FINAL EXAMINATION
[GROUP-IV]

SUGGESTED ANSWER TO QUESTIONS
DECEMBER 2011

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.

Answer 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 bits of a question at one place.
(ii) Open a new page for answer to a new question.

Question :

1(a). State whether the following statements are 'True' or 'False'. If false, you are to put up the correct statement. No credit will be given for merely stating 'False'. If 'Right', just mention-'Right'. You need not rewrite the statement:

(i)   Value Analysis process is a less important tool than Function Analysis System Technique.

(ii) The term Value has four different meanings- Exchange value, cost value, use value and wealth value.

(iii) The Balance Score Card puts more stress on financial parameters than on non-financial parameters, since its objective is the growth of the organization.

(iv) The Matrix Organization structure is suitable for large projects.

(v)   Akio Morita is credited with pioneering the cost approach of target costing.   [1×5]

Answer to Qn.1(a):

(i)   True.

(ii)   False. The term Value has four different meanings- Exchange value, cost value, use value and Esteem value.

(iii) False. The Balance Score Card puts more stress on non-financial parameters than on financial parameters because it is these non-financial parameters measures are guides to the actual performance.

(iv)   False. The Matrix Organization structures are not suitable for large projects, since they cannot fully support decentralized set-ups.

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(v)   True.

Question :

1(b). Expand the following abbreviation: [1×5]

    (i)   PLCM

    (ii)   HRP

    (iii)   COSU

    (iv)   EFQM

    (v)   PDCA

Answer to Qn.1(b):

    (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.

Question :

1(c). Define the following terms :   [1×5]

    (i)   Bench Marking

    (ii)   Mckinsey's 7-S Framework

    (iii)   Capacity Planning

    (iv)   Supply Chain Management

    (v)   Data Mining.

Answer to Qn.1(c):

  (i)   **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:** 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:** 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.

Question :

1(d). Fill in the blanks with appropriate word(s) : [1×5]

   (i) VAR is ------------------------.

   (ii) ------------- has become a standard practice among many organizations as a way to add flexibility to chain.

   (iii) Balanced Score Card is a performance management and ------------ methodology that helps executives translate an organization's mission statement and overall business strategy with specific quantifiable goals.

   (iv) Balanced Score Card is a way to translate ------ into -------.

   (v) Kaizen is a Japanese term comprising KAI = --------- and ZEN = -------.

Answer to Qn.1(d):

Fill in the blanks with appropriate word/(s):

   (i) VAR is Value Added Resellers.

   (ii) Outsourcing has become a standard practice among many organizations as a way to add flexibility to chain.

   (iii) Balanced Score Card is a performance management and Strategy Deployment methodology that helps executives translate an organization's mission statement and overall business strategy with specific quantifiable goals.

   (iv) Balanced Score Card is a way to translate Strategy into action.

   (v) Kaizen is a Japanese term comprising KAI =change and ZEN = better.

Question :

2(a). Patients arriving at a village dispensary are treated by a doctor on a first-come-first served basis. The inter-arrival time of the patients is known to be uniformly distributed between 0 and 80 minutes, while their service time is known to be uniformly distributed between 15 and 40 minutes. It is desired to simulate the system and determine the average time a patient has to be in the queue for getting service and the proportion of time the doctor would be idle.

Carry out the simulation, using the following sequences of random numbers. The numbers have been selected between 00 and 80 to estimate inter-arrival times and between 15 and 40 to estimate the service times required by the patients.

Series 1(Inter-arrival random nos. in mins.)	07	21	12	80	08	03	32	65	43	74
Series 2(Inter-arrival random nos. in mins.)	23	37	16	28	30	18	25	34	19	21

Assume the starting time as 8.00 A.M.   [8]

Answer to Qn.2(a):

Simulation of data at the village dispensary.

No. of Patients	Inter Arrival time Random No. (Mins.)	Entry time Into queue (Hrs.)	Service Time Random No. (Mins.)	Service Start Time (Hrs.)	End time (Hrs.)	Waiting Time Of Patient (Mins.)	Idle time Of doctor (Mins.)
1	07	8.07	23	8.07	8.30	-	07
2	21	8.28	37	8.30	9.07	2	-
3	12	8.40	16	9.07	9.23	27	-
4	80	10.00	28	10.00	10.28	-	37
5	08	10.08	30	10.28	10.58	20	-
6	03	10.11	18	10.58	11.16	47	-
7	32	10.43	25	11.16	11.41	33	-
8	65	11.48	34	11.48	12.22	-	07
9	43	12.31	19	12.31	12.50	-	09
10	74	01.45	21	01.45	02.06	-	55
				Total (in minutes).		**129**	**115**

Average waiting time of patient = 129/10 = 12.9 minutes.

Average waiting time of doctor = 115/10 = 11.5 minutes.

Question :

2(b). M/s Bilimoria & Co., is currently working with a process, which, after paying for materials, labour etc., brings a profit of ₹ 10,000.

The following alternatives are made available to the company :

(i)   The company can conduct research (R1) which is expected to cost ₹ 10,000 and having 90% probability of success, the company gets a gross income of ₹ 25,000.

(ii) The company can conduct research (R2) expected to cost ₹ 5, 000 and having a probability of 60% success. If successful, the gross income will be ₹ 25,000.

(iii) The company can pay ₹ 6,000 as royalty of a new process which will bring a gross income of ₹ 20,000.
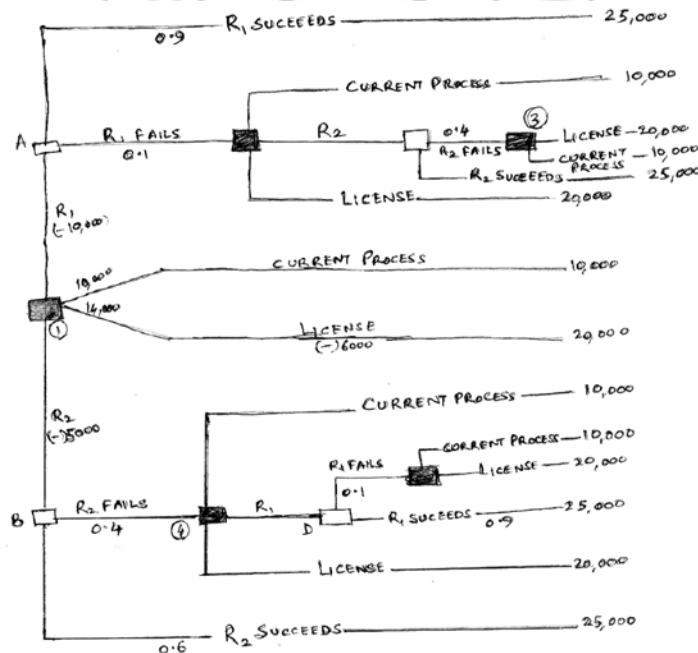
(iv) The company continues the current process.

Because of limited resources, it is assumed that only one of the two types of research can be carried out at a time.

Which alternative should be accepted by the company?   [8]

Answer to Qn.2(b):

The decision tree which represents the possible courses of action is depicted in figure below:

Point 1 is a 'decision box' located 'now' on time scale. The four possibilities arising here are shown. Upon failure of a particular research, say, R_1 there are again $_3$ original alternatives to be sorted out, that of, R_1 being excluded. If, R_2 fails after failure of, R_1, the company is left with only two choices, i.e., either to pay royalty or to continue with the existing process.

Branch Current:

Net Return = ₹ 10,000.

Branch License:

Net Return (₹) = 20,000- 6,000 = 14,000

Branch, R_1 First:

Value at Point 3:

Current	=	₹ 10,000
License	=	₹ 14,000
Value at Point C =		Expected gross profit
	=	25,000 × 0.6 + 14,000 × 0.4
	=	20,600.

Value at Point 2:

Current	=	₹ 10,000
License	=	₹ 14,000
R_2	=	₹ 20,000 – ₹ 5,000 = ₹ 15,000.
Value at Point A	=	₹ 25,000 × 0.9 + 0.1 × 15,600 = ₹ 24,060.
Value at Branch, R_1 =		₹ 24,060 – ₹ 10,000 = ₹ 14,060.

Branch, R_2 First:

Value at point 5

Current	=	₹ 10,000
License	=	₹ 14,000
Value at point at D:		Expected gross profit
	=	0.9 × 25,000 + 0.1 × 14,000
	=	₹ 23,900.

Value at Point 4:

Current	=	₹ 10,000
License	=	₹ 14,000
R_1	=	₹ 23,900 – ₹ 10,000 = ₹ 13,900.
Value at Point B (₹) =		0.4 × 14,000 + 0.6 × 25,000 = ₹ 20,600.
Value at R_2 (₹)	=	20,600 – 5,000 = ₹ 15,600.

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Thus R$_2$, followed by license upon former's failure is the best course of action.

Question :

3 (a). XYZ Ltd., manufacture only one product. A review of the results of the first quarter of the year, made by the top management, revealed the following:

Sales (in units)   10,000.

Loss (Rs.)   10,000

Fixed cost (for the year ₹ 120, 000)   30,000

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 Re. 0.50 per unit.

The Sales Manager has an alternative proposal. For the second quarter, additional sales promotion expenses can be increased to the extent of ₹ 5,000 and a profit of ₹ 5,000 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 ₹4,000 for the quarter.

The Managing Director asks you as a Cost Accountant to evaluate all the above three proposals and calculate the additional sales volume that would be required in each case, in order to help him to take a decision.   [8]

Answer to Qn. 3(a):

Selling Price per unit for the first quarter:

Fixed cost (₹)   30,000

Less: Loss (₹)   10,000

Contribution   20,000

Contribution per unit (₹)   2.00   (20,000 ÷ 10,000)

S-V = Contribution. Or S = Contribution +V

                      = 2.00 + 8.00 = ₹ 10 per unit.

For second quarter : Finance Manager's Proposal

Revised variable cost   = ₹ 8.00 + 0.50 = ₹ 8.50.

Revised contribution   = ₹ 10- 8.50   = ₹ 1.50.

Break-even point (units)   = Fixed cost ÷ contribution per unit = 30,000 ÷ 1.50 = 20,000 units.

P/V ratio = Contribution/Sales = 1.5/10 × 100 = 15%.

From the above, it is concluded that an additional 10,000 units should be sold to break-even.

Sales Manager's Proposal:

Present fixed cost	₹ 30,000
Add: Sales Promotion expenses	₹ 5,000
Revised fixed cost	₹ 35,000
Revised Profit	₹ 5,000
Revised contribution	₹ 40,000

Revised sales volume = Revised contribution ÷ contribution/unit(first quarter)

= ₹ 40,000 ÷ ₹ 2 = 20,000 units.

P/V ratio= 2/10 × 100 = 20 %.

In this case also, the additional sales volume of 10,000 units is required.

Production Manager's Proposal:

Reduced selling price = ₹ 9.70 (reduced by 3%).

Contribution per unit = ₹ 9.70 – ₹ 8.00 or ₹ 1.70

Revised contribution = Existing fixed cost + Revised profit.

= ₹ 30,000+ ₹ 4,000 or ₹ 34,000.

Revised sales volume = Revised contribution ÷ contribution per unit.

= ₹ 34,000 ÷ 1.70 or 20,000 units.

P/V ratio = 1.7/9.7 × 100 = 17.52 %.

Additional sales volume required, in this case also will be 10,000 units.

Summary:

	Proposals		
	Finance Manager	Sales Manager	Production Manager
P/V ratio	15%	20%	17.52%
Net profit	Nil	₹ 5,000	₹ 4,000

It is noticed that additional sales volume in all the three proposals is 10,000 units to achieve the desired objective. Therefore, sales volume does not affect the decision. The P/V ratio and the Net

Profit of Sales Manager's proposals are the maximum and therefore, his proposal should be accepted.

Question :

3(b). A manufacturer of fountain pens selling in the market at ₹ 100 per dozen makes a net profit of 20% on sales by producing 50,000 dozen per dozen against a capacity of 75,000 dozens. His cost sheet for the year 2011 was as under:

	Cost per dozen (₹)
Direct materials	36
Direct wages	30
Works overheads (50% of this is variable)	10
Sales overhead (25% of this is variable)	4

During next year i.e. 2012, he anticipates his fixed costs to increase by 6%, cost of direct materials by 5% and labour (with whom an agreement had been concluded) by 10%. Market enquiries revealed that the selling price of the product and quantity will remain unchanged in the year 2012.

An enquiry has been received for the supply of 10,000 dozens to a customer. What could be the lowest quotation, if the business wants to make a minimum profit of Rs. 8 lacs during the year 2012? Give detailed workings.   [8]

Answer to Qn. No. 3(b):

   (i) **Profitability during the year 2011   (50,000 dozen):**

	Per dozen	Total
	(₹)	(₹)
Sales	100	50,00,000
Variable Cost	72	36,00,000
Contribution	28	14,00,000
Less: Fixed Cost	8	4,00,000
Profit (20% of sales)	20	10,00,000

Profitability during the year 2012 (50,000 dozen):

Sales	₹ 100	₹ 50,00,000
Variable Costs (₹) :		
Raw materials (36 ×1.05)	37.80	18,90,000
Direct wages (30 × 1.10)	33.00	16,50,000
Variable works overheads	5.00	2,50,000
Variable sales overheads	1.00	50,000
	76.80	38,40,000

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Contribution	23.20	11,60,000
Less: Fixed overheads:		
Works overhead (₹ 5 × 1.06)	5.30	
Sales overhead (₹ 3 × 1.06)	3.18	
	8.48	4,24,000
Profit (Contribution – Fixed cost)	14.72	7,36,000
Desired profit in 2012		₹ 8,00,000
Profit already earned		₹ 7,36,000
Additional profit desired (for 10,000 dozens)		64,000
Additional profit per dozen		₹ 6.40
Variable cost as above		₹ 76.80
Lowest quotation per dozen		₹ 83.20

Question :

4(a). What is Aggregate Planning? What are the two planning strategies available to the Aggregate Planner? [2+2]

Answer to Qn. No. 4(a):

Aggregate Planning is the process of developing, analyzing and maintaining a preliminary approximate schedule of the overall operations of an organization. The aggregate plan generally contains targeted sales forecast, production levels, inventory levels and customer backlogs. The schedule is intended to satisfy demand forecast at a minimum cost. In simple terms, aggregate planning is an attempt to balance capacity and demand in such a way that the costs are minimized.

Two planning strategies available to the aggregate planner are :

    i.   Level Strategy and

    ii.   Chase Strategy.

Level Strategy seeks to produce an aggregate plan that maintains a steady production rate and /or a steady level of employment.

Chase Strategy implies demand and capacity period by period. Although it implies greater degree of flexibility for the firm, there is likely to be uneven level of employment from period to period.

Question :

4(b). 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 to Qn. No. 4(b):

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 ₹ 15x1200	=	18,000
Overtime ₹ 25x50	=	1,250
Subcontract ₹ 30x250	=	7,500
Inventory Carrying Cost ₹ 5×325	=	1,625
Total Costs		28,375

Question :

4(c). What is MCS? List its characteristics. [1+3]

Answer to Qn. No. 4(c):

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 sound Management Control System(MCS):

  i.   MCS is all pervasive.

  ii.   It is a continuous exercise.

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

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

  v.   Coordination amongst different departments is needed.

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

Question :

5(a). What are the various steps essential for Quality Improvement, as stated by Philip Crosby? Mention at least 10 steps. [5]

Answer to Qn. No. 5(a):

Philip Crosby's steps to quality improvement are :-

  i.   It should be clear to all in the organization that the management is committed to quality.

  ii.   Quality improvement teams are to be formed in all departments with senior officials in the team.

  iii.   Cost of poor quality is to be calculated.

  iv.   Measure processes to determine current and potential quality issues.

  v.   Take action to correct quality issues.

  vi.   Establish a zero defects committee to monitor progress of quality improvement.

  vii.   Train supervisors in quality improvement

  viii.   Create quality councils.

  ix.   Encourage interaction of employees with management on quality related matters.

  x.   Recognize efforts of participants in quality improvement.

Question :

5(b). You have been provided with the following information in respect of a particular company which manufactures a single product:-

Production and sales per month   = 2000 units.

Selling price per unit   = ₹ 1000.

Variable cost of production per unit = ₹ 700.

The company is toying with two different suggestions to implement an Inspection Policy. Those are:-

Suggestion no. 1.

To avoid final inspection, strengthen inspection at the stage of raw material inputs, at a cost of ₹10,000 per month (raw materials rejected at this stage will be replaced by the supplier free of cost) and improve machining inspection at an additional cost of ₹ 15000 per month. After such step, it is expected that 1% of the quantity sold is to be replaced under free warranty clause.

Suggestion no. 2.

To inspect the finished goods at a cost of ₹ 20000 per month. In that case, 3% of the production is likely to be detected as defective and scrapped at nil value. Such scrapped units can be set right by incurring a re-working cost of ₹ 5000 for every 25 units of total units scrapped.

You are required to advise

    i.   Which suggestion is better?   [3]

   ii.   Classify the quality cost under

        a. appraisal cost and

        b. external failure costs.   [2+2]

Answer to Qn. No. 5(b):

Evaluation of the two suggestions:

Production – 2000 units	Suggestion 1		Suggestion 2	
	(₹)	Classification	(₹)	Classification
1. Inspection of Finished Goods			20,000	Appraisal
2. Inspection of Raw Material	10,000	Appraisal		
3 (a) Scrap				
3% of 2000 units = 60 units				
Variable cost 60 units × ₹ 700			42,000	Appraisal

(b) Contribution lost on

    scrapped units @ ₹ 300   18,000   Appraisal

4. Reworking Cost (60 units) *   15,000   Appraisal

5. Inspection Cost-machining stage   15,000   Appraisal

6. Replacement cost under arranty

    1% × 2000 units = 20 units

a. Contribution lost 20 × ₹ 300   6,000   External failure

b. Variable cost lost 20 × ₹ 700   14,000   External failure

                              45,000   95,000

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* **Reworking Cost :**

            ₹

  25 units = 5,000

  25 units = 5,000

  10 units = 5,000

             15,000.

Conclusion: Suggestion 1 is better.

Question :

5(c). What is a System? Name different types of Systems.   [1+3]

<u>Answer to Qn. No. 5(c):</u>

The term system may be defined as a set of inter-related objects that operate collectively to accomplish some common purpose or goal. It basically consists of 3 components-viz., Input, a Processing unit and an output unit.

The following could be cited as various types of systems-

- Open system: is one that freely interacts with its environment.Eg., Information System,
- Closed system: is a system that does not interact with its environment Eg., A communist country like China,
- Deterministic system: is one that operates in a predictable manner. Eg., A Computer programme,
- Probabilistic system: is one which can be described in terms of its probable behaviour- Eg., An Inventory System

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Question :

6(a). Laxmi Engg. Company is a single product company, having a manufacturing capacity of 6000 units per week of 48 hours. The output data of different element of cost for three consecutive weeks are given below:

Units produced	Direct Material	Direct Labour	Total factory Overheads (Variable & Fixed)
	(₹)	(₹)	(₹)
2400	4800	6000	37200
2800	5600	7000	38400
3600	7200	9000	40800

As a Management Accountant, you are asked by the company to work out the selling price assuming an Activity level of 4000 units per week and a profit of 20% on selling price.   [4]

Answer to Qn. No. 6(a):

Production and different elements of cost for three consecutive weeks have been given. Total factory overheads have to be segregated into variable and fixed overheads. The variable portion could be calculated as under:-

$$\frac{\text{Change in total factory overheads}}{\text{Change in production level}} = \frac{38400 - 37200}{2800 - 2400} = \frac{1200}{400} = 3$$

Fixed Factory overheads = (Total fixed overheads at 2400 units

Less Variable overhead at 2400 units).

= ₹ 37200 – (2400 × 3) = ₹ 30000.

Computation of selling price at 4000 units:

	₹
Direct Material @ ₹ 2 per unit	8000
Direct Labour @ ₹ 2.50 per unit	10000
Variable overheads @ ₹ 3 per unit	12000
Fixed factory overheads	30000
Total Factory cost	60000
Profit (20% of selling price or 25% of cost)	15000
Total Selling Price	75000

Selling price per unit = $\dfrac{75000}{4000}$

= ₹ 18.75. (Ans).

Question :

6(b). A Single Product Manufacturing Company made its budget for the year 2010-11 with 5000 units of output. The financial results in respect of the actual output of 4800 units achieved during the year were as under:

	₹
Direct Material	29,700
Direct Wages	44,700
Variable Overheads	72,750
Fixed Variable	39,000
Profit	36,600
Sales	2,22,750

The standard direct wage rate is ₹ 4.50 per hour and the standard variable overhead rate is ₹7.50 per hour.

The cost accounts recorded the following variances for the year:

Variances	Favourable (₹)	Adverse (₹)
Material Price	-	300
Material Usage	-	600
Wage Rate	750	-
Labour Efficiency	-	2250
Variable Overhead Expense	3000	-
Variable Overhead Efficiency	-	3750
Fixed Overhead Efficiency	-	1500
Selling Price	6750	-

Required :
  i. Prepare a statement showing the original budget.
  ii. Prepare the standard product cost sheet per unit. [6+6]

Answer to Qn. No. 6(b):

Statement showing the original budget and standard cost sheet per unit.

Particulars	Actual cost, Profit and Sales of 4800 units Total (₹)	Adjustment of variances		Standard cost, Profit and sales of 4800 units (Col-A) Total (₹)	Standard cost, Profit and sales for 5000 units	
		Fav'ble ₹	Adverse ₹		(Col-B) Original Budget Total (₹)	(Col-C) Per unit (₹)
Sales	2,22,750					
Sales price variance		6,750		2,16,000	2,25,000	45.00
Direct Material	29,700					
Material Price variance			300			
Material Usage variance			600	28,800	30,000	6.00
Std. Material Cost	44,700					
Direct wages		750				
Wages rate variance			2,250	43,200	45,000	9.00
Labor. efficiency variance	72,750					
Std. Labor Cost		3,000				
Variable overheads			3,750	72,000	75,000	15.00
V.O/HExpn.variance	39,000					
V.O/H. efficiency variance			1,500			
Std. variable O/H				37,500	37,500	7.50
Fixed overheads						
F.O.exp. variance						
Budgeted F.O						
Cost of Sales	1,86,150			1,81,500	1,87,500	37.50
Profit	36,600			34,500	37,500	7.50

[6+6]

Question :

7(a). Max Steel Company present output details of a unit, as given below :

	Per month
Output	12,000 units.
Workers employed	300
Sales (all production) ₹	120000
Contribution ₹	48,000
Fixed Cost ₹	12000

The Company's top management plan to introduce more mechanization into the unit at a capital cost of ₹ 20000. The proposed mechanization will lead to reduction in the labour force by 50.

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But the productivity can be increased by 80%. To provide necessary incentive to the workers for higher productivity, the company top management intends to offer a 2% rise on the piece work rate of ₹ 2 per unit of every 10% increase in average individual output. It is also proposed to reduce the selling price by 5% to sell the entire production.

Ignore depreciation on new machine.

As a Management Consultant, You have to calculate the extra monthly contribution resulting from the proposed mechanization. If the cost of capital is assumed to be 9% pa., what would be the increase in the net profit per month. [8]

Answer to Qn. No.7(a):

Comparative Statements of Profitability:

	Before Mechanization	After Mechanization
Number of workers	300	250
Average output/worker (units)	40	72
Output (250×72, after mechanization)	12,000 units	18,000 units
Sales (₹)	1,20,000	1,71,000
Variable cost	72,000	1,13,760
Contribution	48,000	57,240
Fixed cost	12,000	12,000
Profit	36,000	45,240
Less Additional interest cost/month		(-) 150
		45,090

Additional profit/month (₹ 45,090 – 36,000) = ₹ 9090.

Working Notes:

Variable cost has been calculated as per below:

Variable cost / unit , as of now : $\dfrac{72,000}{12,000}$ = ₹ 6

∴ Variable cost for 18000 units = ₹ 1,08,000

Add Additional cost due
to incentives @ 32 p/unit
for all units .   =   5,760
                                          ₹ 1,13,760.

The increase in productivity per worker is 32 units, which works out to 80%. Hence incentive of 16% on ₹ 2 per unit should be provided. [8]

Question :

7(b). List the merits of Contribution Approach. [4]

Answer to Qn. No.7 (b):

Merits of Contribution Approach:
The following are the important merits of the Contribution Approach:

i. Aids in decision making: The major utility of this technique lies in the assistance it gives to the management in vital decision making, particularly while dealing with problems which require short term decision.

ii. Cost control: This technique is essentially a tool for cost analysis and cost presentation. The contribution facilitates evaluation of performance because the results are not distorted by subjective allocation of the non controllable cost.

iii. Profit Planning: Profit Planning is a planning of future operations to attain maximum profit or to maintain a specified level of profit. The contribution ratio indicates the relative profitability of different sectors of the business whenever there is a change in sales price, variable cost or product mix.

iv. Evaluation of performance: The performance of each sector can be brought out by means of contribution analysis.

v. Contribution/Limiting Factor: Very often various limiting factors exist in any business which may arise from factors such as limited availability of power, raw material, or manpower, etc., In such a situation, it will be better to calculate contribution for limited factors, instead of the usual calculation of product-wise contribution-for decision-making.

Question :

7(c) . What are the shortcomings of the Balanced Score Card? [4]

Answer to Qn. No. 7(c):

Shortcomings of the Balance Score Card: The following are some of the serious short-comings of the Balanced Score Card:

i. In Balance Score Card - community and environmental issues are not addressed. In today's context, these are critical issues.

ii.   Competitors have not been included. Companies need to monitor the environmental factors to track competitor activity and technological developments.

These criticisms mainly stem from the fact that the Balanced Score Card is not a multiple stakeholder framework. Any performance measurement framework needs to reflect the needs of all the important stakeholders.

Question :

8. Write Short notes on :

   (a)   Theory of Constraints.

   (b)   Basic elements of a control system.

   (c)   Core concepts of TQM.

   (d)   Limitations of Standard Costing.   [4×4]

Answer to Qn. No.8(a):

Theory of Constraints: 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.

Answer to Qn. No. 8(b):

Basic elements of a Control System:

The basic elements of a control system are the following:

i. A control object or variable to be controlled- is the variable of the systems behaviour chosen for monitoring and control.

ii. A detector or scanning sub-system-tracks the performance and can be visualized as a scanning system and it feeds on information.

iii. A comparator/Assessor- The output of the scanning system constitutes the energizing input of the comparator.

iv. 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. .

v. Communication Network – are devices that transmit information between the detector and the assessor and between the assessors and the effectors.

Answer to Qn. No. 8(c):

The core concepts of TQM:

The three core concepts of Total Quality Management(TQM) are-

i. Quality Control(QC)

ii. Quality Assurance(QA) and

iii. Quality Management (QM).

Quality Control (QC): is concerned with the past and deals with data obtained from previous production, which allow action to be taken to stop the production of defector units.

Quality Assurance (QA): deals with the present and focuses to create and operate appropriate systems to prevent defects from occurring.

Quality Management: is concerned with the future and manages people in a process of continuous improvement to the products and services offered by the firm.

Answer to Qn. No.8(d):

Limitations Of Standard Costing:

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.