Test Series: October, 2019

MOCK TEST PAPER – 1

FINAL COURSE (OLD): GROUP – II

PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS/HINTS

1. (a) Frequency Table

(i)	Insufficient Funds	140/265	52.83%
(ii)	Signature Mismatch	80/265	30.19%
(iii)	No Signature	20/265	7.55%
(iv)	Wrong Date	10/265	3.77%
(v)	Wrong Drawee	10/265	3.77%
(vi)	Others	5/265	1.89%

Insufficient Funds cannot be solved by clerical staff's alertness. Other problems (100-52.83) =47.17% can be solved with alertness by clerical staff.

(b) Statement Showing Classification of Quality Costs"

	2017		2018	
	Rs. '000	% of Sales	Rs. '000	% of Sales
Prevention:				
Quality Training	75	1.25%	150	2.50%
Appraisal:				
Product Inspection	200	3.33..%	240	4.00%
Materials Inspection	80	1.33..%	60	1.00%
Internal Failure:				
Scrap	600	10.00%	300	5.00%
Rework	500	8.33..%	400	6.66..%
External Failure:				
Product Warranty	300	5.00%	150	2.5
Total	1,755	29.25%	1,300	21.66..%

Cost reduction was effected by 7.583% (29.25 – 21.66..) of sales, which is an increase in profit by Rs. 4,54,980.

(c) **(i)** Statement Showing Comparative Profit if all traceable Cost of Division "D" is avoidable.

Particulars	Total Operation of Company if it		Net Benefit to Closure D
	Keep Division D	Closure of D	
Sales	1,94,000	1,70,000	(24,000)
Less: Variable Expenses	1,02,800	88,400	+14,400
Contribution	91,200	81,600	(9,600)
Less: Total Fixed Cost	83,200	71,000	+12,200
Profit	8,000	10,600	+2,600

Profit will increase by Rs. 2,600 closure of division "D".

(ii) Effect of Closure with Assumption

Particulars	(Rs.)
Reduction in Variable Cost	14,400
Reduction in Fixed Cost (Rs. 12,200 – Rs. 6,100)	6,100
Total Benefits	20,500
Reduction in Sales	(24,000)
Reduction in Profit by Closure of Division D	(3,500)

(d) u_i, v_j are arbitrary constants. We can start by taking any constant for any of the u_1 or v_j. Normally, $u_i = 0$ is taken at R_1 for convenient calculation.

$(u_i + v_j)$ will be the same. Since when we start with any one constant, the others are adjusted to align with that constant, such that $u_i + v_j$ = costs in the allocated cells. Hence, they have to be same both A and B in all the unallocated cells also.

Δ_{ij} is the matrix of $C_{ij} = (u_i+v_j)$ for the unallocated cells. The C_{ij} are given, (u_i+v_j) is the same as per above explanation. Hence, Δ_{ij} has to be the same for A and B.

2. **(a)** **(i)** The situation is governed by the actions of the manager of 'Yu'. Based on a transfer price of Rs. 180 per component, the total variable cost per unit of Product B will be Rs. 216

Demand	Selling Price (Rs.)	Variable Cost (Rs.)	Contribution (Rs.)	Total Contribution (Rs.'000)
1,000 units	480	216	264	264
2,000 units	440	216	224	448
3,000 units	400	216	184	552

4,000 units	360	216	144	576
5,000 units	320	216	104	520
6,000 units	268	216	52	312

'Yu' will produce 4,000 units of Product B and will therefore order 4,000 of Component A from 'Xu'.

Particulars	Xu (Rs.'000)	Yu (Rs.'000)	Group (Rs.'000)
Revenue	720	1,440	1,440
Less: Variable Costs	240	864	384
Less: Fixed Costs	200	300	500
Profit	280	276	556

(ii) The situation for the group should be judged using the total marginal costs of the divisions. This will give a variable cost per Product B of Rs. 96.

Demand	Selling Price (Rs.)	Variable Cost (Rs.)	Contribution (Rs.)	Total Contribution (Rs.'000)
1,000 units	480	96	384	384
2,000 units	440	96	344	688
3,000 units	400	96	304	912
4,000 units	360	96	264	1,056
5,000 units	320	96	224	1,120
6,000 units	268	96	172	1,032

The profit maximising output is 5,000 units of Product B. This will earn a total monthly profit for the Shenzhen Group of Rs. 6,20,000 (Rs.11,20,000 - Rs. 5,00,000).

(b) (i) Growth Stage

Compared to the introduction stage the likely changes are as follows:

Unit Selling Prices

These are likely to be reducing for a number of reasons:

- The product will become less unique as competitors use reverse engineering to introduce their versions of the product.
- Netcom may wish to discourage competitors from entering the market by lowering the price and thereby lowering the unit profitability.

- The price needs to be lowered so that the product becomes attractive to different market segments thus increasing demand to achieve the growth in sales volume.

Unit Production Costs

These are likely to reduce for a number of reasons:

- Direct materials are being bought in larger quantities and therefore Netcom may be able to negotiate better prices from its suppliers thus causing unit material costs to reduce.
- Direct labour costs may be reducing if the product is labour intensive due to the effects of the learning and experience curves.
- Other variable overhead costs may be reducing as larger batch sizes reduce the cost of each unit.
- Fixed production costs are being shared by a greater number of units.

(ii) Maturity Stage

Compared to the growth stage the likely changes are as follows:

Unit Selling Prices

These are unlikely to be reducing any longer as the product has become established in the market place. This is a time for consolidation and whilst there may be occasional offers to tempt customers to buy the product the selling price is likely to be fairly constant during this period.

Unit Production Costs

Direct material costs are likely to be fairly constant in this phase and may even rise as the quantities required diminish compared to those required in the growth stage with the consequential loss of negotiating power.

Direct labour costs are unlikely to be reducing any longer as the effects of the learning and experience curves have ended. Indeed the workers may have started working on the next product so that their attention towards this product has diminished with the result that these costs may increase.

Overhead costs are likely to be similar to those of the end of the growth phase as optimum batch sizes have been established and are more likely to be used in this maturity stage of the product life cycle where demand is more easily predicted.

3. (a)

$C_j \rightarrow$			6	4	10	0	0	0	Min. Ratio
C_B	Basic Variable	Quantity	Y_1	Y_2	Y_3	S_1	S_2	S_3	
0	S_1	400	0	4/3	0	1	-1/3	0	300

6	Y_1	400	1	2/3	2	0	1/3	0	600
0	S_3	400	0	5/3	0	0	-2/3	1	←240
		$Z_j = \sum C_{Bi}X_j$	6	4	12	0	2	0	
		$C_j - Z_j$	0	0↑	-2	0	-2	0	

(i) Yes, because the given solution has no artificial variables in the basic column.

(ii) Perform one more iteration with Y_2:

C_j→			6	4	10	0	0	0
C_B	**Basic Variable**	**Quantity**	**Y_1**	**Y_2**	**Y_3**	**S_1**	**S_2**	**S_3**
0	S_1	80	0	0	0	1	1/5	-4/5
6	Y_1	240	1	0	2	0	3/5	-2/5
4	Y_2	240	0	1	0	0	-2/5	3/5
		$Z_j = \sum C_{Bi}X_j$	6	4	12	0	2	0
		$C_j - Z_j$	0	0	-2	0	-2	0

(iii) Shadow Price is Rs.0, Rs.2 and Rs.0 (or any other given monetary unit) for Constraint 1, Constraint 2 and Constraint 3 respectively and same has been obtained from row $C_j - Z_j$.

(iv) $C_j - Z_j$ for Y_3 being –2, production of each unit of Y_3 would cause a reduction of Rs.2 (or any other given monetary unit). Thus, the price for Y_3 should be increased by at least two rupee per unit to ensure no reduction of profits.

(v) Original Constraint Inequality with the coefficient of variables:

Let us consider the given iteration is the 2nd one. The first iteration (I_1) must have had S_2 instead of Y_1. Row Y_1 of I_2 has been computed by dividing the S_2 row of I_1 by 3. S_2 of I_1 (in Identity Matrix) would have been 1. Now it is 1/3. Working backwards, we multiply row Y_1 of I_2 by 3 to get Row S_2 of I_1.

Original Row S_2 [Y_1 of I_2 × 3]:

$$(1Y_1 + 2/3Y_2 + 2Y_3) \times 3 \quad \leq \quad 400 \times 3$$

Or

$$\mathbf{3Y_1 + 2Y_2 + 6Y_3 \quad \leq \quad 1,200}$$

Similarly **Original Row S_1** [S_1 of I_2 + Y_1 of I_2]:

$(0Y_1 + 4/3Y_2 + 0Y_3) + (1Y_1 + 2/3Y_2 + 2Y_3) \leq \quad 400 + 400$

Or

$$\mathbf{Y_1 + 2Y_2 + 2Y_3 \quad \leq \quad 800}$$

Similarly **Original Row S_3** [S_3 of I_2 + 2 × Y_1 of I_2]:

$0Y_1 + 5/3Y_2 + 0Y_3 + (1Y_1 + 2/3Y_2 + 2Y_3) \times 2 \leq 400 + 400 \times 2$

Or

$$\mathbf{2Y_1 + 3Y_2 + 4Y_3 \leq 1,200}$$

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Original Constraint Inequality (with the coefficient of variables) can also be traced through algebraic method by solving through *system of equations*.

(b) Star Fitness' main Critical Success Factors are

(i) Developing and maintaining a high level of customer satisfaction.

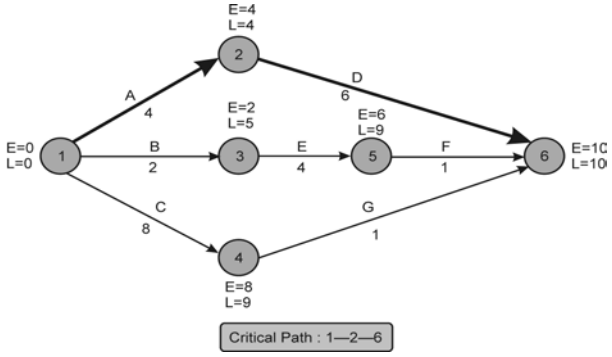
(ii) Offering facilities that are not much below that offered by competition.

(iii) Keeping a tight cap on costs as there is considerable competitive pressure in this industry and entry barriers are not high.

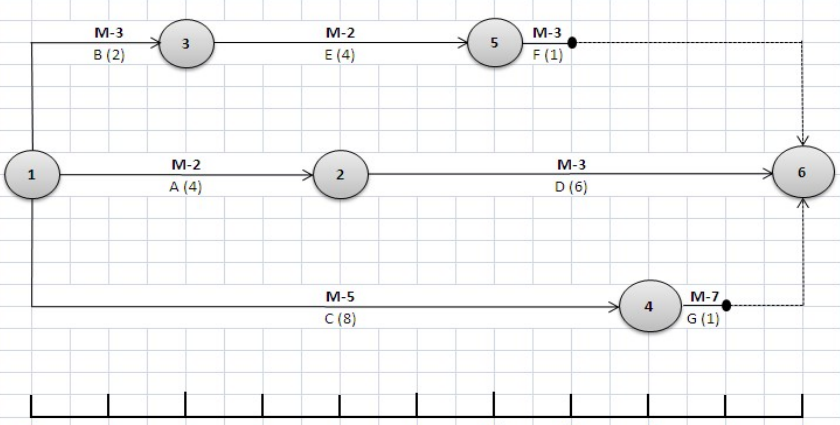
The following is a possible **Balance Scorecard** for Star Fitness:

Financial Perspective	Operating expenses relative to budget
	Cash flow
	Total daily operating revenue
Customer Perspective	Turnover rate among members
	Customer satisfaction rate
Internal Perspective	Number of employee complaints
	Number of equipment not available on average day (due to maintenance)
Innovation and Learning	Number of new equipment put into service
	Number of staff participating in training courses

4. (a) The network for the given problem:



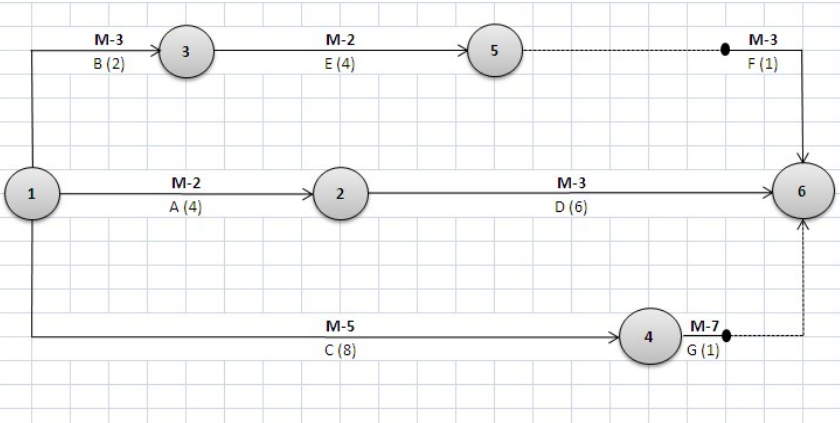
Peak requirement is 11 men and same is required on 7th Day (Refer below Time Scale Diagram).



D	10	10	9	9	10	10	11	8	10	3
S	10	10	10	10	10	10	10	10	10	10
SH	0	0	1	1	0	0	-1	2	0	7

Note: D refers to Men Required; S refers to Men Available; SH refers to (Shortage)/Excess; M refers to No. of Man

The project can be completed in 10 days. For this, we have to shift Activity F to 10th Day as only 10 men are available on any day. (Refer below Time Scale Diagram)



D	10	10	9	9	10	10	8	8	10	6
S	10	10	10	10	10	10	10	10	10	10
SH	0	0	1	1	0	0	2	2	0	4

Note: D refers to Men Required; S refers to Men Available; SH refers to (Shortage)/Excess; M refers to No. of Man

(b) BASIC CALCULATIONS

Actual Output produced is 630 Kg. The Standard Quantity of Material required for 630 Kg. of output is 700 Kg. $\left(\frac{630Kg.}{90} x 100\right)$

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.)	
A	280 (40% of 700 Kg.)	30	8,400	350	25	8,750	300 (40% of 750 Kg.)
B	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 Price Variance = AQ × (SP – AP)

A = 350 Kg. × (Rs.30 – Rs.25)

= Rs.1,750 (F)

B = 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)

A = Rs.30 × (300 Kg – 350 Kg)

= Rs.1,500 (A)

B = 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)
	A	=	Rs.30 × (280 Kg. – 300 Kg)
		=	Rs.600 (A)
	B	=	Rs.40 × (420 Kg. – 450 Kg.)
		=	Rs.1,200 (A)
	Total	=	Rs.600 (A) + Rs.1,200 (A)
		=	Rs.1,800 (A)

5. (a) (i) Projected Raw Material Issues (Kg):

	'A'	'B'	'C'
'X' (48,000 units-Refer Note)	60,000	24,000	---
'Y' (36,000 units-Refer Note)	72,000	-	54,000
Projected Raw Material Issues	1,32,000	24,000	54,000

Note:

- Based on this experience and the projected sales, the WML has budgeted production of 48,000 units of 'X' and 36,000 units of 'Y' in the eighth period.

  =52,500 × 40% + 45,000 – 18,000 = 48,000

  =27,000 × 40% + 42,000 – 16,800 = 36,000

- Production is assumed to be uniform for both products within each four-week period.

(ii) and (iii) Projected Inventory Activity and Ending Balance (Kg):

	'A'	**'B'**	**'C'**
Average Daily Usage	6,600	1,200	2,700
Beginning Inventory	96,000	54,000	84,000
Add: Orders Received:			
Ordered in 5th period	90,000	-	60,000
Ordered in 6th period	90,000	-	-
Sub Total	276,000	54,000	144,000
Less: Issues	132,000	24,000	54,000
Projected ending inventory balance	144,000	30,000	90,000

Note:

- Ordered 90,000 Kg of 'A' on fourth working day.

- Order for 90,000 Kg of 'A' ordered during fifth period received on tenth working day.
- Order for 90,000 Kg of 'A' ordered on fourth working day of sixth period received on fourteenth working day.
- Ordered 30,000 Kg of 'B' on eighth working day.
- Order for 60,000 Kg of 'C' ordered during fifth period received on fourth working day.
- No orders for 'C' would be placed during the sixth period.

(iv) Projected Payments for Raw Material Purchases:

Raw Material	Day/Period Ordered	Day/Period Received	Quantity Ordered	Amount Due	Day/Period Due
'A'	20th/5th	10th /6th	90,000 Kg	Rs. 135,000	20th/6th
'C'	4th/5th	4th /6th	60,000 Kg	Rs. 90,000	14th/6th
'A'	4th/6th	14th /6th	90,000 Kg	Rs. 135,000	4th/7th
'B'	8th/6th	13th /7th	30,000 Kg	Rs. 90,000	3rd/8th

(b)

Item	Value-Added/ Non-Value Added
Polishing of furniture used by a systems engineer in a software firm.	Non-Value Added
Maintenance by a software company of receivables management software for a banking company.	Value-Added
Painting of pencils manufactured by a pencil factory.	Value-Added
Delivering Packages by a delivery service.	Value-Added
Providing legal research for legal services.	Value-Added
Too long or insufficient set up times	Non-Value Added

6. (a) (i) Statement of Profit Mould Industries for the first half of 2018

Products		P	Q	R	S	Total
Output (units)	(A)	900	1,400	700	500	3,500
		(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Selling Price	(B)	200	80	48	140	
Direct Material Cost		82	38	21	58	
Direct Labour		24	11	6	16	

Variable Overhead	10	5	3	8	
Total Variable Cost ...(C)	116	54	30	82	
Contribution (D) = (B)- (C)	84	26	18	58	
Total Contribution(D) ×(A)	75,600	36,400	12,600	29,000	1,53,600
Less: Fixed Cost					40,800
Profit					1,12,800

(ii) Total Profit by using Increased Capacity

Since the product P has maximum contribution per unit i.e. Rs. 84, it shall be produced to 105% of the first half year's total output of 3,500 units. Extra units will be 175 (3,500 × 1.05 – 3,500) units of P.

Extra Contribution (175 × 84) Rs. 14,700

Total Profit of II half Year (1,12,800 + 14,700) Rs. 1,27,500

(iii) Evaluation of Proposal of Buying 200 units from Associated Company

Particulars	Amount
Variable Cost Own Manufacturing of Q	54.00
Purchase Price *including handling charges* (Rs. 72.00 + Rs. 1.60)	73.60
Decrease in Contribution	19.60
Extra Contribution from P	84.00
Net Extra Contribution	64.40
Total Extra Contribution (Rs. 64.40 × 200)	12,880

(iv)

Particulars	P	Q	R	S
VC on Own Production	116.00	54.00	30.00	82.00
Cost of Purchase (92% of Selling Price)	184.00	73.60	44.16	128.80
Loss of Contribution	68.00	19.60	14.16	46.80

Product R should be purchased. Total increase in profit Rs. 13,968 {(Rs. 84 – Rs. 14.16) × 200}

(b) The factors that generate such a phenomenon are:

(i) Labour Efficiency: Human beings have the ability to learn by practice and improve their performance. Even maintenance and supervision activities can be improved, by repeated experience.

(ii) Product Standardisation: By repeated manufacture, reduction can be brought about in change over and setups.

(iii) Improvement in Methods and Process of Assembly: By repeated experience it is possible to improve the production processes and methods of operations by technical, work and method studies. Subassemblies can be contracted out.

(iv) Product Design: The design can be improved by eliminating unnecessary and costly features by value analysis.

(v) Scale Effect: With increase in the volumes of activity, capacity costs fall which brings about economies of scale.

7. (a) The new product can be sold into the market at a maximum of Rs. 25 per unit. The company also seeks a minimum mark-up of 25% on product cost, which means the product should have a target cost of Rs. 20 per unit. Calculation is as below:

Target Cost + 25% Mark-up on cost = Rs. 25

Or, Target Cost per unit = Rs. 20 per unit.

Statement Showing "Life Cycle Cost *per unit*"

Particulars of Cost	Rs.
Manufacturing Cost *per unit*	16.00
Add: - Research and Development, Design Cost $\left(\frac{\text{Rs.}1,50,000}{40,000\text{units}}\right)$	3.75
- End of Life Costs $\left(\frac{\text{Rs.}70,000}{40,000\text{units}}\right)$	1.75
- Promotion and Capacity Cost $\left(\frac{\text{Rs.}20,000}{40,000\text{units}}\right)$	0.50
Total Life Cycle Cost *per unit*	22.00

The above life cycle cost of the proposed product is above the target cost of Rs. 20 per unit hence, the product should not be manufactured.

(b) Target Costing – VALID or NOT VALID

Sl. No	Statement	Valid or Not valid
(i)	Target costing is not applicable to a monopoly market.	**Valid,** Target costing is applied where the price is market determined and in the existence of competitive environment. In monopoly market, a firm is a price maker hence, target costing method is not applicable to a monopoly market.

(ii)	Target costing ignores non-value added activities.	**Valid,** In case of target costing the aim is to confine the total cost to set target. To achieve this target cost figure, *non-value added activities are eliminated and hence ignored*.

(c)

Three Measures of Theory of Constraints	Item
Throughput Contribution	(vii) Sales
Investments	(i) Research and Development Cost
	(iii) Finished Goods Inventory
	(vi) Stock of Raw material
	(viii) Cost of Equipment and Building
Operating Costs	(ii) Rent/Utilities
	(iv) Depreciation
	(v) Labour Cost

(d) At lease one of Q or R or both have to be adverse. Material mix variance arises out of the actual quantity being consumed in a nonstandard ratio. If one is favourable, lesser of that constituent is consumed. This would mean that more of the other constituent is consumed. Hence, more quantity of Q or R or both have to be consumed. Either Q or R or both will have adverse variance. Both cannot have a favourable variance.

(e) 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.