MOCK TEST PAPER – 2

FINAL (OLD) COURSE: GROUP – II

PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS/HINTS

1. (a) Contribution *per unit*

Particulars	(Rs.)
Selling Price	200
Variable Cost (Rs. 65 + Rs. 33 + Rs. 16)	114
Contribution per unit (Excluding direct labour, considered irrelevant and fixed)	86

Savings and Earnings if the Plant is Shut Down

Particulars	(Rs.)
Savings in Fixed Cost (Rs. 14,00,000* – Rs. 1,25,000)	12,75,000
Contribution from Alternate Activity (Rs. 40 × 50% of 2,00,000 hrs)	40,00,000
Shutting Down and Reopening Cost (Rs. 50,000 + Rs.100,000)	(1,50,000)
Total	51,25,000

* [2,00,000 units x Rs. 7]

Indifference Point: Rs.51,25,000 / Rs.86 = 59,593 units

Minimum level of production to justify continuation = 59,594 units

(b) Statement Showing Calculation of Opportunity Cost

Product	P	Q	R	S
Selling Price (Rs. per unit)	40	50	60	70
Variable Cost (Rs. per unit)	30	20	20	30
Contribution (Rs. per unit) [A]	10	30	40	40
Demand (units)	1,000	600	900	600
No. of Units can be Produced (within 1,000 hours of production capacity)	1,000 $\left(\frac{1{,}000\text{hrs.}}{1\text{hr.}}\right)$	800 $\left(\frac{1{,}000\text{hrs.}}{1.25\text{hr.}}\right)$	800 $\left(\frac{1{,}000\text{hrs.}}{1.25\text{hr.}}\right)$	500 $\left(\frac{1{,}000\text{hrs.}}{2\text{hr.}}\right)$
No. of Units can be Sold (lower of demand and production) [B]	1,000	600	800	500
Possible contribution of product (Rs.) [A] × [B]	10,000	18,000	32,000	20,000
Opportunity Cost*	32,000	32,000	20,000	32,000

(*) Opportunity cost is the maximum possible contribution foregone by not producing alternative products i.e. if product P is produced then opportunity cost will be maximum of possible contribution from product Q, R and S i.e. Rs. 32,000. Same is for Product Q and S. In case of product R opportunity cost will be the maximum of possible contribution from product P, Q and S i.e. Rs. 20,000.

(c) Statement Showing 'Target Cost of Direct Labour & Variable Overheads'

Particulars	Amount (Rs.)
Expected Sales (Rs. 64 × 12,000 units)	7,68,000
Less: Direct Material (Rs. 16 × 12,000 units)	1,92,000
Advertisement Expenses	57,000
Fixed Overheads	2,80,000
Target Profit	50,000
Target Cost of Direct Labour and Variable Overheads	1,89,000

Target Labour Time Required to achieve Target Profit

$$= \frac{\text{Target Cost of Direct Labour and Variable Overheads}}{\text{Wages Rate + Variable Overhead Rate}}$$

$$= \frac{\text{Rs. } 1,89,000}{\text{Rs. } 8 + \text{Rs. } 1}$$

= 21,000 hrs.

(d) Let

u = Investment in "Mutual Fund 'AB'"

v = Investment in "Mutual Fund 'CD'"

w = Investment in "Money Market Fund"

x = Investment in "Government Bonds"

y = Investment in "Share 'E'"

z = Investment in "Share 'F'"

Objective function:

Maximize

$Z = 0.15u + 0.09v + 0.08w + 0.0875x + 0.17y + 0.18z$

Condition-1:

Rs. 15,00,000 to be invested -

$$u + v + w + x + y + z \leq 15,00,000$$

Condition-2:

At least 40% of investment in Government Bonds-

$$x \geq (u + v + w + x + y + z) \times 0.40$$

Or

$$2u + 2v + 2w - 3x + 2y + 2z \leq 0$$

Condition-3:

Combined Investment in two shares not to exceed Rs. 2,60,000-

$$y + z \leq 2{,}60{,}000$$

Condition-4:

At least 25% of the investment in the money market fund-

$$w \geq (u + v + w + x + y + z) \times 0.25$$

Or

$$u + v - 3w + x + y + z \leq 0$$

Condition-5:

Amount of money invested in shares should not exceed the amount invested in mutual funds-

$$y + z \leq u + v$$

Or

$$-u - v + y + z \leq 0$$

Condition-6:

Amount invested in mutual fund 'AB' should be not be more than the amount invested in mutual fund 'CD'-

$$u \leq v$$

Or

$$u - v \leq 0$$

This problem can be solved with the assumption of **Investment Exactly** Rs.15,00,000

2. (a) (i) Total Contribution Statement

Statement Showing "Total Contribution - for remaining two phases"

Particulars	Maturity		Decline
Weeks	31 - 50	51 - 70	71 - 110
Number of units Produced and Sold	22,000	22,000	22,000
Selling Price per unit (Rs.)	450	450	300
Less: Unit Variable Cost (Rs.)	225	188	225
Unit Contribution (Rs.)	225	262	75
Total Contribution (Rs.)	49,50,000	57,64,000	16,50,000

(ii) Pricing Strategy for Product α^3

GAL is following the skimming price strategy that's why it has planned to launch the product α^3 initially with high price tag.

A skimming strategy may be recommended when a firm has incurred large sums of money on research and development for a new product.

In the problem, GAL has incurred a huge amount on research and development. Also, it is very difficult to start with a low price and then raise the price. Raising a low price may annoy potential customers.

Price of the product α^3 is decreasing gradually stage by stage. This is happening because GAL wants to tap the mass market by lowering the price.

(iii) Possible Reasons for the changes in cost during the life cycle of the product 'α^3'

Product life cycle costing involves tracing of costs and revenues of each product over several calendar periods throughout their entire life cycle. Possible reasons for the changes in cost during the life cycle of the product are as follows:

GAL is expecting reduction in unit cost of the product α^3 over the life of product as a consequence of economies of scale and learning / experience curves.

Learning effect may be the possible reason for reduction in per unit cost if the process is labour intensive. When a new product or process is started, performance of worker is not at its best and learning phenomenon takes place. As the experience is gained, the performance of worker improves, time taken per unit reduces and thus his productivity goes up. The amount of improvement or experience gained is reflected in a decrease in cost.

Till the stage of maturity, GAL is in the expansion mode. The GAL may be able to take advantages of quantity discount offered by suppliers or may negotiate the price with suppliers.

Product α^3 has the least variable cost Rs.188 in last phase of maturity stage; this is because a product which is in the mature stage may require less marketing support than a product which is in the growth stage so, there is a saving of marketing cost per unit.

Again the cost per unit of the product α^3 jumps to Rs.225 in decline stage. As soon as the product reaches its decline stage, the need or demand for the product disappear and quantity discount may not be available. Even GAL may have to incur heavy marketing expenses for stock clearance.

Workings

Statement of Cumulative Sales along with Sales Price and Variable Cost

Weeks	Demand *per week*	Total Sales	Cumulative Sales	Selling Price per unit (Rs.)	Variable Cost per unit (Rs.)
1 - 10	220	2,200	2,200	750	375
11 - 20	550	5,500	7,700	600	300
21 - 30	825	8,250	15,950	525	300
31 - 50	1,100	22,000	37,950	450	225
51 - 70	1,100	22,000	59,950	450	188
71 - 80	880	8,800	68,750	300	225
81 - 90	660	6,600	75,350	300	225
91 - 100	440	4,400	79,750	300	225
101 - 110	220	2,200	81,950	300	225

(b)

Flows	Errors
2–3	There are 2 activities which are *duplicate or parallel*. In case they are two different activities, one may pass through a dummy.
2–5	This is a *dangling* activity; No complete path exists. Can be joined to (9) with a dummy.
4–6 & 6–4	*Looping* exists; This is not proper sequencing.

3. (a) Row Operation-

	P	Q	R	S	T
P	-	3	12	18	0
Q	12	-	3	18	0
R	12	9	-	0	9
S	24	0	6	-	3
T	0	6	3	21	-

Column Operation-

	P	Q	R	S	T
P	-	3	9	18	0
Q	12	-	0	18	0
R	12	9	-	0	9
S	24	0	3	-	3
T	0	6	0	21	-

We know check if optimal assignment can be made in below table or not. Proceeding, we get following table-

	P	Q	R	S	T
P	-	3	9	18	0
Q	12	-	0	18	0
R	12	9	-	0	9
S	24	0	3	-	3
T	0	6	0	21	-

The above solution is optimum solution with two routes-

P to T to P and

Q to R to S to Q

Above table provides the optimum solution but do not satisfy travelling condition. To solve this problem we have to bring next minimum element in the matrix i.e.3. Now the possible *new assignments* are

P to Q instead of P to T,

S to R instead of S to Q and

S to T instead of S to Q.

Let us consider each of the new assignment independently.

Situation-1

We make 'assignment' in cell (P, Q) instead of 'assignment' in cell (P, T). The resulting table is shown below-

	P	Q	R	S	T
P	-	[3]	9	18	0
Q	12	-	[0]	18	0
R	12	9	-	[0]	9
S	24	0	3	-	[3]
T	[0]	6	0	21	-

The feasible solution is P to Q to R to S to T to P and it involves a cost of Rs. 40,000 (Rs.5,000 + Rs.8,000 + Rs.11,000 + Rs.14,000 + Rs.2,000).

Situation-2

We make 'assignment' in cell (S, R) instead of 'assignment' in cell (S, Q). The resulting table is shown below-

	P	Q	R	S	T
P	-	[3]	9	18	0
Q	12	-	0	18	[0]
R	12	9	-	[0]	9
S	24	0	[3]	-	3
T	[0]	6	0	21	-

The resulting solution is P to Q to T to P, R to S to R, which is not feasible as it does not satisfy the travelling condition.

Situation-3

We make 'assignment' in cell (S, T) instead of 'assignment' in cell (S, Q). The resulting table is shown below-

	P	Q	R	S	T
P	-	[3]	9	18	0
Q	12	-	[0]	18	0
R	12	9	-	[0]	9
S	24	0	3	-	[3]
T	[0]	6	0	21	-

The resulting table is same as in Situation 1 which gives the feasible solution P to Q to R to S to T to P with cost of Rs. 40,000.

Hence least cost route is P to Q to R to S to T to P with cost of Rs.40,000.

(b) (i)

	Part A	Part B
Machine "A" (4,000 hrs)	6,666	16,000
Machine "B" (4,500 hrs)	9,000	8,181
Alloy Available (13,000 kg.)	8,125	8,125
Maximum Number of Parts *to be manufactured*	6,666	8,125

		(Rs.)	(Rs.)
Material (Rs.12.5 × 1.6 kg.)		20.00	20.00
Variable Overhead: Machine "A"		48.00	20.00
Variable Overhead: Machine "B"		50.00	55.00
Total Variable Cost *per unit*		118.00	95.00
Price Offered		145.00	115.00
Contribution *per unit*		27.00	20.00
Total Contribution *for units produced*	(I)	1,79,982	1,62,500

Spare Part A will optimize the contribution.

(ii)

		Part A
Parts to be manufactured numbers		6,666
Machine A : to be used		4,000
Machine B : to be used		3,333
Underutilized Machine Hours (4,500 hrs. – 3,333 hrs.)		1,167
Compensation for unutilized machine hours (1,167hrs. × Rs.60)	(II)	70,020
Reduction in Price by 10%, Causing fall in Contribution of Rs.14.50 *per unit* (6,666 units × Rs.14.5)	(III)	96,657
Total Contribution	(I + II – III)	1,53,345

4. (a) BASIC CALCULATIONS

Actual Output produced is 630 Kg. The Standard Quantity of Material required for 630 Kg. of output is 700 Kg. $\left(\frac{630Kg.}{90} x100\right)$

Statement Showing
"Computation of Standard Cost / Actual Cost / Revised Actual Quantity"

Material	Standard Cost			Actual Cost	Revised Actual Quantity [RAQ] (Kg.)		
	Quantity [SQ] (Kg.)	Price [SP] (Rs.)	Amount [SQ × SP] (Rs.)	Quantity [AQ] (Kg.)	Price [AP] (Rs.)	Amount [AQ × AP] (Rs.)	
P	280	30	8,400	350	25	8,750	300

	(40% of 700 Kg.)						(40% of 750 Kg.)
Q	420 (60% of 700 Kg.)	40	16,800	400	45	18,000	450 (60% of 750 Kg.)
Total	700		25,200	750		26,750	750

COMPUTATION OF VARIANCES

Material Cost Variance = SQ × SP – AQ × AP

P = 280 Kg. × Rs.30 – 350 Kg. × Rs.25

= Rs.350(A)

Q = 420 Kg. × Rs.40 – 400 Kg. × Rs.45

= Rs.1,200 (A)

Total = Rs.350 (A) + Rs.1,200 (A)

= Rs.1,550 (A)

Material Price Variance = AQ × (SP – AP)

P = 350 Kg. × (Rs.30 – Rs.25)

= Rs.1,750 (F)

Q = 400 Kg. × (Rs.40 – Rs.45)

= Rs.2,000 (A)

Total = Rs.1,750 (F) + Rs.2,000 (A)

= Rs.250 (A)

Material Mix Variance = SP × (RAQ – AQ)

P = Rs.30 × (300 Kg – 350 Kg)

= Rs.1,500 (A)

Q = Rs.40 × (450 Kg. – 400 Kg.)

= Rs.2,000 (F)

Total = Rs.1,500 (A) + Rs.2,000 (F)

= Rs.500 (F)

Material Yield Variance = SP × (SQ – RAQ)

P = Rs.30 × (280 Kg. – 300 Kg)

= Rs.600 (A)

Q = Rs.40 × (420 Kg. – 450 Kg.)

= Rs.1,200 (A)

Total = Rs.600 (A) + Rs.1,200 (A)

= Rs.1,800 (A)

(b) The Initial solution obtained by the North-West Corner Rule in transportation need not always contain the R_2C_1 cell. In the North-West Corner Rule the first allocation is made at R_1C_1 cell and then it only moves towards R_2C_1 cell when the resources at the first row i.e. R_1 is exhausted first than the resources of first column i.e. C_1. On the contrary if resources at first column i.e. C_1 is exhausted first then the next allocation will be at R_1C_2.

For example the resource availability at first row (R_1) is 1,500 units and the demand in first column (C_1) is 1,000 units. In this case resource availability of first row (R_1) will be exhausted to the extent of the demand in first column (C_1) first and then the remaining resource availability at first row (R_1) will be used to meet the demand of the second column (C_2). In this example cell R_2C_1 will not come in initial solution obtained by the North-West Corner Rule.

5. (a) (i) Statement Showing "Production Budget"

Particulars	'RB' (units)	'RD' (units)
Inventory (at the end of the year)	31,250	11,250
Add: Projected Sales	75,000	50,000
Total Requirements	1,06,250	61,250
Less: Beginning inventory	25,000	10,000
Production	81,250	51,250

(ii) Statement Showing "Direct Material Purchase Budget"

Particulars	Material 'A' (Kg.)	Material 'B' (Kg.)	Material 'C' (Kg.)
Requirement for Production 'RB'	4,06,250 (81,250 units × 5 Kg.)	2,03,125 (81,250 units × 2.50 Kg.)	---
Requirement for Production 'RD'	2,56,250 (51,250 units × 5 Kg.)	1,53,750 (51,250 units × 3 Kg.)	51,250 (51,250 units × 1 Kg.)
Total Requirement	6,62,500	3,56,875	51,250
Add: Closing inventory	45,000	40,000	8,750
Less: Beginning inventory	40,000	36,250	7,500
Purchase	6,67,500	3,60,625	52,500

(iii) Statement Showing "Direct Labour Hours Required vs Available"

Particulars	'RB' Units	'RD' Units	Total
Maximum Sales	75,000	50,000	
Less: From Stock	25,000	10,000	
Required Goods for Pdn.	50,000	40,000	
Direct Labour Requirement	2,00,000 (50,000 units × 4 hrs.)	2,40,000 (40,000 units × 6 hrs.)	4,40,000 hrs.
Direct Labour Available			6,00,000 hrs.

∵ Direct Labour Hrs. (Requirement) is < Direct Labour Hrs. (Availability)

∴ **Principal Budget Factor is Sales (units)**

(b)

Cases		Type of Cost
(i)	Cost associated with the acquisition and conversion of material into finished product.	Product Cost
(ii)	Cost arising from a prior decision which cannot be changed in the short run.	Committed Cost
(iii)	Increase in cost resulting from selection of one alternative instead of another.	Differential/Incremental Cost
(iv)	Rent paid for a factory building which is temporarily closed.	Shut Down Cost

(c)

Particulars	**Standard Hours Produced**		
	Product X	***Product Y***	***Total***
Output (units)	1,200	800	
Hours *per unit*	8	12	
Standard Hours	9,600	9,600	19,200

Actual Hours Worked: (100 workers × 8 hours × 22 days) 17,600

Budgeted Hours *per month*: (1,86,000 / 12) 15,500

Capacity Ratio $= \frac{\text{Actual Hours}}{\text{Budgeted Hours}} \times 100 = \frac{17,600}{15,500}$ 113.55%

Efficiency Ratio $= \frac{\text{Standard Hours Produced}}{\text{Actual Hours}} \times 100 = \frac{19,200}{17,600} \times 100$ 109.09%

Activity Ratio $= \frac{\text{Standard Hours Produced}}{\text{Budget Hours}} \times 100 = \frac{19,200}{15,500} \times 100$ 123.87%

Relationship: Activity Ratio = Efficiency Ratio × Capacity Ratio

$$= \frac{109.09 \times 113.55}{100} = 123.87\%$$

6. (a) (i)

	Rs. / u **Avg. / unit (4 units)**
Variable Cost	2,000
Labour	810
Target Contribution	1,500
Price to be Quoted	4,310

(ii) No, the company cannot quote this price for varying products because the learning curve Ratio does not apply to non-repeated jobs. Each product will carry a different price according to its direct labour hours.

(b) Workings

Statement Showing 'Non-unit Level Overhead Costs'

Particulars	Current Situation	Proposed Situation
No. of Production Runs/ Setups	42	40 $\left(\frac{960\text{runs} \times 42\text{setup}}{1{,}008\text{units}}\right)$
Cost per Setup	Rs. 450	Rs. 360
Production Units *per run*	960 units	1,008 units
Production Units	40,320 (960 units × 42)	40,320
Engineering Hrs.	500	422
Engineering Cost *per hour*	Rs. 10	Rs. 10

Requirement of Question

(i) Break Even Point (Changed Scenario)

Break Even Point

$$= \frac{\text{Fixed Cost} + (\text{Setup Cost} \times \text{No. of Setups}) + (\text{Engineering Costs} \times \text{No. of Engineering Hrs.})}{(\text{Price} - \text{Unit Variable Cost})}$$

$$= \frac{\text{Rs. } 72{,}100 + (\text{Rs. } 360 \times 40 \text{ Setups}) + (\text{Rs. } 10 \times 422 \text{ hrs.})}{(\text{Rs. } 10 - \text{Rs. } 5)}$$

= 18,144 units

Break Even Point (No of Production Runs)

$$= \frac{\text{Break Even (units)}}{\text{Production (units per run)}}$$

$$= \frac{18{,}144 \text{ units}}{1{,}008 \text{ units}}$$

= 18 Runs

(ii) A company should adopt Activity Based Costing (ABC) system for *accurate product costing*, as traditional volume based costing system does not take into account the *Non-unit Level Overhead Costs* such as Setup Cost, Inspection Cost, and Material Handling Cost etc. Cost Analysis under ABC system showed that while these costs are largely fixed with respect to sales volume, but they are not fixed to other appropriate cost drivers. If break up the remaining Rs. 72,100 fixed costs consist of only a small portion of these costs, ABC need not be applied.

However, it may also be noted that the primary study has resulted in cost savings. If the savings in cost are expected to exceed the cost of study and implementing ABC, it may be

justified. Further it is pertinent to mention that ABC offers no increase in product-costing accuracy for single-product setting.

(c) Fixed Overhead Expenditure Variance

= Budgeted Fixed Overheads – Actual Fixed Overheads

Rs.20,000 (F) = Rs.7,20,000 – Actual Fixed Production Overheads

Actual Fixed Overheads = Rs.7,00,000

Absorbed Fixed Overheads = Actual Fixed Overheads + Over Absorbed Fixed Overheads

= Rs.7,00,000 + Rs.3,200

= Rs.7,03,200

Standard Absorption Rate *per unit* = Rs.7,20,000 / 36,000 units

= Rs.20

So, Actual Number of Units = Rs.7,03,200 / Rs.20

= 35,160 units

7. (a) Critical success factors of TQM:

- Focus on customer needs.
- Everyone in the organisation should be involved.
- Focus on continuous improvement.
- Design quality in product and production process.
- Effective performance measurement system.
- Rewards and performance measurements should be renewed.
- Appropriate training and education to everyone to understand the aim of TQM.

(b) Discretionary costs are those that are incurred, typically each year, in an amount that is approved as part of the normal budget process. However, there is no clear relationship between the volume of services and the amount of cost that must be incurred. Manager must decide and justify the level that is deemed to be appropriate. This justification is to be made a fresh without making reference to previous level of spending in his/her department.

Zero based budgeting is undoubtedly most effective in terms of discretionary costs. The bottom line of a zero based budgeting is that it is important to understand what types of objectives are being accomplished by discretionary cost centers and what resources being devoted to accomplishing various objectives. This will allows a prioritization, so that organization can evaluate the likely impact of substantial increase or decrease in the resources allocated to the discretionary center.

Accordingly, ZBB has extensive potential application to the division T, A and RD.

(c) If unit variable cost and unit selling price are not constant then the main problem that would arise while fixing the transfer price of a product would be as follows:

There is an optimum level of output for a firm as a whole. This is so because there is a certain level of output beyond which its net revenue will not rise. The ideal transfer price under these circumstances will be that which will motivate these managers to produce at this level of output.

Essentially, it means that some division in a business house might have to produce its output at a level less than its full capacity and in all such cases a transfer price may be imposed centrally.

(d) Direct Product Profitability (DPP) is 'Used primarily within the retail sector, and involves the attribution of both the purchase price and other indirect costs *such as distribution, warehousing, retailing* to each product line. Thus a net profit, as opposed to a gross profit, can be identified for each product. The cost attribution process utilises a variety of measures *such as warehousing space, transport time* to reflect the resource consumption of individual products.'

Benefits of Direct Product Profitability:

(i) Better Cost Analysis - Cost *per product* is analysed to know the profitability of a particular product.

(ii) Better Pricing Decision- It helps in price determination as desired margin can be added with the actual cost.

(iii) Better Management of Store and Warehouse Space- Space Cost and Benefit from a product can be analysed and it helps in management of store and warehouse in profitable way.

(iv) The Rationalisation of Product Ranges etc.

(e)

Type of Service	Probability	Cumulative Probability	Random No. Interval
Self- Service	0.60	0.60	00 – 59
Attended Service	0.40	1.00	60 – 99

Arrival Rate

No. of Arrivals	Probability	Cumulative Probability	Random Number Interval
0	0.20	0.20	00 – 19
1	0.10	0.30	20 – 29
2	0.35	0.65	30 – 64
3	0.30	0.95	65 – 94
4	0.05	1.00	95 – 99