

Fundamentals Level – Skills Module

Performance Management

Monday 2 June 2014



Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

ALL FIVE questions are compulsory and MUST be attempted.

Formulae Sheet is on page 7.

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

The Association of Chartered Certified Accountants

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ALL FIVE questions are compulsory and MUST be attempted

- 1 Duff Co manufactures three products, X, Y and Z. Demand for products X and Y is relatively elastic whilst demand for product Z is relatively inelastic. Each product uses the same materials and the same type of direct labour but in different quantities. For many years, the company has been using full absorption costing and absorbing overheads on the basis of direct labour hours. Selling prices are then determined using cost plus pricing. This is common within this industry, with most competitors applying a standard mark-up.

Budgeted production and sales volumes for X, Y and Z for the next year are 20,000 units, 16,000 units and 22,000 units respectively.

The budgeted direct costs of the three products are shown below:

Product	X	Y	Z
	\$ per unit	\$ per unit	\$ per unit
Direct materials	25	28	22
Direct labour (\$12 per hour)	30	36	24

In the next year, Duff Co also expects to incur indirect production costs of \$1,377,400, which are analysed as follows:

Cost pools	\$	Cost drivers
Machine set up costs	280,000	Number of batches
Material ordering costs	316,000	Number of purchase orders
Machine running costs	420,000	Number of machine hours
General facility costs	361,400	Number of machine hours
	<u>1,377,400</u>	

The following additional data relate to each product:

Product	X	Y	Z
Batch size (units)	500	800	400
No of purchase orders per batch	4	5	4
Machine hours per unit	1.5	1.25	1.4

Duff Co wants to boost sales revenue in order to increase profits but its capacity to do this is limited because of its use of cost plus pricing and the application of the standard mark-up. The finance director has suggested using activity based costing (ABC) instead of full absorption costing, since this will alter the cost of the products and may therefore enable a different price to be charged.

Required:

- (a) Calculate the budgeted full production cost per unit of each product using Duff Co's current method of absorption costing. All workings should be to two decimal places. (3 marks)
- (b) Calculate the budgeted full production cost per unit of each product using activity based costing. All workings should be to two decimal places. (11 marks)
- (c) Discuss the impact on the selling prices and the sales volumes OF EACH PRODUCT which a change to activity based costing would be expected to bring about. (6 marks)

(20 marks)

- 2 Tablet Co makes two types of tablet computer, the Xeno (X) and the Yong (Y). X currently generates a contribution of \$30 per unit and Y generates a contribution of \$40 per unit. There are three main stages of production: the build stage, the program stage and the test stage. Each of these stages requires the use of skilled labour which, due to a huge increase in demand for tablet computers over recent months, is now in short supply. The following information is available for the two products:

Stage	Xeno (X)	Yong (Y)
	Minutes per unit	Minutes per unit
Build (\$10 per hour)	24	20
Program (\$16 per hour)	16	14
Test (\$12 per hour)	10	4

Tablet Co is now preparing its detailed production plans for the next quarter. During this period it expects that the skilled labour available will be 30,000 hours (1,800,000 minutes) for the build stage, 28,000 hours (1,680,000 minutes) for the program stage and 12,000 hours (720,000 minutes) for the test stage. The maximum demand for X and Y over the three-month period is expected to be 85,000 units and 66,000 units respectively. Fixed costs are \$650,000 per month.

Due to rapid technological change, the company holds no inventory of finished goods.

Required:

- (a) On the graph paper provided, use linear programming to calculate the optimum number of each product which Tablet Co should make in the next quarter assuming it wishes to maximise contribution. Calculate the total profit for the quarter. (14 marks)
- (b) Calculate the amount of any slack resources arising as a result of the optimum production plan and explain the implications of these amounts for decision-making within Tablet Co. (6 marks)

(20 marks)

3 The Rotech group comprises two companies, W Co and C Co.

W Co is a trading company with two divisions: The Design division, which designs wind turbines and supplies the designs to customers under licences and the Gearbox division, which manufactures gearboxes for the car industry.

C Co manufactures components for gearboxes. It sells the components globally and also supplies W Co with components for its Gearbox manufacturing division.

The financial results for the two companies for the year ended 31 May 2014 are as follows:

	W Co		C Co
	Design division \$'000	Gearbox division \$'000	\$'000
External sales	14,300	25,535	8,010
Sales to Gearbox division			7,550
			<u>15,560</u>
Cost of sales	(4,900)	(16,200)*	(5,280)
Administration costs	(3,400)	(4,200)	(2,600)
Distribution costs	–	(1,260)	(670)
Operating profit	<u>6,000</u>	<u>3,875</u>	<u>7,010</u>
Capital employed	23,540	32,320	82,975

* Includes cost of components purchased from C Co.

Required:

(a) Discuss the performance of C Co and each division of W Co, calculating and using the following three performance measures:

- (i) Return on capital employed (ROCE)
- (ii) Asset turnover
- (iii) Operating profit margin

Note: There are 4·5 marks available for calculations and 5·5 marks available for discussion. (10 marks)

(b) C Co is currently working to full capacity. The Rotech group's policy is that group companies and divisions must always make internal sales first before selling outside the group. Similarly, purchases must be made from within the group wherever possible. However, the group divisions and companies are allowed to negotiate their own transfer prices without interference from Head Office.

C Co has always charged the same price to the Gearbox division as it does to its external customers. However, after being offered a 5% lower price for similar components from an external supplier, the manager of the Gearbox division feels strongly that the transfer price is too high and should be reduced. C Co currently satisfies 60% of the external demand for its components. Its variable costs represent 40% of revenue.

Required:

Advise, using suitable calculations, the total transfer price or prices at which the components should be supplied to the Gearbox division from C Co. (10 marks)

(20 marks)

- 4 Gam Co sells electronic equipment and is about to launch a new product onto the market. It needs to prepare its budget for the coming year and is trying to decide whether to launch the product at a price of \$30 or \$35 per unit. The following information has been obtained from market research:

Price per unit \$30		Price per unit \$35	
Probability	Sales volume	Probability	Sales volume
0.4	120,000	0.3	108,000
0.5	110,000	0.3	100,000
0.1	140,000	0.4	94,000

Notes

- 1 Variable production costs would be \$12 per unit for production volumes up to and including 100,000 units each year. However, if production exceeds 100,000 units each year, the variable production cost per unit would fall to \$11 for all units produced.
- 2 Advertising costs would be \$900,000 per annum at a selling price of \$30 and \$970,000 per annum at a price of \$35.
- 3 Fixed production costs would be \$450,000 per annum.

Required:

- (a) Calculate each of the six possible profit outcomes which could arise for Gam Co in the coming year. (8 marks)
 - (b) Calculate the expected value of profit for each of the two price options and recommend, on this basis, which option Gam Co would choose. (3 marks)
 - (c) Briefly explain the maximin decision rule and identify which price should be chosen by management if they use this rule to decide which price should be charged. (3 marks)
 - (d) Discuss the factors which may give rise to uncertainty when setting budgets. (6 marks)
- (20 marks)**

- 5 Valet Co is a car valeting (cleaning) company. It operates in the country of Strappia, which has been badly affected by the global financial crisis. Petrol and food prices have increased substantially in the last year and the average disposable household income has decreased by 30%. Recent studies have shown that the average car owner keeps their car for five years before replacing it, rather than three years as was previously the case. Figures over recent years also show that car sales in Strappia are declining whilst business for car repairs is on the increase.

Valet Co offers two types of valet – a full valet and a mini valet. A full valet is an extensive clean of the vehicle, inside and out; a mini valet is a more basic clean of the vehicle. Until recently, four similar businesses operated in Valet Co's local area, but one of these closed down three months ago after a serious fire on its premises. Valet Co charges customers \$50 for each full valet and \$30 for each mini valet and this price never changes. Their budget and actual figures for the last year were as follows:

	Budget		Actual	
Number of valets:				
Full valets	3,600		4,000	
Mini valets	2,000		3,980	
	\$	\$	\$	\$
Revenue		240,000		319,400
Variable costs:				
Staff wages	(114,000)		(122,000)	
Cleaning materials	(6,200)		(12,400)	
Energy costs	(6,520)		(9,200)	
		<u>(126,720)</u>		<u>(143,600)</u>
Contribution		113,280		175,800
Fixed costs:				
Rent, rates and depreciation		(36,800)		(36,800)
Operating profit		<u>76,480</u>		<u>139,000</u>

The budgeted contribution to sales ratios for the two types of valet are 44.6% for full valets and 55% for mini valets.

Required:

- (a) Using the data provided for full valets and mini valets, calculate:

- (i) The total sales mix contribution variance; (4 marks)
- (ii) The total sales quantity contribution variance. (4 marks)

- (b) Briefly describe the sales mix contribution variance and the sales quantity contribution variance. (2 marks)

- (c) Discuss the SALES performance of the business for the period, taking into account your calculations from part (a) AND the information provided in the scenario. (10 marks)

(20 marks)

Formulae Sheet

Learning curve

$$Y = ax^b$$

Where Y = cumulative average time per unit to produce x units

a = the time taken for the first unit of output

x = the cumulative number of units produced

b = the index of learning ($\log LR / \log 2$)

LR = the learning rate as a decimal

Demand curve

$$P = a - bQ$$

$$b = \frac{\text{change in price}}{\text{change in quantity}}$$

a = price when Q = 0

$$MR = a - 2bQ$$

End of Question Paper