SOLUTION MANAGEMENT ACCOUNTING AND CONTROL NOV 2007

QUESTION 1

Uncle Pee

a) Relevant Costs Budget Statement

		GH¢	GH¢
Contract Price			20,000
Material	A (1,000 x 6)	6,000	
	B (1,000 x 5)	5,000	
	C (1,000 x 4) + (700 x 2.5)	2,950	
	D	1,500	
			15,450
Labour:			
Grade X Wages		-	
Grade Y wages (200 x 3.5)		700	
Contribution forgone (200 x 4)		800	1,500
Variable overheads:			
Grade X (50 hr x 1)		500	
Grade Y (200 hrs x 1)		200	700
Fixed overhead expenditure:			
Incremental hire costs		300	
User cost of other contract		200	
			500
Consultant Fee			300
Net benefit from the contract			1,550

Advise

The contract is worthwhile and should be undertaken by Uncle Pee

b) Conventional Cost Statement

		GH¢	GH¢
Material	A	6,000	
	B (600 x 2) + (400 x 5)	3,200	
	C (700 x 3) + (300 x 4	3,300	
	D (200 x 4)	800	
			13,300
Labour:			
Grade X (500 x 3)		1,500	
Grade Y (200 x 3.5)		700	
Contribution forgone			2,200
Variable overheads (700 x 1)			700
Fixed overhead (250% of 2,200)			5,550
Consultant Fee			300
Machinery: Special Machine		300	
Depreciation (3 months)		900	1,200
			23,200
Contract Revenue			20,000
Loss on contract			(3,200)

Advise

The project should not be undertaken.

QUESTION 2

(a) Monthly Production Budget

	March Units	April Units	May Units
Budgeted Sales	180,000	240,000	250,000
Closing Stocks	48,000	50,000	46,000
	228,000	290,000	296,000
Less Opening Stocks	36,000	48,000	50,000
Production required	192,000	242,000	246,000

(b) Monthly Purchases of Raw Materials

		March	April	
Materials needed for production at ½ kg per unit		96,000	121,000	
Minimum month end stock	(note 1)	48,400	49,200	
		144,400	170,200	
		45,600	69,600	(note 2)
		98,800	100,600	
Less opening stock				
Actual purchases (40,000 multiple)		120,000	120,000	
Surplus purchases		21,200	19,400	

Note 1 - March: Minimum month end stock = 40% of ½ kg x 24,200 units
April: Minimum month end stock = 40% of ½ kg x 24,600 units

Note 2 - The minimum month end stock in March plus surplus purchases in March (48,400 x 21.200)kg

Closing stock at the end of April will be the minimum stock of 49,200 kg plus surplus purchases of 19,400 kg i.e. 68,600 kg.

(c) Cash Forecast for April

Receipts from customers:

i)	For invoices sent out on 15 March (50% of 360,000)		
	Those not taking a discount 49½ x 180,000	89,100	
ii)	For invoices sent out on 31 March (50% of 360,000)		
	Those taking a discount 50% of 180,000 x 98%	88,120	
	Those not taking a discount 49½ x 180,000	89,100	
iii)	For invoices sent out on 15 April (50% of 480,000)		
	Those taking a discount 50% of 240,000 x 98%	117,600	
		384,000	

Payments

Payment for raw material bought in March (120,000 x GH¢1)	120,000	
Direct wages (242,000 units x GH¢2)	96,800	
Variable production overhead (192,000 units x 0.2)	38,400	
Fixed production overheads (GH¢23,000 – 8,000)	15,000	
Administration overhead (GH¢60,000 – 800)	59,200	
Selling expenses (10% of March sales of GH¢560,000)	36,000	
		365,400
Surplus of receipts over payments		186,000
Cash balance b/f 1 April		12,000
Cash balance c/f 30 April		30,600

QUESTION 3

a)

From: Management Accountant
To: Head, Finance and Administration
Subject: **Alternative Budget Models**
Date: 23rd Nov. 2006

Introduction

Main body

Zero based budgets start with the concept that no item of cost is included unless justified.

Advantages

1. Involves line managers in the resource allocation decision.
2. Encourage such managers to see the activities of their departments as a portfolio that can be examined.
3. Promotes a search improved package delivery.
4. Emphasis that any cost incurred should be matched with traceable benefit.

Disadvantage

1. The zero assumption may be seen as threatening
2. Requires an honest approach to the cost-benefit assessment.
3. Same benefits may be difficult to justify in financial terms.
4. The initial introduction may be very time consuming and costly.

Incremental Budgeting

An incremental budget is one which is set using last year's results or budget as a starting point.

Advantages

1. Easy to prepare
2. Easy to understand
3. Assumptions are simple
4. It is not labourious

Disadvantages

1. The previous year's inefficiencies are perpetuated.

2. Inappropriate uses of referees are not curtailed.

3. An adverse behavioural impact may occur

4. Managers may spend their allocated budget unnecessarily to ensure that they are allocated the same level of resources in the next year's budget.

(b) (i)

- It is activities which derive cost and the aim is to control the causes of costs directly rather than the costs themselves.

- Not all activities add value so it is essential to differentiate and examine activities for their value-adding potential.

- The majority of activities in a department are driven by demands and decisions beyond the immediate control of the budget holder. This relationship is ignored by conventional budget.

- More immediate and relevant performance measures are required than are found in conventional budgeting systems.

(b) (ii)

- Clear guidelines

- Effective communication

- Participation by all levels of management

- Goal congruence

- Proper and effective coordination

- Regular and systematic monitoring

- Education

- Assignment of authority and responsibility

- Creation of responsibility centres

- Motivation

- Flexibility

QUESTION 4

(a) A mathematical model which uses the tree diagram with affixed probabilities and units of products to make decisions. The decision tree utilizes expected value criterion to arrive at decisions. The tree is composed of decision points and random outcome points linked up by lines

Table of Expected Values

Grade of Rice	Probabilities	Retailer 1		Retailer 2		Retailer 3	
		Investment	Expected value	Investment	Expected value	Investment	Expected value
A	2/10	15	3.0	17	1.4	20	4.0
B	3/10	25	7.5	43	12.9	20	6.0
C	3/10	17	5.1	15	4.5	30	9.0
D	2/10	43	8.60	25	5.0	30	6.0
Overhead	-	(15)	(15)	(15)	(15)	(15)	(15)
			9.2		8.8		10

Calculations of their expectation values

$EV_1 = (0.2 \times 15) + (0.3 \times 25) + (0.3 \times 17) + (0.2 \times 43) + (-15) = 9.2$

$EV_2 = (0.2 \times 17) + (0.3 \times 43) + (0.3 \times 15) + (0.2 \times 25) + (-15) = 8.8$

$EV_3 = (0.2 \times 20) + (0.3 \times 20) + (0.3 \times 30) + (0.2 \times 30) + (-15) = 10$

Expected turnover of Retailer 1 = 9.2×10^3 GH¢

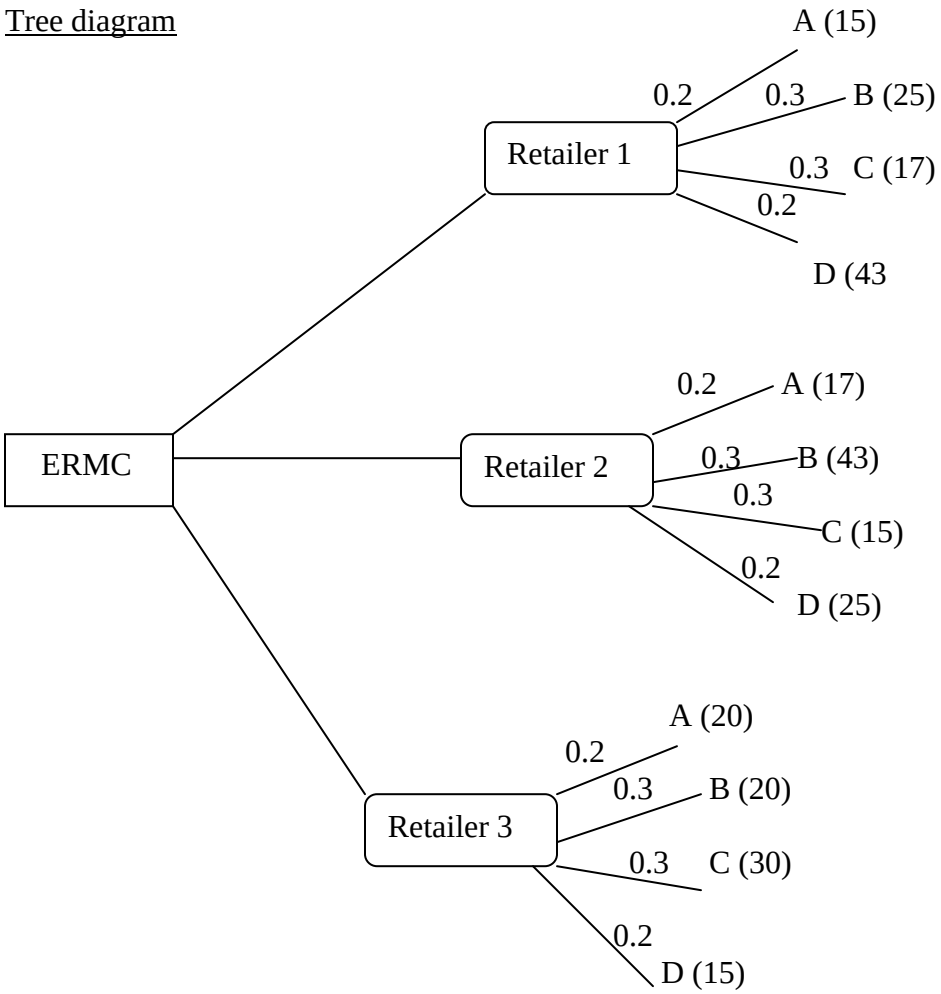
Expected turnover of Retailer 2 = 8.8×10^3 GH¢

Expected turnover of Retailer 3 = 10×10^3 GH¢

i) Ranking

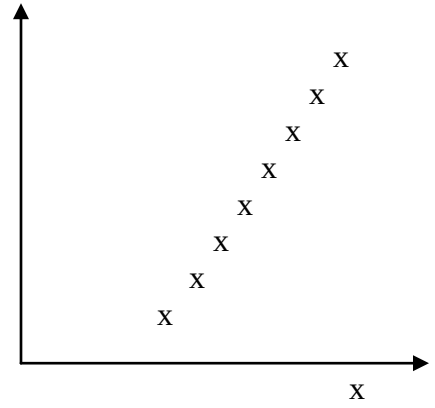
Retailer 3 ≥ Retailer 1 ≥ Retailer 2

ii) Tree diagram



QUESTION 5

(i)



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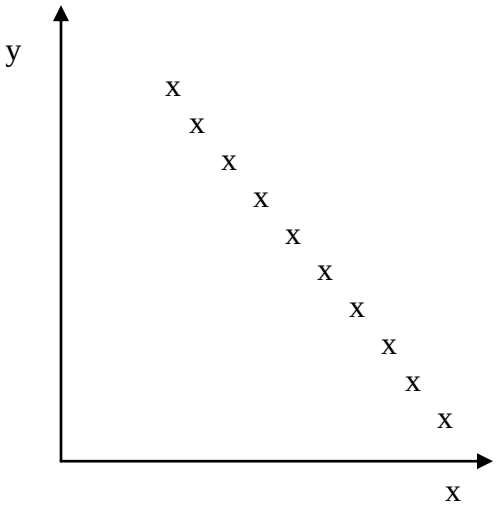

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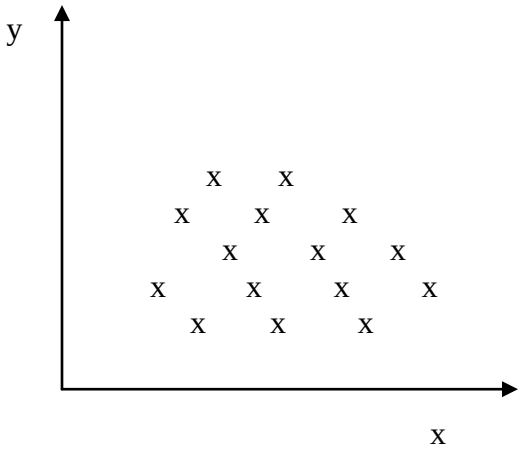


X	Y	XY	X^2	Y^2
13	10	130	169	100
8	11	88	64	121
7	13.6	95.2	49	184.96
15	5.6	84	225	31.36
12.6	15.2	191.52	158.76	231.04
16	5	80	256	25.0
7	16	112	49	256.0
4	17	68	16	289.0
17	4	68	289	16.0
13	7	91	169	49.0
11	9	99	121	81.0
6.6	13.0	85.8	43.56	169.0
130.2	126.4	1,192.52	1,609.32	1,553.36

$$r = \frac{n \Sigma x y - \Sigma x \Sigma y}{\sqrt{[n \Sigma x^2 - (\Sigma x 1^2)][n \Sigma y^2 - (\Sigma y)^2]}}$$

$$r = \frac{12(1{,}192.52) - (130.2)(126.4)}{\sqrt{[12(1609.32) - (130.2^2][12(1553.36) - (126.4)^2]}}$$

$$= \frac{14310.24 - 16457.28}{\sqrt{(19311.84 - 16952.04)(18640.32 - 15976.96)}}$$

$$= \frac{-2147.04}{\sqrt{(2359.8)(2663.36)}}$$

$$= \frac{-2147.04}{\sqrt{6284996.928}} = \frac{-2147.04}{2506.99}$$

$$= -0.86$$

iii) There is a strong inverse correlation between Marks in x and Marks in y,

QUESTION 6

a) Lend time: Elapsed time between depleted stock and replenished stock.

Stock-out: The period that stock level falls below zero level.

b) $TC(q) = Co\left(\frac{D}{q}\right) + Cn\left(\frac{q}{2}\right)$

$\frac{dTC(q)}{dq} = -Co\frac{D}{q^2} + \frac{Cn}{2}$

$\frac{d^2TC(q)}{dq^2} = 2Co\frac{D}{q^3} > 0$

At stationery point, $\frac{dTC(q)}{dq} = 0$, implying that

$$\frac{C_o D}{q^2} = \frac{C_n}{2}$$

or $$q^2 = \frac{2CoD}{Cn}$$

or $$q = \pm \sqrt{\frac{2CoD}{Cn}}$$

But $q \geq 0$, thence $q_o = \sqrt{\frac{2CoD}{Cn}}$, called EOQ

$$TC(q) = Co\left(\frac{D}{qo}\right) + Cn\left(\frac{qo}{2}\right)$$

where $qo = \sqrt{\frac{26D}{Cn}}$

c) We calculate

$$E\ O\ G = qo = \sqrt{\frac{2CoD}{Cn}}$$

Where,

i) D = 12,000 sachets/year

Co = GH¢20/order

Cn = 10% per annum of the stock value per item

= o.1 x GH¢4.50 per sachet per year

$$\therefore q_o = \sqrt{\frac{2 \times 20 \times 12{,}000}{0.1 \times 4.5}}$$

$$= 1032.79$$

$$= 1033$$

EOQ = 3266

ii) $$TC(q_o) = 20\left(\frac{12{,}000}{3{,}266}\right) + (0.1)\left(\frac{3{,}266}{2}\right)$$

$$= 73.48 + 163.3$$

$$= 236.78$$

i.e TC = GH¢236.78

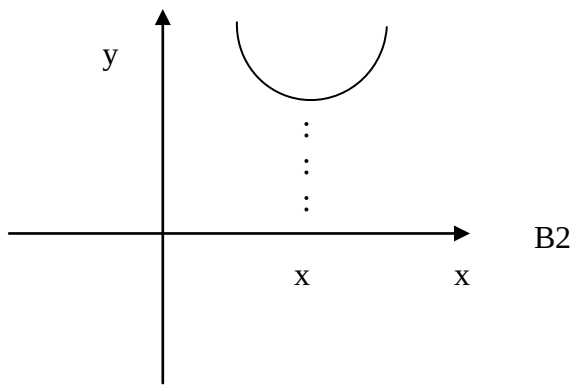
$$TC(q_o) = 20\left(\frac{12{,}000}{1{,}032.8}\right) + 0.45\left(\frac{1{,}032.8}{2}\right)$$

$$= 232.4 + 232.4$$

$$= \underline{464.8}$$

QUESTION 7

(i)



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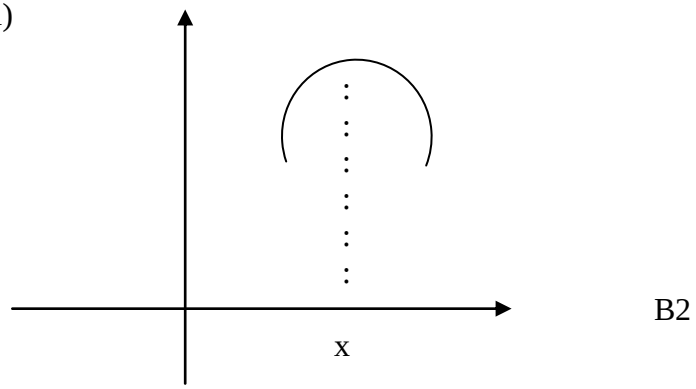

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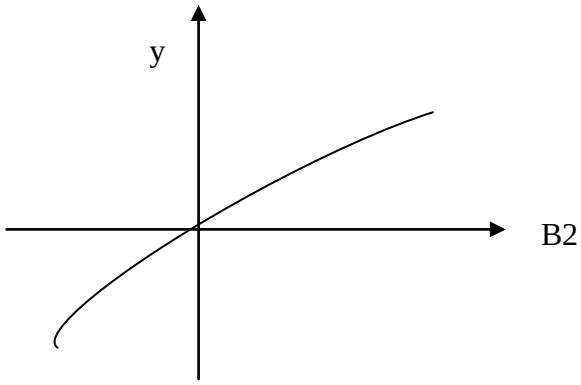

(ii) $TC = 75 + 4Q$

$\frac{dTC}{dQ} = MC = 4$

$TR = 12Q - 0.06Q^2$

$\frac{dTR}{} = MR = 12 - 0.12Q$

(iii) From graph, profit maximizing output = 68.

(iv) Profit $= 12Q - 0.06Q^2 - 75 - 4Q = 8Q - 0.06Q$

When $Q = 68$

Profit $= 8(68) - 0.06(68)^2 - 75 = 544 - 231.2 - 75$

$= \underline{191.2}$