obtained from a subcontractor at an output cost of ₹30 per unit.
The company policy prevents utilizing back orders.
The Inventory Carrying Cost is ₹5 per unit.
Calculate cost of aggregate plan. **[8]**

Answer:

Period		1	2	3	4	5	6
Forecast		100	150	300	300	500	150
Output	Regular	200	200	200	200	200	200
	Overtime					50	
	Subcontract					250	
Forecast Inventory		100	50	(-)100	(-)50	0	50
	Beginning	0	100	150	50	0	0
	Ending	100	150	50	0	0	50
	Average	50	125	100	25	0	25

Cost of Aggregate Plan:-

		₹
Regular Time	₹15x1,200	= 18,000
Overtime	₹25x50	= 1,250
Subcontract	₹30x250	= 7,500
Inventory Carrying Cost	₹5×325	= 1,625
	Total Costs	28,375

(b)

A Company produces three products A, B and C. The following information is available for a period:

Product	A	B	C	Throughput Accounting Ratio
Contribution (₹ per unit) (Sales – Direct Materials)	**30**	**25**	**15**	
Machine hours required per unit of production:				
Machine 1	**10 hours**	**2 hours**	**4 hours**	**133.33%**
Machine 2	**15 hours**	**3 hours**	**6 hours**	**200.00%**
Machine 3	**5 hours**	**1 hour**	**2 hours**	**66.67%**

Estimated Sales Demand for A, B and C are 500 units each and machine capacity is limited to 6,000 hours for each machine. You are required to analyze the above information and apply Theory of Constraints process to remove the constraints. How many units of each product will be made? [4]

Answer:

Throughput Accounting (TA) Ratio is highest for 'Machine 2'. So, 'Machine 2' is the bottleneck.
Total 'Machine2' hours available = 6,000

Particulars	A	B	C
1. Throughput Contribution per unit (given) (₹)	30	25	15
2. 'Machine 2' hours required per unit	15	3	6
3. Contribution per 'Machine 2' hour (1÷ 2) (₹)	2	8.33	2.5
4. Ranking	III	I	II
5. Maximum Sales Demand (units)	500	500	500
6. 'Machine 2' hours required (2 × 5)	7,500	1,500	3,000
7. 'Machine 2' hours allocated based on ranking	(bal. fig) 1,500	(I Rank) 1,500	(II Rank) 3,000
8. Possible Output Quantity (7 ÷ 2) (units)	100	500	500

(c) List the characteristics of MCS. [3]

Answer:

Management Control System (MCS) is the process by which the managers assure that resources

are obtained and used effectively in the accomplishment of organizational objectives. It is a step by which top management ensures that the company's objectives are achieved.

Characteristics of a Management Control System (MCS):

i. MCS is all pervasive and it is a continuous exercise.

ii. Functional areas like Research, Marketing, Advertising, Production etc., must be decided upon and adjusted continuously.

iii. MCS has a periodicity. It is regular and is disciplined.

iv. Coordination amongst different departments is needed.

v. In MCS the emphasis is on both planning and control.

7. (a) A review, made by the top management of W & W Ltd. which makes only one product, of the result of the first quarter of the year revealed the following:

Sales in units	**20,000**
Loss	**₹20,000**
Fixed cost (for the year ₹2,40,000)	**₹60,000**
Variable cost per unit	**₹8.00**

The Finance Manager who feels perturbed suggests that the company should at least break even in the second quarter with a drive for increased sales. Towards this, the company should introduce better packing which will increase the cost by ₹0.50 per unit.

The Sales Manager has an alternative proposal. For the second quarter additional sales promotion expenses a can be increased to the extent of ₹10,000 and a profit of ₹10,000 can be aimed at during the period with increased sales.

The Production Manager feels otherwise. To improve the demand, the selling price per unit has to be reduced by 3%. As a result the sales volume can be increased to attain a profit level of ₹8,000 for the quarter.

The Manager Director asks you as a Cost Accountant to evaluate the three proposals and calculate the additional sales volume that would be required in each case, in order to help him to take a decision. [10]

Answer:

Calculation of Selling Price

		₹
Variable cost	(8 x 20,000)	1,60,000.00
Add: Fixed cost		60,000.00
Total cost		2,20,000.00
Profit		(20,000.00)
Sales		2,00,000.00
Selling price	(2,00,000/20,000)	₹10

Statement showing evaluation of alternatives and the number of units required to attain the targets of respective managers.

	Finance Manager	Sales Manager	Production Manager
i) Selling price (₹)	10.00	10.00	9.70
ii) Variable cost (₹)	8.50	8.00	8.00
iii) Contribution per unit (₹)	1.50	2.00	1.70
iv) Fixed cost (₹)	60,000.00	70,000.00	60,000.00
v) Target (₹)	B.E.P	Profit or ₹10,000	Profit of ₹8,000
	(60,000/1.5)	(80,000/2)	(68,000/1.7)
	40,000.00	40,000.00	40,000.00
Additional units required	20,000.00	20,000.00	20,000.00

(b) Outline the limitations of Standard Costing. [5]

Answer:

The following are some of the limitations of Standard Costing:

i. Establishment of standard costs is difficult in practice.

ii. The standards tend to become rigid, in course of time.

iii. Inaccurate, unreliable and out of date standards do more harm than good.

iv. Sometimes, standards create adverse psychological effects. If the standard set is too high, its non achievement would result in frustration.

v. Standard costing may not sometimes be suitable in the case of industries dealing with non-standardized products and for repair jobs, which will keep on changing, in accordance with the customer's specifications.

vi. Lack of interest in standard costing on the part of the management makes the system practically ineffective. Management must accept the concept whole-heartedly.

8. Write Short Notes on any three out of the following: [3x5=15]

(a) Kaizen Costing;
(b) Value Chain Analysis;
(c) "Zero Defects" and "Rights First Time";
(d) Budget Process and its impact on human behavior.

Answer:

(a) Kaizen Costing:

Kaizen costing is a modification of standard costing which is essential to realize the planned cost reductions in continuous time. Kaizen costing is a Japanese contribution to cost

accounting. Kaizen costing is 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 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 percent, review by senior will start. Resource 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, following few rules are to be remembered:

- List down your own problems.
- Grade your problems as to minor, difficult and major.
- Select the smallest minor problem and start with it. After tackling this, move on to next graded problem and so on.
- Know and always remember, 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.

(b) Value Chain Analysis: Value Chain depicts how customer value accumulates along a chain of activities that lead to an end product or service. It is described as the internal processes or activities a company performs to design, produce, market, deliver and support its product.

Value Chain Analysis requires a strategic framework or focus for organizing internal and external information and for summarizing findings and recommendations. It requires a team effort. Management accountants of today has to collaborate with engineering, production, marketing, distribution and service professionals to focus on the strength, weakness, opportunities and threats identified in the value chain analysis results. This helps the firms to better understand which segments, distribution channels, price points, product differentiation, selling propositions will yield them the greatest competitive advantage. The analysis involves the following steps:

a) Internal cost analysis – to determine the sources of profitability and relative cost positions of internal value-creating processes.
b) Internal differentiation analysis - to understand the sources of differentiation within internal value creating processes.
c) Vertical linkage analysis – to understand the relationship and associated costs among external suppliers and customers in order to maximize the value delivered to customers and to minimize cost.

(c) "Zero Defects" and "Rights First Time":

The man who prompted these two words is Phillip Crosby.

As per him, "Zero Defects" does not mean that mistakes never happen. Rather it means there is no allowable number of errors built into a product or process and that it is to be got right first time. He believes that management should take prime responsibility for quality and worker

only blindly follow their managers. As per him, the Quality Management must satisfy the following criteria:

- Quality is conformance to requirements;
- Quality prevention is preferable to quality inspection;
- Zero defects is quality performance standard;
- Quality is required to be measured in monetary terms;

The following are the important steps in Quality Improvement:

- Get committed to quality;
- Raise quality awareness amongst all employees;
- Train supervisors in Quality improvement;
- Hold on to "Zero Defects" days;
- Calculate the cost of (poor) quality;
- Recognize participants' efforts;
- Do it all over again-quality improvements actions do never end.

(d) Budget Process and its impact on human behavior:

The Budget Process affects Human Behaviour in three aspects:

(i) Formulation of Budgets: The Budget Process may be top-down, determined wholly by top management. This may engender a feeling of budgets being thrust upon employees who perceive them as pressure devices. As a result, their full enthusiasm may not be forthcoming in implementing it. In case the budget is formulated with a bottom-up approach, involving employees, commitment for meeting the budget can be assured.

(ii) Fixing targets: Sales production and other targets that are fixed should be challenging but attainable so as to bring out the best efforts of individuals. If targets are so high, as to be unattainable, it may be demotivating for the employees: in some cases it may also lead to manipulation of data to ensure conformity with budget.

However such manipulations will have adverse effects in the long run. A common practice of sales manager is to dump stocks on their dealers at the year end to meet sales targets, perhaps giving unduly long credit.

(iii) Evaluation of performance: The evaluation of performance should be done in a constructive manner and not in a vindictive style. While variances may be thrown up by the system, the causative factors may not be known readily. Hence it is necessary to analyze the reasons for variance and ensure proper accountability.