SUGGESTED SOLUTIONS

KB2 – Business Management Accounting

December 2015

SECTION 1

Answer 01

Relevant Learning Outcome/s:
1.2.1   Assess the key features of marginal costing and throughput accounting (including different types of measures used in throughput accounting)
1.2.2   Evaluate the use of marginal costing and throughput accounting in stock valuation, profit calculation, and limiting factor (bottleneck resource) decision making.

Suggested detailed answer

(a)

Contribution per unit	**Pops**	**Oats**
Direct material cost	30	600
Overhead cost	420	60
	450	660
Contribution	450	390
Selling price	900	1050
Drying process time (minutes)	1.2	0.9
Contribution per drying process minute	375	433
Rank	**2**	**1**
Production quantity	113,250	54,000
Drying process time (hours)	2,265	810

Product mix is: 113,250 units of Pops and 54,000 units of Oats

(2 marks)

(b)

	Pops	**Oats**
Selling price per unit	900	1050
Direct material cost	30	600
Throughput contribution	870	450
Drying process time (minutes)	1.2	0.9
Throughput contribution per drying process minute	725	500
Rank	**1**	**2**
Production quantity	144,000	13,000
Drying process time (hours)	2,880	195

Product mix is: 144,000 units of Pops and 13,000 units of Oats

(2 marks)

(c)

Throughput Accounting Ratio $=$ $\dfrac{\text{Throughput Return per hour of bottleneck resource}}{\text{Total overhead cost per hour of bottleneck resource}}$

TAR for Pops $=$ $\dfrac{144{,}000 \times 870 \,/\, 2{,}880}{(120{,}000 \times 420 + 45{,}000 \times 60) \,/\, 3{,}075}$ $=$ $\dfrac{43{,}500}{17{,}268.293}$

$= \quad 2.52$

TAR for Oats $=$ $\dfrac{13{,}000 \times 450 \,/\, 195}{(120{,}000 \times 420 + 45{,}000 \times 60) \,/\, 3{,}075}$ $=$ $\dfrac{30{,}000}{17{,}268.293}$

$= \quad 1.74$

(3 marks)

(d)   TAR can be used as a control devise to improve profitability of a product. This can be done by improving TAR. TAR can be increased by:

- Increasing the selling price and/or reducing the material cost

- Reducing the time required for the bottleneck resource

- Creating more capacity of the bottleneck resource and if possible increase the capacity so that the bottleneck can be removed

- In doing the above, the proportionate cost increase should be minimised so that TAR will improve.

(3 marks)

(Total: 10 marks)

Answer 02

Relevant Learning Outcome/s:
3.1.1 Identify relevant information for decision making
3.1.2 Demonstrate relevant costs under material, labour, make or buy, continue/discontinue/outsource, accept or reject decisions

Suggested detailed answer

(a)   Expected manufacturing cost in 2016

	Total cost (Rs. '000)
Direct material cost (1,700 x 10,000)	17,000
Direct labour cost (450 x 10,000)	4,500
Variable manufacturing cost (15,000 x 80)	1,200
Avoidable manufacturing costs	3,200
Unavoidable manufacturing costs	8,000
	33,900
Cost per unit	3,390

(2 marks)

(b)

(i)   If bought from external supplier and capacity is left idle

	Rs. '000
Cost of purchase (3,000 x 10,000)	30,000
Cost saving on cessation of manufacturing (33,900 - 8,000)	25,900

Since the cost of purchase is more than the cost saving, PTA should continue to manufacture.

(ii) <u>If bought from external supplier and make special circuit boards</u>

	Rs. '000
Cost saving on cessation of manufacturing	
(33,900 - 8,000)	25,900
Incremental gain on special circuit boards	
(25,000 - 21,500)	3,500
	29,400

Cost of purchase is more than the sum of both cost saving and additional gain. Therefore PTA should continue to manufacture.

(6 marks)

(c) Both options of manufacturing or buying would be indifferent when the cost of purchase is equal to the sum of cost saving and incremental gain.

For that, the incremental gain should be 30,000 - 25,900 = 4,100

That means the incremental revenue should be 21,500 + 4,100 = 25,600

Therefore the required point of revenue from special circuit boards is:

Rs. 25,600,000

(2 marks)

(Total: 10 marks)

Answer 03

Relevant Learning Outcome/s:
4.1.1   Discuss decentralisation and different types of responsibility centres (revenue cost, profit and investment centres)

(a)   **For 2015**

$$\text{ROCE} = \frac{22.5}{100 + 25} = 18.0\%$$

For 2016

$$\text{ROCE (i)} = \frac{22.5 + (3.5 - 2)}{125 + 12} = 17.5\%$$

$$\text{ROCE (ii)} = \frac{22.5 + (5 - 3 - 3)}{125 - 20 + 2} = 20.1\%$$

Notes

Depreciation of the sold equipment = 5 (now saved)

Loss on sale = 3

Loss of profit contribution = 3

Cost of sold equipment = 20

Cash received on sale = 2

$$\text{ROCE (iii)} = \frac{22.5 + 0.4}{125} = 18.3\%$$

Overdraft will increase and creditors will fall

Therefore NCA will remain unchanged.

$$\text{ROCE (iv)} = \frac{22.5 - 0.6}{125} = 17.5\%$$

Inventory will reduce and cash will increase

Therefore NCA will remain unchanged.

(5 marks)

(b)   Transactions (i) and (iv) will reduce the current ROCE hence managers will not favour them.

Transactions (ii) and (iii) will have a favourable impact on ROCE hence managers will favour them. They will prefer transaction (ii) more than (iii), as (ii) will significantly improve the ROCE.

(2 marks)

(c)   PV of future savings resulting from transaction (i) will be 3.5 x 3.89 = 13.62

NPV = 13.62 - 12 = Rs. 1.62 million, which is positive.

The recommendation would have been to go ahead with the proposal as it adds value to the company in the medium term. However, ROCE will reduce and the managers will not favour the proposal. Therefore there would be a lack of goal congruence in this situation.

(3 marks)

(Total: 10 marks)

Answer 04

Relevant Learning Outcome/s:
5.1.3   Discuss receivable and payable management (including credit policy, credit assessment, credit control, and collection and factoring option).
5.1.6   Assess receivable management decisions such as cash discounts, age analysis, change in credit policy including whether to factor or not.

Suggested detailed answer

		Rs. '000	Rs. '000
(a)	Increase in contribution from additional sales		
	Present credit sales (100 million * 80%)	80,000	
	Increase in credit sales (10%)	8,000	
	Increase in contribution (40%)		3,200
	Incremental cost (1% on 88 million)		(880)
	Early settlement discount cost		
	Credit sales eligible for discount (88 million * 55%)	48,400	
	Discount amount payable		(968)
	Impact to the interest cost		
	Current interest cost (80 million/365 * 60) * 0.12	1,578	
	Interest cost on proposed policy:		
	Outstanding receivable (45 days) (88 million * 0.55/365 * 45)	5,967	
	Interest at 12%	716	
	Outstanding receivable (75 days) (88 million * 0.45/365 * 75)	8,137	
	Interest at 12%	976	
	Total interest on proposed system	1,692	
	Increase in the interest cost		(114)
	Net effect to profit		**1,238**

The marketing division's proposal is financially desirable since it generates an increased profit.

(7 marks)

(b)
- Obtaining bank loans

- Factoring of debtors/accounts receivables

- Negotiating to extend credit period with suppliers

- Postponing capital expenses

- Selling assets previously acquired

- Negotiating with banks to reschedule existing loan repayment.

- Reduction of dividend payment

- Reducing the stock holding period. Adoption of modern inventory management techniques such as JIT.

(3 marks)

(Total: 10 marks)

Answer 05

Relevant Learning Outcome/s:
5.1.7   Assess optimum inventory decision (EOQ) including the decision of whether to accept a quantity discount or not.

Suggested detailed answer

(a)   It is true that the price of the material under consideration is **not a part of the formula of the EOQ computation.** That is because EOQ formula **assumes that the selling price remains unchanged.** However, since the holding cost is given as a proportion of selling price, the selling price also becomes relevant for the EOQ computation. Further, when making a decision with **bulk discounts, the material price should be considered as relevant** since it varies based on the order quantity. Therefore, the assistant's claim is invalid.

(2 marks)

(b)   Total demand for the forthcoming year = 2,500MT

Ordering cost per order = Rs. 10,000

Scenario 1 - Without discounts

EOQ = √2*2,500MT*Rs. 10,000/Rs. 17,550

EOQ = 53.40MT

Factory cost (USD 1,000*135*130%*2,500MT)	438,750,000
Holding cost (53.4MT/2)*17,550	468,585
Ordering cost (10,000*2,500MT/53.4MT)	468,165
Total cost of inventory	**439,686,750**

(W1) Holding cost = (USD 1,000*130%*135)*10% = Rs. 17,550

Scenario 2 - Calculating order quantity at USD 1,000 less 3%

EOQ = √2*2,500MT*Rs. 10,000/Rs. 17,023.50

EOQ = 54.2MT.

However, the minimum order quantity eligible for 3% discount is 70MT

(W2) Holding cost = (USD 970*130%*135)*10% = Rs. 17,023.50	
Factory cost (USD 970*135*130%*2,500MT)	425,587,500
Holding cost (70MT/2)*17,023.50	595,823
Ordering cost (10,000*2,500MT/70MT)	357,143
Total cost of inventory	**426,540,465**

Scenario 3 - Calculating order quantity at USD 1,000 less 4.0%
EOQ = √2*2,500MT*Rs. 10,000/Rs. 16,848
EOQ = 54.5MT.

However, the minimum order quantity eligible for 4% discount is 100MT

Factory cost (USD 960*135*130%*2,500MT)	421,200,000
Holding cost (100MT/2)*16,848	842,400
Ordering cost (10,000*2,500MT/100MT)	250,000
Total cost of inventory	**422,292,400**

(W3) Holding cost = (USD 960*130%*135)*10% = Rs. 16,848
The total cost is minimised when the order quantity is 100MT per order.

(8 marks)

(Total: 10 marks)

Answer 06

Relevant Learning Outcome/s:
2.1.2 Discuss the factors to be considered when deciding whether to investigate a variance or not
2.1.3 Calculate mix and yield variances (under multiple material/labour/sales types), and planning, and operating variances as an addition to the basic operating statement (variance reconciliation statement)
2.1.4 Assess information generated through mix and yield variances and planning, and operating variances.
2.1.5 Demonstrate the impact of the learning/experience curve on planning and controlling.

Suggested detailed answer

(a)   Budgeted contribution per unit (Rs.)

A: 220 – 100 – 40 – 4 =   76.00
B: 32 – 16 – 6 – 0.6 =   9.40
C: 280 – 120 – 60 – 6 =   94.00

Sales mix contribution variance

Product	A	B	C	Total	
Actual sales quantity	720	3,100	780	4,600	
Actual sales at budget mix	920	2,990	690	4,600	
	(200)	110	90		
Contribution per unit (Rs.)	76.00	9.40	94.00		
Variance (Rs.)	(15,200)	1,034	8,460	(5,706)	A

Sales quantity contribution variance

Product	A	B	C	Total	
Budgeted sales quantity	800	2,600	600	4,000	
Actual sales at budget mix	920	2,990	690	4,600	
	120	390	90		
Contribution per unit (Rs.)	76.00	9.40	94.00		
Variance (Rs.)	9,120	3,666	8,460	21,246	F

(5 marks)

(b) The sales quantity contribution variance and the sales mix contribution variance explain how the sales volume contribution variance has been affected by a change in the total quantity of sales and a change in the relative mix of products sold.

From the figures calculated for sales quantity contribution variance in part (a), we can say that the increase in total quantity sold would have earned an additional contribution of Rs. 21,246 if the actual sales volume had been in the budgeted sales mix.

The sales mix contribution variance shows that the change in the sales mix resulted in a reduction in profit of Rs. 5,706. The change in the sales mix has resulted in a relatively higher proportion of sales of Product B, which is the product that earns the lowest contribution and a lower proportion of Product A, which earns a significantly higher contribution.

(4 marks)

(c) In spite of the average direct labour cost per unit been maintained as budgeted, there have been variances with regard to labour rate and labour efficiency as shown below.

Display of need to analyse into two components:
Labour rate variance = $(780 \times 60/1.875) \times (2 - 1.875)$ = Rs. 3,120 F
Labour efficiency variance = $780 \times (30 - 32)$hrs $\times 2$ = Rs. 3,120 A

The two variances are numerically equal with one being favourable while the other being adverse, which may be a coincidence, and this has resulted in a zero variance.

Labour has been sourced at a lower rate but appears to be at the expense of quality resulting in low efficiency, thus the advantage of a low rate has not been useful.

Therefore the production manager's statement cannot be agreed upon.

(5 marks)

(d)   Learning index at 90% learning rate = log 0.90 / log 2 = -0.152003093

Average time per unit for the first 560 units
$Y = ax^b = 8 \times 560^{(-0.152)} = 3.057$ hours

Total time for 560 units (560*3.057)	1,712	hours
Revised standard time for actual production	1,712	hours
Actual time worked	3,500	hours
Original standard time (8 x 560)	4,480	hours

Direct labour efficiency variances:
Planning variance: (4,480 hours – 1,712 hours) x Rs. 300 = Rs. 830,400 F
Operating variance: (3,500 hours - 1,712 hours) x Rs. 300 = Rs. 536,400 A
 DL rate variance: 3,500 x 300 - 1,155,000   = Rs. 105,000 A

(5 marks)

(e)   1.   **The size of the variance**
Costs tend to fluctuate around a norm and therefore variances may be expected on most costs. The company will need to decide how large a variance must be before it is considered 'abnormal' and worthy of investigation.

2.   **The likelihood of the variance being controllable**
Managers may know from experience that certain variances may not be controllable even if a lengthy investigation is undertaken to determine their cause. Managers may argue that a material price variance is less easily controlled than a material usage variance as it is determined by external factors. On the other hand, a material price variance may be due to the efficiency of the purchasing department and this would only be apparent after further investigation.

3.   **The likely cost versus the potential benefits of the investigation**
The cost of the investigation would need to be weighed against the cost that would be incurred if the variance was allowed to continue in future periods.
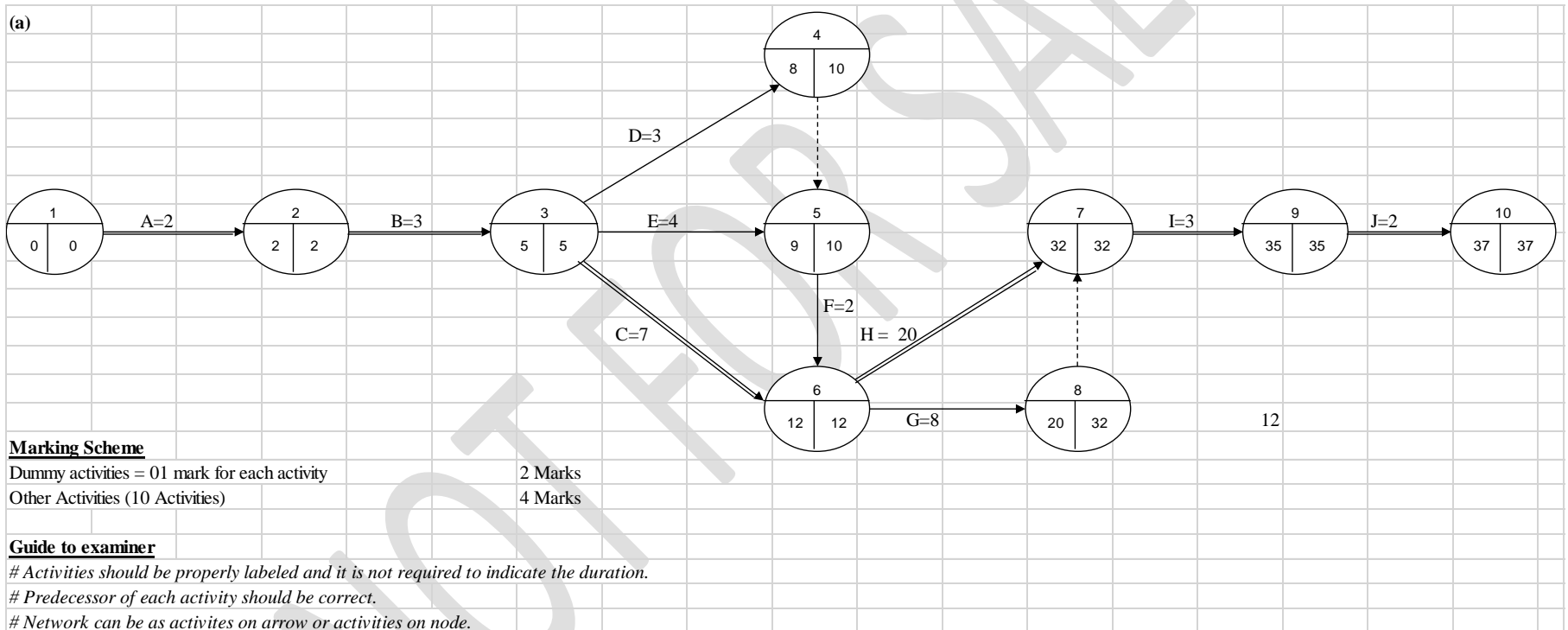
(6 marks)

(Total: 25 marks)

Answer 07

Relevant Learning Outcome/s:
3.6.1 Demonstrate critical path analysis, project duration, total float, cost and resource scheduling

(a)

Marking Scheme

Dummy activities = 01 mark for each activity	2 Marks
Other Activities (10 Activities)	4 Marks

Guide to examiner

 # Activities should be properly labeled and it is not required to indicate the duration.

 # Predecessor of each activity should be correct.

 # Network can be as activites on arrow or activities on node.

(6 marks)

(b) Critical path activities =   A-->B--->C--->H--->I--->J

Duration of the product implementation = 37 weeks

(4 marks)

(c) Activity H → The parallel activity for Activity H is Activity G, which has a float of 12 weeks. Therefore speeding up Activity H by 5 weeks will not change the critical path activities.

Activity I → This activity is the sole activity at this point of time. Therefore critical path activities will not change if duration of Activity I changes.

(3 marks)

(d) **Activity F**

The float of this activity is 1 week (12-9-2). Therefore a reduction of 1 week will not affect the total duration of the project. As such, expediting is not worth.

Activity G

The float of this activity is 12 weeks (32-12-8). Therefore a reduction of 2 weeks will not affect the total duration of the project. As such, expediting is not worth.

Activity H

This is a critical path activity. Therefore the total duration could be reduced by speeding up this activity.

Weekly contribution is Rs. 5 million (50,000 pcs * Rs. 100 per piece). If we expedite by one week we can increase profit by Rs. 5 million.

	Rs. '000
Increase in profit (5 weeks * 5 million)	25,000
Saving in overheads (5 weeks * 0.2 million)	1,000
Additional cost (3.5 million * 5 weeks)	(17,500)
Net benefit	**8,500**

There is a net benefit of Rs. 8.5 million and therefore expediting Activity H could be recommended.

Activity I

This is a critical path activity and therefore the total duration could be reduced by speeding up this activity.

	Rs. '000
Increase in profit (1 week * 5 million)	5,000
Saving in overheads (1 week * 0.1 million)	100
Additional cost (6.5 million * 1 week)	(6,500)
Net benefit	**(1,400)**

This generates a net loss therefore this activity should not be expedited.

(9 marks)

(e)
- It is not always possible to devise an effective WBS (work breakdown structure) for a project.
- It assumes a sequential relationship between activities, which is not always possible.
- There are problems in estimation. Where the project is completely new, the planning process may be conducted in conditions of relative ignorance.
- Although network analysis plans the use of resources of labour and finance, it does not appear to develop plans for contingencies, other than crashing time.
- CPA assumes a trade-off between time and cost. This may not be the case where a substantial portion of the cost is indirect overheads or where the direct labour proportion of the total cost is limited.

(3 marks)
(Total: 25 marks)

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