

SUGGESTED SOLUTIONS

KB 2 – Business Management Accounting

December 2016

SECTION 1

Answer 01

Relevant Learning Outcome/s:			
1.1.1	Assess the key features of the absorption costing method and ABC method		
1.1.2	Demonstrate how overheads are related to end products/services using absorption		
	costing method (flat rate used with no allocation or apportionment or re-allocation		
	expected) and ABC method (multiple drivers used).		

(a)

- It is true that indirect costs are absorbed to the product when applying the standard absorption costing system.
- However, in this system the total indirect cost is charged to the products based on a flat rate, which is decided based on the utilisation of machine time by each product.
- Absorption costing will result in over/under absorption.
- Based on the given information, the total indirect cost contains costs relating to material ordering, labour and machines. The utilisation of these indirect cost by each product is different.
- Therefore it is inappropriate to charge the total indirect cost to products using a flat rate. Thus we cannot conclude that the product cost is accurate though the full cost is absorbed to the products. As such the statement of the production manager is invalid.
- (b)

Based on the flat rate of machine time,

Total overhead cost (Rs. '000)	34,000
Total indirect overheads (34 – 4) (Rs. '000)	30,000
Total machine time (hours)	500
Flat rate per machine hour (Rs.)	60,000
Machine time for a unit of drill (100/10,000) (hours)	0.010

Product cost per unit of HDD	Rs.
Material cost	3,000
Labour cost	600
Variable cost	400
Indirect overheads	600
Standard cost per unit	4,600

Based on ABC				
	Rs. '000	Comp.	For HDD	For HDD
Material ordering cost	6,000	20%	1,200	2,400
Labour related cost	12,000	40%	20,000	6,000
Variable cost	12,000	40%	100	2,400
Total indirect cost	30,000			10,800

Product cost per unit of heavy duty drill	Rs.
Material cost	3,000
Labour cost	600
Variable cost	400
Indirect overheads	1,080
Standard cost per unit	5,080

The unit cost per ABC is Rs. 480, which is higher than the standard absorption costing. This can lead to improper pricing of products.

Relevant Learning Outcome/s:

- 5.1.4 Discuss available options of inventory management.
- 1.3.2 Demonstrate the importance of the following concepts for cost accounting and decision making:
 - Kaizen costing
 - Quality-related costing (TQM)
 - Manufacturing/Enterprise Resource Planning (MRP and ERP)
- (a) Re-order level (ROL) and EOQ provide answers to the questions of when to order and how much to order respectively.

Establishing the ROL requires estimation of demand and supply lead times. In relation to ROL, the following issues may be encountered:

- (i) The demand for chemicals and raw materials depend on the extent to which they are required for production purposes and that in turn will depend on the production requirement based on the demand for finished goods. When there is a wide range of finished products and an even wider range of raw materials, it would be a difficult exercise to estimate demand on an item-by-item basis without a suitable system.
- (ii) A similar difficulty would arise in relation to lead times. Different materials are bought from different suppliers and the terms of supply could vary. Sometimes the same material may be ordered from different suppliers where lead times are different. Accordingly, establishing average lead times and monitoring them for such a large portfolio of items would be difficult.
- (iii) The EOQ model assumes that the demand for each item of material occurs independently of other activities. However in **complex manufacturing environments, the demand for material purchases is not independent.** It is dependent on the volume of the planned output of products and sub-products, which includes the raw materials that must be purchased.

Establishment of EOQ also requires estimation of demand, which gives rise to the some issues identified above. The other issues could be:

- (i) The EOQ calculated may not match the supplier's minimum/maximum order sizes.
- (ii) PQR may not have sufficient storage capacity or sufficient working capital facilities to accommodate the EOQ. Sometimes the shelf life of certain chemicals may not fall in line with the EOQ.
- (iii) When the prices change with the size of the order quantity, establishment of the EOQ is further complicated.
- (iv) EOQ is a cost-based estimate. It ignores qualitative factors such as shelf life of the item.
- (v) The EOQ model assumes demand for the material is constant for the given period. However, seasonal demand and sudden demand will have an impact on EOQ.

(vi) EOQ assumes instantaneous supply. Suppliers may fail to deliver the item, which will invalidate the calculated EOQ.

(b)

- Materials Requirement Planning (MRP) is a computerised approach for coordinating the planning of materials acquisition and production.
- The major feature of MRP is that it first involves an estimation of the quantity and timing of finished goods demand.
- MRP then uses this to determine the requirement for raw materials at each stage of production. This provides the basis for determining the quantity and timing of purchased materials.
- The aim of MRP is to generate a planned, coordinated schedule of material requirements for a specified time period for each item of material.
- By having a MRP system, the production manager is able to overcome the issues described in (a) above.

Relevant Learning Outcome/s:

3.2.1 Assess the concepts of break-even point, margin of safety, contribution/sales (C/S) ratio and profit/volume (P/V) charts in analysing cost volume profit (CVP) in an organisation.

Othello (Pvt) Ltd – Projected profitability for 2016	Rs. '000	Rs. '000
Sales revenue (10,000 rackets at Rs. 5,000)		50,000
Cost of production:		
- Direct material	5,000	
- Direct labour	17,500	
- Variable overheads	3,000	
- Fixed overheads	11,000	(36,500)
Administrative overheads		(7,000)
Selling and distribution overheads:		
- Sales commission (2% of sales)	1,000	
- Delivery costs (Rs. 250 per racket)	2,500	
- Advertising and promotion per annum	<u>2,000</u>	<u>(5,500)</u>
Profit		<u>1,000</u>

Solution starts here

(a)

А	10% reduction in selling price with 40% increase in demand	
	Othello (Pvt) Ltd – Projected profitability for 2017	Rs. '000
	Sales revenue (14,000 rackets at Rs. 4,500)	63,000
	Sales commission	(1,260)
	Other variable costs (28,000 x 140%)	<u>(39,200)</u>
	Contribution	22,540
	Fixed overheads	<u>(20,000)</u>
	Profit	<u> </u>
	Incremental profit (2,540 – 1,000)	1,540

B-1	Investment of Rs. 1.5 million for further 20% sales with Strategy A	Rs. '000
	Incremental contribution generated by additional 20% sales	
	22,540 x 20/140	3,220
	Incremental investment in advertising and promotion	<u>(1,500)</u>
	Incremental profit	<u>1,720</u>

B-2	Investment of Rs. 1.5 million for further 20% sales without Strategy A	Rs. '000
	Incremental contribution generated by additional 20% sales	
	21,000 x 20/100	4,200
	Incremental investment in advertising and promotion	<u>(1,500)</u>
	Incremental profit	2,700

(b)			
С	Export Order		Rs. '000
	Incremental cost of 5,000 rackets		
	28,000 x 5,000/10,000		14,000
	Variable cost per unit (Rs.)	2,800	
	Othello needs to make an additional profit of at least Rs. 3	million	
	This can be achieved through the following options:		
(i)	Combination of Strategy A and Strategy B-1		
	Incremental profit = 1,540 + 1,720	3,260	
(ii)	Combination of Strategy A and Strategy C		
	Contribution required from Stategy C = 3,000 – 1,540	1,460	
	Contribution per unit (1,460,000/5,000) 292		
	Minimum price (2,800 + 292) 3,092		
(iii)	Combination of Strategy B-2 and Strategy C		
	Contribution required from Strategy C = 3,000 – 2,700	300	
	Contribution per unit (300,000/5,000) 60		
	Minimum price (2,800 + 60) <u>2,860</u>		
			(Total: 10 r

Relevant Learning Outcome/s:

4.2.1 Discuss different types of transfer pricing possible under decentralised organisational structure (including maximum and minimum price, cost based pricing, market based pricing, dual pricing and negotiated pricing)

(a)

Present pricing (Variable cost + 30%)	Rs.
Raw materials	7,000
Direct labour	1,500
Variables overheads	500
Delivery charges	<u>200</u>
Total variable cost	9,200
Profit mark-up 30%	<u>2,760</u>
Price to TPL	<u>11,960</u>
Proposed price (Full cost + 10%)	
Total variable cost	9,200
Fixed cost per unit	<u>1,800</u>
Full cost	11,000
Profit mark-up 10%	1,100
Price to TPL	<u>12,100</u>

(b) If TPL makes the purchase decision, it will select to buy the motherboards from the outside market at Rs. 11,500 per motherboard since the price in the external market is lower than the transfer price.

Price per motherboard in external market (Rs.)	11,500
Variable cost per motherboard (Rs.)	<u>9,200</u>
Loss per motherboard (Rs.)	<u>2,300</u>
Total demand per month	20,000
Possible loss to DPP Group per month (Rs.)	46,000,000
TPL's current purchasing price (Rs.)	11,960
Price in the external market (Rs.)	11,500
Saving in cost per motherboard (Rs.)	460
Total demand per month	20,000
Increase in profit per month in TPL (Rs.)	9,200,000

(a) Dual rate transfer pricing is where the supplying division is allowed to charge a reasonable price (usually the external market price). However, the price recorded in the buying division will be a lesser price, ideally the marginal cost.

In the given scenario the supplying division is presently charging a price (Rs. 11,960) above the market price (Rs. 11,500) and is expecting a further higher price of Rs. 12,100. Therefore, the dual rate transfer price for the supplying division needs to be suitably amended to a higher price than the current external market price. The receiving division will be happy since its cost is recorded at the marginal cost.

Rele	vant Learning Outcome/s:				
5.1.5	Assess price and/or rate of an investment/bon management (including implied/effective intere maturity)	rrowin est rat	ig instrumer e, interest y	nt as part of cash rield and yield to	
(a)	CFL situation				_
	Gross O/S BS value	=	PV of Rs. 10 discounted a	million per month f at 2% per month	or 12 months,
		=	10,000,000	x 10.575	
		=	105,750,00	0	
	Amount offered by GCL (85%)	=	89,887,50	0	
(b)					
(i)	Expected monthly collection after bad debts	=	9,000,000		
	CDF at implicit cost	=	89,887,500	/9,000,000	
		=	9.988		
	Implicit cost per month	≈	2.944%	≈ 3%	
	Implicit cost per annum	≈	35.33%	≈ 36%	
	It is better for CFL to take the loan at 30%				
(ii)	GCL situation				
	Amount invested	•	=	89,887,500	
	Net monthly collection after bad debts and ac	dmin			
	(10 million * 95% – 500,000)		=	9,000,000	
	Effective rate of return p.a. (as above)	CDF	=	9.988	
	Effective rate of return p.a. (as above)		=	36%	
	Compared to COC of GCL, this transaction is p	orofita	ble		
Note:	Candidates could use the IRR method to calculate	e the e	ffective rate.		
(c)	For CFL to accept, the effective cost should be	e <30%	6		
	If other variables remain constant, the offer a	imoun	t should be;		
	9,000,000 x CDF (12) at 2.5%				
	9,000,000 x 10.2645		= 9	92,380,500	
	As a % of O/S balance		=	87.4%	
	From GCL's point of view,				
	CDF at effective return		=	10.2645	
	Effective rate of return p.a. (as above)		=	30%	
VD2 C1	agastad Solutions				

Alternative answer

(b) (i)

Expected monthly collections loss		
discounted at 30% per annum (2.5% per month)	=	9m x 10.26 = 92.34m
Amount offered	=	89.89m
NPV	=	-92.34 + 89.89 = -2.45m

It is preferable to borrow funds at 30%, as it gives a higher present value (92.34) against the amount offered by GCL (89.89).

 (ii) Expected monthly collections by GCL discounted at 20% per annum (1.67% per month) = 9m x 10.79 = 97.11m Amount offered = 89.89 m NPV = 97.11 - 89.89 = 7.22

This transaction is profitable to GCL as it gives a higher present value of monthly collections (97.11) against the amount offered to CFL (89.89m)

(c) CFL will require a minimum of Rs. 92.34 million (part b (i)) GCL will require a minimum of Rs. 89.89 million Therefore, the offer amount should be Rs. 92.34 million

Note: Candidates could use the IRR method to calculate the implicit cost/return on the proposed transactions.

Relevant Learning Outcome/s:				
2.1.1 Interpret the basic types of variances (material/labour/variable overhead/fixed				
overhead/sales)				
2.1.2 Discuss the factors to be considered when deciding whether to investigate a variance or				
not				
2.1.3 Analyse the budgetary control statement (original budget, flex budget, actual and				
variances)				

(a) The standard cost per unit of output of the stitching department

Direct material:		Rs.
Transferred from the cutting department	3 meters at Rs. 180 per meter	540
Accessories bought from outside	4 pieces at Rs. 100 per piece	400
Direct labour	14 hours at Rs. 40 per hour	560
Variable overheads	Rs. 20 per direct labour hour	280
Fixed production overheads:		
Directly incurred by the stitching department		60
Allocation from the general pool		<u>160</u>
		<u>2,000</u>

The actual costs of the stitching department during the first month of operations

Direct material:		Rs.
Output of cutting department	1,400 meters	420,000
Accessories bought from outside	1,900 pieces	230,000
Direct labour (6,500 hours)		280,000
Variable overheads		160,000
Fixed production overheads:		
Directly incurred by the stitching department		32,000
Allocation from the general pool		<u>58,000</u>
		<u>1,180,000</u>

Variance Analysis

Output of cutting department			
Price Variance	(Std P – Act P) x Act Q	{180 - (420,000/1,400)} x 1,400	(168,000)
Usage Variance	(Std Q – Act Q) x Std Rate	{500 x 3 – 1,400} x 180	18,000
Accessories			
Price Variance	(Std P – Act P) x Act Q	{100 - (230,000/1,900)} x 1,900	(40,000)
Usage Variance	(Std Q – Act Q) x Std Rate	{500 x 4 – 1,900} x 100	10,000
Labour			
Rate Variance	(Std Rate – Act Rate) x Act Hrs	{40 - 280,000/6,500} x 6,500	(20,000)
Efficiency Variance	(Std Hrs – Act Hrs) x Std Rate	{500 x 14 – 6,500} x 40	20,000
Variable OH			
Expenditure Variance	Flexed budget – Act VOH	6,500 x 20 – 160,000	(30,000)
Efficiency Variance	(Std Hrs – Act Hrs) x Std Rate	{7,000 – 6,500} x 20	10,000
Fixed OH – Stitching Department			
Expenditure Variance	Budget – Actual	400 x 60 - 32,000	(8,000)
Volume Variance	(Act Q – Bud Q) x Rate	(500 – 400) x 60	6,000
Fixed OH – Allocated			
Expenditure Variance	Budget – Actual	400 x 160 - 58,000	6,000
Volume Variance	(Act Q – Bud Q) x Rate	(500 – 400) x 160	16,000
Total variance			(180,000)
Stitching department standard cost for	actual production	500 x 2,000	1,000,000
Stitching department actual cost of production1			
Total variance			(180,000)

(b) Total variance is Rs. 180,000 unfavourable, but all of them might not be controllable by the stitching department.

Price variance of the input from cutting department is under the control of the cutting department.

Purchase of accessories might be done by central purchasing, in which event the stitching department cannot control it.

Labour rates might be set by the HR department and the stitching department may not be responsible.

Allocated FOH expenditure is controllable at the point where it is incurred and not by the stitching department.

Accordingly, the variances that the stitching department is responsible for can be summarised as follows:

	Rs.
Cutting department material usage variance	18,000
Accessories usage variance	10,000
Labour efficiency variance	20,000
VOH expenditure variance	(30,000)
VOH efficiency variance	10,000
Stitching department FOH expenditure variance	(8,000)
Stitching department FOH volume variance	6,000
Allocated FOH volume variance	16,000
	42,000

Based on the above, the stitching department has a favourable variance of Rs. 42,000. Hence it has controlled costs efficiently.

(Total: 25 marks)

Relevant Learning Outcome/s:

3.8.1 Define the terms uncertainty and risk.3.8.2 Demonstrate how a decision would be a

- Demonstrate how a decision would be made under conditions of uncertainty, using
 - decision tree-based expected value calculations

- data tables

- alternative decision criterions (minimax, maximax and minimax regret)

(a)

	Design 1	Design 2	Design 3	
Variable cost per unit (Rs.)	180,000	180,000	180,000	
Total fixed cost (Rs.)	18,000,000	27,000,000	45,000,000	
Fixed cost per unit of each	design under re	spective deman	d levels	
Demand level	Design 1	Design 2	Design 3	
900	20,000	30,000	50,000	
1,200	15,000	22,500	37,500	
1,500	12,000	18,000	30,000	
Total cost per unit of each o	lesign under res	spective deman	d levels	
Demand level	Design 1	Design 2	Design 3	
900	200,000	210,000	230,000	
1,200	195,000	202,500	217,500	
1,500	192,000	198,000	210,000	
Expected prices per unit (with 30% mark-up)				
Demand level	Design 1	Design 2	Design 3	
900	260,000	273,000	273,000	
1,200	253,500	263,250	273,000	
1,500	249,600	257,400	273,000	

(b) Computation of profitability under each design

		Rs. '000		
Demand level	Design 1	Design 2	Design 3	
900	54,000	56,700	38,700	
1,200	70,200	72,900	66,600	
1,500	86,400	89,100	94,500	

(i) Risk seekers will aim to maximise the possible returns from the different demand scenarios. The maximax method would be appropriate in this situation.

	Rs. '000		
	Design 1	Design 2	Design 3
1,500	86,400	89,100	94,500

The company would be advised to choose Design 3, which will have a maximum profit of Rs. 94.5 million.

(ii) Risk averse decision makers will aim to maximise the minimum possible returns from the different demand scenarios. The maximin method would be appropriate in this situation.

	Rs. '000		
	Design 1	Design 2	Design 3
900	54,000	56,700	38,700

The company would be advised to choose Design 2, which will have a maximin profit of Rs. 56.7 million.

(iii) A risk neutral decision maker will choose the option that yields the maximum expected value of each design.

Expected value (Rs.'000)	Rs. million
Design 1: (80%*54 + 12%*70.2 + 8%*86.4)	58.54
Design 2: (15%*56.7 + 55%*72.9 + 30%*89.1)	75.33
Design 3: (25%*38.7 + 45%*66.6 + 30%*94.5)	67.995

The highest expected profit is probable with Design 2.

Note: Alternate method – Minimax Regret Method could also be applied.

(b) Expected demand for Design 3 (900*0.25) + (1,200*0.45) + (1,500*0.30) = 1,215 units

Increase in per unit cost = (100,000*10%) = Rs. 10,000

Decrease in expected profit = (Rs. 10,000*1,215) = **Rs. 12,150,000**

Alternative answer 1

If material price increases by 10%			
Present level	100,000		
Increase	10,000		
Quantity	Probability	Increase	
900	25%	2,250	
1,200	45%	5,400	
1,500	30%	4,500	
Decrease in profit		12,150	
Therefore, the impact on the expected profit would be Rs. 12.15 million.			

Alternative answer 2

Alternative answer 2	c		
SP per unit (Rs.)	273,000	273,000	273,000
Variable cost per unit (Rs.)	180,000	180,000	180,000
Increase in material price (Rs.)	10,000	10,000	10,000
Contribution per unit (Rs.)	83,000	83,000	83,000
Quantity	900	1,200	1,500
Total contribution (Rs. '000)	74,700	99,600	124,500
Probability	25%	45%	30%
Expected contribution (Rs. '000)	18,675	44,820	37,350
Fixed cost (Rs. '000)			(45,000)
Expected profit (Rs. '000)			55,845
Expected profit prior to material price increase (Rs. '000)	67,995		
Expected profit with the price increase (Rs. '000)	55,845		
Decrease in expected profits (Rs. '000)	12,150		

(Total: 25 marks)



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