

MOCK TEST PAPER – 2
FINAL COURSE: GROUP – II
PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING
SUGGESTED ANSWERS/HINTS

1. (a) Contribution and Profitability Analysis

		<i>Total</i>	<i>Per unit</i>
Sales*		₹ 2,88,000	₹ 32
Less:	Variable costs		
	Direct material	54,000	6
	Direct wages	72,000	8
	Production Overheads	18,000	2
	Admn, S & D OH	27,000	3
		1,71,000	19
Contribution		1,17,000	13
Less:	Fixed Overheads		
	Production	42,000	
	Admn, S & D	36,000	
		78,000	
Net Profit		39,000	

*Capacity utilisation: 75%

$$P/V \text{ Ratio} = (S - V)/S \times 100 = 40.625\%$$

$$BE \text{ Sales} = \text{Fixed costs} \div P/V \text{ Ratio}$$

$$= 78,000 \div 40.625\%$$

$$= ₹ 1,92,000$$

$$\text{or } 1,92,000 \div ₹ 32 = 6,000 \text{ Units}$$

(b)

<i>Production</i>	<i>90% Capacity (10,800 Units)</i>	<i>100% Capacity (12,000 Units)</i>
Selling price per unit	₹ 28	₹ 27.20
Variable cost per unit	19	19.00

Contribution per unit	9	8.20
P/V Ratio	32.143%	30.147%
Total contribution	97,200	98,400
Less Fixed Overheads	78,000	83,000
	19,200	15,400

The P/V Ratio has gone down to 32.143% in the case of alternative b(i) and to 30.147% in alternative b(ii). Therefore the company should follow the original plan as at (a) above

(c)

(i)	Selling price per unit	₹ 32
	Less Variable costs	19
	Contribution per unit	13
	Total contribution (12,000 × ₹ 13)	1,56,000
	Less: fixed costs (₹ 78,000 + ₹ 15,000)	93,000
	Profit	63,000

This proposal may be accepted as there is a considerable increase in the profits.

(b) 1. Direct Materials Cost Variance

Quantity Variance:

Actual quantity	1,600 kgs	
Standard quantity	1,500 kgs	
Variance –unfavourable	100 kgs × Std price, ₹ 35	₹ 3,500

Price Variance:

Actual price	₹ 32.00 per kg	
Standard price	₹ 35.00 per kg	
Variance – favourable	₹(3.00) per kg × Actual Qty, 1600	<u>(4,800)</u>
Total direct materials cost variance - favourable		₹ <u>(1,300)</u>

2. Direct Labour Cost Variance

Time Variance:

Actual time	4,500 hours	
Standard time	4,800 hours	
Variance –favourable	(300 hours) × Std rate, ₹ 11	₹ 3,300

Rate Variance:

Actual rate	₹ 11.80	
Standard rate	₹ 11.00	
Variance unfavourable	₹ 0.80 per hr × Actual time, 4500 hours	<u>(3,600)</u>
Total direct labour cost variance - unfavourable		<u>₹ (300)</u>

3. Factory Overhead Cost Variance

Variable factory overhead – controllable variance:

Actual variable factory overhead cost incurred	₹ 12,300
Budgeted variable factory overhead for 4,800 hours	<u>11,520*</u>
Variance – unfavourable	(₹ 780)

Fixed factory overhead – volume variance:

Budgeted hours at 100% of normal capacity	5,500 hours
Standard hours for actual production	<u>4,800</u>
Productive capacity not used	700 hours
Standard fixed factory overhead cost rate	<u>₹ 3.50</u> hours
Variance – unfavourable	<u>(2,450)</u>

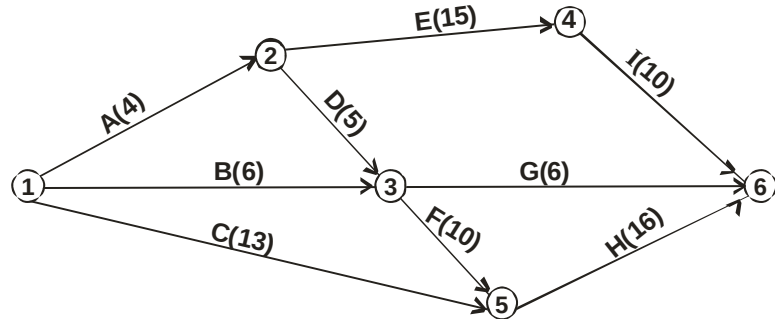
Total factory overhead cost variance – unfavourable ₹ (3,230)

*4,800 hours × ₹ 2.40 = ₹ 11,520

2. (a) Based on the given data, we first obtain the expected duration and variance for each of the activities as follows:

Activity	a	m	b	t_e	s^2
A	2	4	6	4	4/9
B	6	6	6	6	0
C	6	12	24	13	9
D	2	5	8	5	1
E	11	14	23	15	4
F	8	10	12	10	4/9
G	3	6	9	6	1
H	9	15	27	16	9
I	4	10	16	10	4

(i) The project network is shown as follows.



(ii) and (iii) the various paths and their lengths are given below:

Path	Length
1 – 2 – 4 – 6	29
1 – 2 – 3 – 6	15
1 – 2 – 3 – 5 – 6	35*
1 – 3 – 6	12
1 – 3 – 5 – 6	32
1 – 5 – 6	29

Thus, the expected project completion time = 35 weeks.

The critical path is 1 – 2 – 3 – 5 – 6 and critical activities are: 1 – 2 (A), 2 – 3 (D), 3 – 5 (F) and 5 – 6 (H).

The variance of the project completion time = $4/9 + 1 + 4/9 + 9 = \frac{98}{9}$ weeks²

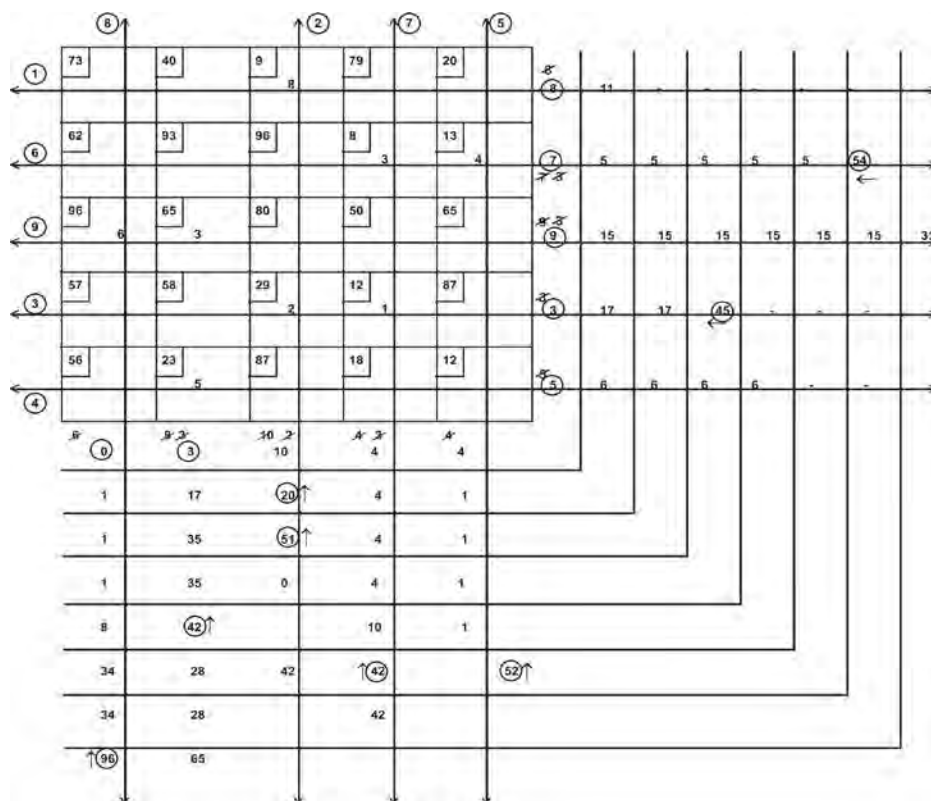
and the standard deviation = $\sqrt{98/9} = 3.3$ weeks.

(b) Computation of Target Cost

	Per tonne (in ₹)
ABC Ltd selling price to the merchant	1,466
Less freight paid by ABC Ltd	(30)
Less normal sales returns and allowances	(60)
XYZ Ltd. Capital charge	(120)
Target cost for XYZ Ltd	1,256
Ship to Distribution Centre	(11)

Distribution Centre operating cost	(25)
Subtotal	1,220
Distribution centre capital charge	(58)
Mill target manufacturing cost	1,162

3. (a) The initial solution is found by VAM below:



$$\begin{aligned}
 \text{The transportation cost} &= 9 \times 8 + 8 \times 3 + 13 \times 4 + 96 \times 6 \\
 &\quad + 65 \times 3 + 29 \times 2 + 23 \times 5 + 12 \times 1 \\
 &= 72 + 24 + 52 + 576 + 195 + 58 + 115 + 12 \\
 &= 1104
 \end{aligned}$$

The above initial solution is tested for optimality. Since there are only 8 allocations and we require 9 ($m + n - 1 = 9$) allocations, we put a small quantity in the least cost independent cell (5, 5) and apply the optimality test. Let $u_5 = 0$ and then we calculate remaining u_i and v_j .

										u_i
73		40		9		79		20		
	34		32		8		87		23	8
		39		8				-8		-3
62		93		96		8		13		
	7		69		71		3		4	24
		55		24		25				
96		65		80		50		65		
	6		3		14		1		11	65
					66			49		54
57		58		29		12		87		
	-2		30		2		1		70	28
		59		28						17
56		23		87		18		12		
	2		5		63		11		0	23
		54			24		7			
v_j	31	0	1	-16	-11					

Since some of the A_{ij} 's are negative, the above initial solution is not optimal. Introducing in the cell (Dummy) with most negative A_{ij} an assignment e . The value of e and the new solution as obtained from above is shown below. The values of u_i 's, v_j 's are also calculated. The solution satisfies the conditions of optimality. The condition $A_{ij} = C_{ij} - (u_i + v_j) \geq 0$ for non allocated cells is also fulfilled.

										u_i
73		40		9		79		20		
	36		34		8		89		25	37
		37		6				-10		-5
62		93		96		8		13		
	7		69		69		4		3	55
		55		24		27				
96		65		80		50		65		
	5		4		12		1		11	96
					68			49		54
57		58		29		12		87		
	1		32		2		2		72	57
			26					10		15
56		23		87		18		12		
	2		4		61		11		1	54
		54			26		7			
v_j	0	-31	-28	-47	-42					

The above table gives the minimum cost.

\ The cost is

$$\begin{aligned} &= 9 \times 8 + 8 \times 4 + 13 \times 3 + 65 \times 4 + 96 \times 5 + 57 \times 1 + 29 \times 2 + 23 \times 4 + 12 \times 1 \\ &= 72 + 32 + 39 + 260 + 480 + 57 + 58 + 92 + 12 \\ &= 1102 \end{aligned}$$

- (b) **Total Quality Management:** Traditional focus was primarily on the financial performance of an organisation. Now a day it is crucial for organisation to monitor performance in many non financial areas as well. For many companies, quality is at the forefront of the area in which non financial performance is critically important. Monitoring product quality coupled with measuring and reporting quality costs helps companies program of total quality management (TQM). TQM refers to the broad set of management and control processes designed to focus the entire organisation and all of its employees on providing products or services that do the best possible job of satisfying the customers.

Six Cs of TQM

- (i) **Commitment** - If a TQM culture is to be developed, so that quality improvement becomes normal part of everyone's job, a clear commitment, from the top must be provided. Without this all else fails.
 - (ii) **Culture** - Training lies at the centre of effecting a change -in culture and attitudes. Negative perceptions must be changed to encourage individual contributions.
 - (iii) **Continuous improvement** - TQM is a process, not a program, necessitating that we are committed in the long term to the never ending search for ways to do the job better.
 - (iv) **Co-operation:** The on-the-job experience of all employees must be fully utilized and their involvement and co-operation sought in the development of improvement strategies and associated performance measures.
 - (v) **Customer focus:** Perfect service with zero defects in all that is acceptable at either internal or external levels.
 - (vi) **Control:** Documentation, procedures and awareness of current best practice are essential if TQM implementations are to function appropriately The need for control mechanisms is frequently overlooked, in practice.
- (c) **Opportunity Cost:** It is the cost of Opportunity lost by diversion of an input factor from one use to another. It is the measure of the benefit of Opportunity foregone. The introduction of opportunity cost concept is helpful to the management in making profitability calculations when one or more of the inputs required by one or more of the alternative courses of action are already available. These inputs may nevertheless have a cost and this is measured by the sacrifice made by the

alternative action chosen or the cost that is given up in order to make them available for the current proposal.

The examples of Opportunity cost are :-

- (i) The opportunity cost of using a machine to produce a particular product is the foregone earnings that would have been possible if the machine was used to produce other products.
- (ii) The opportunity cost of funds invested in a business is the interest that could have been earned by investing the funds in alternative avenues say Bank deposit.
- (iii) The opportunity cost of one's time is the salary which he would have earned by his profession.

4. (a) Working Notes:

1. FOB price of dismantled kit:

FOB price of dismantled kit (in\$)	510
FOB price of dismantled kit (in ₹)	24,000
(\$510 × ₹47.059)	

2. Cost of a dismantled kit to Z Inc.

If ₹120 is the S. P. of kit to Z Inc. then its C ₹100

$$\text{₹ 1} = \frac{\text{₹ 100}}{\text{₹ 120}}$$

$$\begin{aligned} \text{If ₹ 24,000 is the S. P. then C. P. is} &= \frac{\text{₹ 100}}{\text{₹ 120}} \times \text{₹ 24,000} \\ &= \text{₹ 20,000} \end{aligned}$$

3. Cost of local procurements:

140% of the supplies made by Z Inc. or $140\% \times \text{₹}10,000^* = \text{₹}14,000$

*Being 50% of cost of a dismantled kit to Z Inc.

4. Landed cost of a dismantled kit:

	₹
FOB price	12,000
(50% × ₹24,000) (Refer to working note 1)	
Add: Insurance & freight	<u>500</u>
CIF price	12,500

Add: Customs duty	3,750
(30% × ₹12,500)	
Landed cost of a dismantled kit	<u>16,250</u>
5. Cost of the standard items procured locally:	
48% of the cost of locally procured goods	
= 48% × ₹14,000	
= ₹ 6,720	
6. Royalty payment per computer:	
Let x = Selling price per unit of personal computer	
y = Royalty paid per computer	
Since 20% is the margin of profit on S.P. it main a margin of 25% on C.P.	
Therefore we have	
$X = 1.25 (\text{₹ } 32,250 + \text{₹ } 150 + y)$	
$Y = 10\% \{x - (\text{₹ } 6,720 + \text{₹ } 16,250)\}$	
On solving the above equations we get:	
$X = \text{₹ } 43,000$	
$Y = \text{₹ } 2003.43 \text{ or } \text{₹ } 2,000 \text{ (Approx)}$	
Statement showing the selling price of a personal computer in India	₹
A. Landed cost of a dismantled kit	
(Refer to working note 4)	16,250
B. Cost of local procurement	
(Refer to working note 3)	4,000
C. Cost of assembly and other overheads per computer	<u>2,000</u>
D. Total cost of manufacture: (A+ B + C)	33,250
E. Technology fee per computer	150
(₹ 3,00,00,000 / 2,00,000 computer)	
F. Royalty payment per unit	
(Refer to working note 6)	
G. Total cost (D + E+ F)	34,400
H. Profit (20% on selling price of 25% o total cost)	<u>8,600</u>
I. Selling price (per computer)	<u>43,000</u>

(b) Advantages of simulation are enumerated below:

1. Simulation techniques allow experimentation with a model of the system rather than the actual operating system. Sometimes experimenting with the actual system itself could prove to be too costly and, in many cases too disruptive. For example, if you are comparing two ways of providing food service in a hospital, the confusion that would result from operating two different systems long enough to get valid observations might be too great. Similarly, the operation of a large computer central under a number of different operating alternatives might be too expensive to be feasible.
2. The non-technical manager can comprehend simulation more easily than a complex mathematical model. Simulation does not require simplifications and assumptions to the extent required in analytical solutions. A simulation model is easier to explain to management personnel since it is a description of the behaviour of some system or process.
3. Sometimes there is not sufficient time to allow the actual system to operate extensively. For example, if we were studying long-term trends in world population, we simply could not wait the required number of years to see results. Simulation allows the manager to incorporate time into an analysis. In a computer simulation of business operation the manager can compress the result of several years or periods into a few minutes of running time.
4. Simulation allows a user to analyze these large complex problems for which analytical results are not available. For example, in an inventory problem if the distribution for demand and lead time for an item follow a standard distribution, such as the poisson distribution, then a mathematical or analytical solution can be found. However, when mathematically convenient distributions are not applicable to the problem, an analytical analysis of the problem may be impossible. A simulation model is a useful solution procedure for such problems.

- 5 (a) Let us assume the number of A products produced be x_1 and the number of B products produced be x_2

Profit function is $Z = 2x_1 + 3x_2$

The in-equation due to G is $x_1 + x_2 \leq 400$

The in-equation due to H is $2x_1 + x_2 \leq 600$

also $x_1 \geq 0, x_2 \geq 0$

\ The required L.P.P. is

Maximize $Z = 2x_1 + 3x_2$ (Objective Function)

Subject to $x_1 + x_2 \leq 400$

$$2x_1 + x_2 \leq 600$$

constraints.

$$x_1, x_2 \geq 0$$

– Non-negative constraints.

To solve by Graphical Method

We shall convert the in-equation given in L.P.P. as equation

$$x_1 + x_2 = 400 \text{ ® (1)}$$

$$2x_1 + x_2 = 600 \text{ ® (2)}$$

Consider the line – (1), $x_1 + x_2 = 400$

When $x_2 = 0$, $x_1 = 400$

\ line (1) cuts x_1 – axis at (400,0)

When $x_1 = 0$, $x_1 + x_2 = 400$, $x_2 = 400$

Line (1) cuts x_2 axis at (0,400)

Consider the line (2).

When $x_2 = 0$, $2x_1 + x_2 = 600$

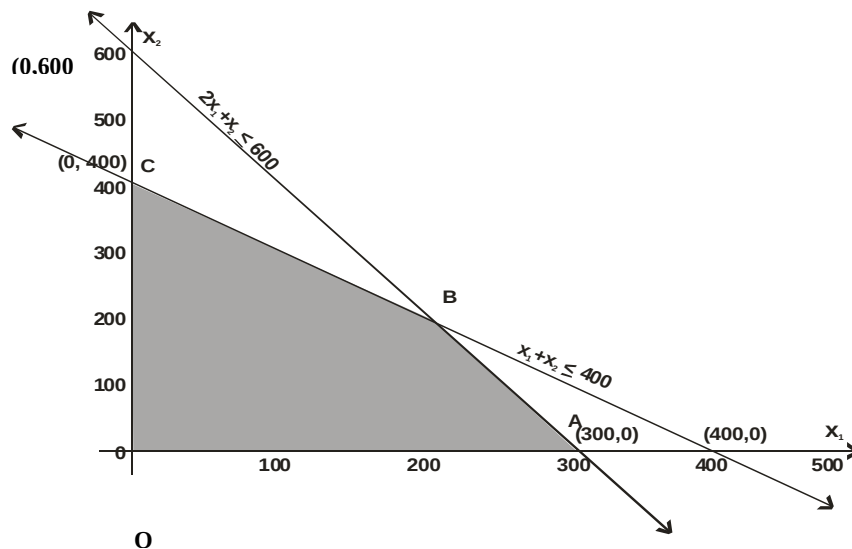
$$2x_1 = 600$$

$$x_1 = 300$$

\ line (2) cuts x_1 axis at (300,0)

When $x_1 = 0$, $x_2 = 600$

line (2) cuts x_2 axis at (0, 600)



From the figure the region OABC is called space.

The point C = (0, 400)

The point A = (300,0)

The point O = (0, 0).

We shall find point B

\ we shall solve equation (1) and (2).

(2) – (1) ▸

$$2x_1 + x_2 = 600$$

$$\begin{array}{r} x_1 + x_2 = 400 \\ \hline x_1 = 200 \end{array}$$

$$x_1 + x_2 = 400$$

$$200 + x_2 = 400$$

$$x_2 = 400 - 200$$

$$x_2 = 200$$

The point B = (200, 200)

$$\text{Now } Z = 2x_1 + 3x_2$$

At 'O', $Z = 0$

at 'C' = (0, 400), $Z = 2(0) + 3(400) = 1200$

at A = (300,0), $Z = 2(300) + 3(0) = 600$

at B = (200, 200), $Z = 2(200) + 3(200)$
 $= 400 + 600 = 1000$

\ The solution is

\ Maximize $Z = 1200$

at $x_1 = 0, x_2 = 400$

(b) Back flushing in a JIT system

Traditional accounting systems record the flow of inventory through elaborate accounting procedures. Such systems are required in those manufacturing environment where inventory/WIP values are large. However, since JIT systems operate in modern manufacturing environment characterized by low inventory and WIP values, usually also associated with low cost variances, the requirements of such elaborate accounting procedures does not exist.

Back flushing requires no data entry of any kind until a finished product is completed. At that time the total amount finished is entered into the computer

system which is multiplied by all components as per the Bill of materials (BOM) for each item produced. This yields a lengthy list of components that should have been used in the production process and this is subtracted from the opening stock to arrive at the closing stock to arrive at the closing stock/inventory.

The problems with back flushing that must be corrected before it works properly are:

- (i) The total production quantity entered into the system must be absolutely correct, if not, then wrong components and quantities will be subtracted from the stock.
 - (ii) All abnormal scrap must be diligently tracked and recorded. Otherwise materials will fall outside the back flushing system and will not be charged to inventory.
 - (iii) Lot tracing is impossible under the back flushing system. This is required when a manufacturer needs to keep records of which production lots were used to create a product in case all the items in a lot need be recalled.
 - (iv) The inventory balance may be too high at all times because the back flushing transactions that relieve inventory usually does so only once a day, during which time other inventory is sent to the production process. This makes it difficult to maintain an accurate set of inventory records in the warehouse.
- (c) **Application of Learning curve:** Learning curve helps to analyse cost-volume profit relationships during familiarisation phase of product or process to arrive at cost estimates.

It helps in budgeting and profit planning.

It helps in pricing and consequent decision making – e.g. acceptance of an order, negotiations in establishing contract prices etc. with the advantage of the knowledge of decreasing unit cost.

It helps in setting standards in the learning phase.

- 6 (a) Rasoi Ltd.'s Score card should describe its product differentiation strategy. The key points that should be included in its balance score card are
- .. Financial Perspective – Increase in operating income by charging higher margins on Samrat.
 - .. Customer Perspective – Market share in high-end kitchen range market and customer satisfaction.
 - .. Internal business Perspectives: Manufacturing quality, order delivery time, on time delivery and new product feature added.
 - .. Learning and Growth Perspective: Development time for designing new end product and improvement in manufacturing process.

Operative Income:

	(Amount in 000' ₹)	
	2011	2012
Revenue (40,000 × 1,000: 42,000 × 1,100)	40,000	46,200
Direct Material	12,000	13,530
Conversion cost	10,000	11,000
Selling and Customer service	7,200	7,250
Total cost	29,200	31,780
Operative Income	10,800	14,420

Change in operating Income is ₹ 36,20,000 (F)

A. Growth Component

- (a) Revenue effect = Output Price in 2011 {Actual units sold in 12 – Actual units sold in 11}

$$= ₹ 1, 000 (42,000 \text{ units} - 40,000 \text{ units})$$

$$= ₹ 20, 00,000 (F)$$

- (b) The cost effect = Input price in 2011 {Actual units of input to produce 2011 output less Actual units of input which would have been used to produce year 2012 output on the basis of 2011}

$$(i) \text{ Direct Material} = ₹ 100 [1,20,000 \text{ sq.ft.} - 1,20,000 \text{ sq.ft.} \times \frac{42,000 \text{ units}}{40,000 \text{ units}}]$$

$$= ₹ 6,00,000 (A)$$

- (ii) Conversion cost and selling and customer service will not change since adequate capacity exists in 2011 to support 2012 output and customers. Hence variance

$$\text{Conversion cost} = 200 (50,000 - 50,000) = 0$$

$$\text{S \& Customer Service} = 25,000 (300 - 300) = 0$$

Increase in operating effect of Growth component is ₹ 14,00,000 (F)

B. Price recovery Component:

- (i) Revenue effect = Actual output in 2012 [Selling price per unit in 2012 less Selling price per unit in 2011]

$$= 42,000 \text{ units } (\text{₹ } 1,100 - \text{₹ } 1,000) = \text{₹ } 42,00,000 \text{ (F)}$$

(ii) Cost effect = Unit of input based on 2011 actual that would have been used to produce 2012 output {Input prices per unit in 2011 less Input prices per unit in 2012}

$$\begin{aligned} \text{(a) Direct material} &= 1,26,000 \text{ sq. ft. } (\text{₹ } 100/\text{sq.ft.} - \text{₹ } 110/\text{sq. ft.}) \\ &= \text{₹ } 12,60,000 \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{(b) Conversion Cost} &= 50,000 \text{ units } (\text{₹ } 200/\text{unit} - \text{₹ } 220/\text{unit}) \\ &= \text{₹ } 10,00,000 \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{(c) S \& Customer Service} &= 300 \text{ customers } (\text{₹ } 24,000 - \text{₹ } 25,000) \\ &= \text{₹ } 3,00,000 \text{ (A)} \\ &= \text{₹ } 25,60,000 \text{ (A)} \end{aligned}$$

Increase in Operating income due to Price Recovery is ₹ 16,40,000 (F)
{₹ 42,00,000 – ₹ 25,60,000}

(C) Productivity Component

Productivity component = Input Prices in 12 {Actual units of input which would have been used to produce year 2012 output on the basis of 2011 actual less Actual Input}

$$\begin{aligned} \text{(i) Direct Material: ₹ 110/sqft} \\ (1,26,000 \text{ units} - 1,23,000 \text{ units}) &= \text{₹ } 3,30,000 \text{ (F)} \\ \text{(ii) Conversion Cost: ₹ 200/unit} \\ (50,000 \text{ units} - 50,000 \text{ units}) &= 0 \\ \text{(iii) Selling \& Customer} &= \text{₹ } 25,000 \\ (300 \text{ customers} - 290 \text{ customers}) &= \text{₹ } 2,50,000 \text{ (F)} \\ &= \text{₹ } 5,80,000 \text{ (F)} \end{aligned}$$

The change in operating income from 2011 to 2012 is analysed as follows:

			(Amount in 000' ₹)		
	2011	Growth component	Price recovery	Cost effect of productivity component	2012
Revenue	40,000	2,000 (F)	4,200 (F)	—	46,200
Cost	29,200	600 (A)	2,560 (A)	580 (F)	31,780
Operating Income	10,800	1,400(F)	1,640 (F)	580 (F)	14,420

(b) (A)

Control Report

Code		Fixed budget	Flexible Budget	Actual	Variances
		7,500 units	6,750 units	6750	
301	Sales salaries	₹ 30,000	₹ 30,000	33,750	₹ 3750 (A)
302	Staff Commission	30,000	27,000	28,500	1,500 (A)
303	Staff expenses	15,000	13,500	13,000	500 (F)
431	Underwriting Staff	45,000	40,500	50,000	9,500 (A)
599	Other Admin Costs	<u>30,000</u>	<u>30,000</u>	<u>33,000</u>	<u>3,000 (A)</u>
		<u>1,50,000</u>	<u>1,41,000</u>	<u>158,250</u>	<u>17,250 (A)</u>

(B) Sales Salaries – ₹ 3,750 (A) Rate Variance is due to unanticipated pay award.

Sales Commission – ₹ 3,000 (F) is due to drop in activity and ₹ 1,500 (A) may be due to increasing sales commission on selected policies or due to inefficiency.

Sales Expenses – ₹ 1,500 reduction due to drop in activity and ₹ 500 (F) for improved control.

Underwriting Salaries – ₹ 4,500 (F) due to drop in activity, ₹ 5062 (A) due to unbudgeted salaries increases and ₹ 4,438 (A) due to inefficiency.

Other Administration – ₹ 3,000 (A) seem to have been caused by changes due to high cost suppliers or hiring temporary office staff.

7 (a) The possible disadvantages of treating divisions as profit centres are as follows:

1. Divisions may compete with each other and may take decisions to increase profits at the expense of other divisions thereby overemphasizing short term results.
2. It may adversely affect co-operation between the divisions and lead to lack of harmony in achieving organisational goals of the company. Thus it is hard to achieve the objective of goal congruence.
3. It may lead to reduction in the company's overall total profits.
4. The cost of activities which are common to all divisions may be greater for decentralised structure than for centralised structure. It may thus result in duplication of staff activities.
5. Top management loses Control by delegating decision making to divisional managers. There are risks of mistakes committed by the divisional managers which the top management, may avoid.
6. Series of control reports prepared for several departments may not be effective

from the point of view of top management.

7. It may under utilise corporate competence.
 8. It leads to complications associated with transfer pricing problems.
 9. It becomes difficult to identify and defines precisely suitable profit centres.
 10. It confuses division's results with manager's performance.
- (b) Bench marking is a technique which is being adopted as a mechanism for achieving continuous improvement. It is a continuous process of measuring a company's products, services or activities against the other best performing organizations either internal or external to the company. The objective is to ascertain how the processes and activities can be improved. The latest developments, best practices and model examples can be incorporated within various operations of the business of the company. It represents an ideal way of achieving high competitive standards.
- (c) **Total life cycle costing approach:** Life cycle costing estimates, tracks and accumulates the costs over a product's entire life cycle from its inception to abandonment or from the initial R & D stage till the final customer servicing and support of the product. It aims at tracing of costs and revenues on product by product basis over several calendar periods throughout their life cycle. Costs are incurred along the product's life cycle starting from product's design, development, manufacture, marketing, servicing and final disposal. The objective is to accumulate all the costs over a product life cycle to determine whether the profits earned during the manufacturing phase will cover the costs incurred during the pre and post manufacturing stages of product life cycle.

Product life cycle costing is important for the following reasons:

- (i) When non-production costs like costs associated with R & D, design, marketing, distribution and customer service are significant, it is essential to identify them for target pricing, value engineering and cost management. For example, a poorly designed software package may involve higher costs on marketing, distribution and after sales service.
- (ii) There may be instances where the pre-manufacturing costs like R & D and design are expected to constitute a sizeable portion of life cycle costs. When a high percentage of total life cycle costs are likely to be so incurred before the commencement of production, the firm needs an accurate prediction of costs and revenues during the manufacturing stage to decide whether the costly R & D and design activities should be undertaken.
- (iii) Many costs are locked in at R & D and design stages. Locked in or Committed costs are those costs that have not been incurred at the initial stages of R & D and design but that will be incurred in the future on the basis of the decisions that have already been taken. For example, the adoption of a certain design

will determine the product's material and labour inputs to be incurred during the manufacturing stage. A complicated design may lead to greater expenditure on material and labour costs every time the product is produced. Life cycle budgeting highlights costs throughout the product life cycle and facilitates value engineering at the design stage before costs are locked in.

Total life-cycle costing approach accumulates product costs over the value chain. It is a process of managing all costs along the value chain starting from product's design, development, manufacturing, marketing, service and finally disposal.

(d) Reasons for following skimming pricing policy

It is a policy where the prices are kept high during the early period of a product's existence. This can be synchronised with high promotional expenditure and in the latter years the prices can be gradually reduced. The reasons for following such a policy are as follows:

- (i) The demand is likely to be inelastic in the earlier stages till the product is established in the market.
- (ii) The gradual reduction in price in the latter years will tend to increase the sales.
- (iii) This method is preferred in the beginning because in the initial periods when the demand for the product is not known the price covers the initial cost of production.
- (iv) High initial capital outlays needed for manufacture, results in high cost of production. In addition to this, the producer has to incur huge promotional activities resulting in increased costs. High initial prices will be able to finance the cost of production particularly when uncertainties block the usual sources of capital.