

Fundamentals Level – Skills Module

Performance Management

Monday 5 December 2011

Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

ALL FIVE questions are compulsory and MUST be attempted.

Formulae Sheet is on page 6.

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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Paper

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ALL FIVE questions are compulsory and MUST be attempted

1 The Telephone Co (T Co) is a company specialising in the provision of telephone systems for commercial clients. There are two parts to the business:

- installing telephone systems in businesses, either first time installations or replacement installations;
- supporting the telephone systems with annually renewable maintenance contracts.

T Co has been approached by a potential customer, Push Co, who wants to install a telephone system in new offices it is opening. Whilst the job is not a particularly large one, T Co is hopeful of future business in the form of replacement systems and support contracts for Push Co. T Co is therefore keen to quote a competitive price for the job. The following information should be considered:

1. One of the company's salesmen has already been to visit Push Co, to give them a demonstration of the new system, together with a complimentary lunch, the costs of which totalled \$400.
2. The installation is expected to take one week to complete and would require three engineers, each of whom is paid a monthly salary of \$4,000. The engineers have just had their annually renewable contract renewed with T Co. One of the three engineers has spare capacity to complete the work, but the other two would have to be moved from contract X in order to complete this one. Contract X generates a contribution of \$5 per engineer hour. There are no other engineers available to continue with Contract X if these two engineers are taken off the job. It would mean that T Co would miss its contractual completion deadline on Contract X by one week. As a result, T Co would have to pay a one-off penalty of \$500. Since there is no other work scheduled for their engineers in one week's time, it will not be a problem for them to complete Contract X at this point.
3. T Co's technical advisor would also need to dedicate eight hours of his time to the job. He is working at full capacity, so he would have to work overtime in order to do this. He is paid an hourly rate of \$40 and is paid for all overtime at a premium of 50% above his usual hourly rate.
4. Two visits would need to be made by the site inspector to approve the completed work. He is an independent contractor who is not employed by T Co, and charges Push Co directly for the work. His cost is \$200 for each visit made.
5. T Co's system trainer would need to spend one day at Push Co delivering training. He is paid a monthly salary of \$1,500 but also receives commission of \$125 for each day spent delivering training at a client's site.
6. 120 telephone handsets would need to be supplied to Push Co. The current cost of these is \$18.20 each, although T Co already has 80 handsets in inventory. These were bought at a price of \$16.80 each. The handsets are the most popular model on the market and frequently requested by T Co's customers.
7. Push Co would also need a computerised control system called 'Swipe 2'. The current market price of Swipe 2 is \$10,800, although T Co has an older version of the system, 'Swipe 1', in inventory, which could be modified at a cost of \$4,600. T Co paid \$5,400 for Swipe 1 when it ordered it in error two months ago and has no other use for it. The current market price of Swipe 1 is \$5,450, although if T Co tried to sell the one they have, it would be deemed to be 'used' and therefore only worth \$3,000.
8. 1,000 metres of cable would be required to wire up the system. The cable is used frequently by T Co and it has 200 metres in inventory, which cost \$1.20 per metre. The current market price for the cable is \$1.30 per metre.
9. You should assume that there are four weeks in each month and that the standard working week is 40 hours long.

Required:

- (a) **Prepare a cost statement, using relevant costing principles, showing the minimum cost that T Co should charge for the contract. Make DETAILED notes showing how each cost has been arrived at and EXPLAINING why each of the costs above has been included or excluded from your cost statement.** (14 marks)
- (b) **Explain the relevant costing principles used in part (a) and explain the implications of the minimum price that has been calculated in relation to the final price agreed with Push Co.** (6 marks)

(20 marks)

- 2 Bath Co is a company specialising in the manufacture and sale of baths. Each bath consists of a main unit plus a set of bath fittings. The company is split into two divisions, A and B. Division A manufactures the bath and Division B manufactures sets of bath fittings. Currently, all of Division A's sales are made externally. Division B, however, sells to Division A as well as to external customers. Both of the divisions are profit centres.

The following data is available for both divisions:

Division A

| | |
|--|-------------|
| Current selling price for each bath | \$450 |
| Costs per bath: | |
| Fittings from Division B | \$75 |
| Other materials from external suppliers | \$200 |
| Labour costs | \$45 |
| Annual fixed overheads | \$7,440,000 |
| Annual production and sales of baths (units) | 80,000 |
| Maximum annual market demand for baths (units) | 80,000 |

Division B

| | |
|--|-------------|
| Current external selling price per set of fittings | \$80 |
| Current price for sales to Division A | \$75 |
| Costs per set of fittings: | |
| Materials | \$5 |
| Labour costs | \$15 |
| Annual fixed overheads | \$4,400,000 |
| Maximum annual production and sales of sets of fittings (units) (including internal and external sales) | 200,000 |
| Maximum annual external demand for sets of fittings (units) | 180,000 |
| Maximum annual internal demand for sets of fittings (units) | 80,000 |

The transfer price charged by Division B to Division A was negotiated some years ago between the previous divisional managers, who have now both been replaced by new managers. Head Office only allows Division A to purchase its fittings from Division B, although the new manager of Division A believes that he could obtain fittings of the same quality and appearance for \$65 per set, if he was given the autonomy to purchase from outside the company. Division B makes no cost savings from supplying internally to Division A rather than selling externally.

Required:

- (a) **Under the current transfer pricing system, prepare a profit statement showing the profit for each of the divisions and for Bath Co as a whole. Your sales and costs figures should be split into external sales and inter-divisional transfers, where appropriate.** (6 marks)

- (b) Head Office is considering changing the transfer pricing policy to ensure maximisation of company profits without demotivating either of the divisional managers. Division A will be given autonomy to buy from external suppliers and Division B to supply external customers in priority to supplying to Division A.

Calculate the maximum profit that could be earned by Bath Co if transfer pricing is optimised. (8 marks)

- (c) **Discuss the issues of encouraging divisional managers to take decisions in the interests of the company as a whole, where transfer pricing is used. Provide a reasoned recommendation of a policy Bath Co should adopt.** (6 marks)

(20 marks)

- 3 You have recently been appointed as an assistant management accountant in a large company, PC Co. When you meet the production manager, you overhear him speaking to one of his staff, saying:

'Budgeting is a waste of time. I don't see the point of it. It tells us what we can't afford but it doesn't keep us from buying it. It simply makes us invent new ways of manipulating figures. If all levels of management aren't involved in the setting of the budget, they might as well not bother preparing one.'

Required:

(a) Identify and explain SIX objectives of a budgetary control system. (9 marks)

(b) Discuss the concept of a participative style of budgeting in terms of the six objectives identified in part (a). (11 marks)

(20 marks)

- 4 Fit Co specialises in the manufacture of a small range of hi-tech products for the fitness market. They are currently considering the development of a new type of fitness monitor, which would be the first of its kind in the market. It would take one year to develop, with sales then commencing at the beginning of the second year. The product is expected to have a life cycle of two years, before it is replaced with a technologically superior product. The following cost estimates have been made.

| | Year 1 | Year 2 | Year 3 |
|--------------------------------|-------------|-------------|-------------|
| Units manufactured and sold | | 100,000 | 200,000 |
| Research and development costs | \$160,000 | | |
| Product design costs | \$800,000 | | |
| Marketing costs | \$1,200,000 | \$1,000,000 | \$1,750,000 |
| Manufacturing costs: | | | |
| Variable cost per unit | | \$40 | \$42 |
| Fixed production costs | | \$650,000 | \$1,290,000 |
| Distribution costs: | | | |
| Variable cost per unit | | \$4 | \$4.50 |
| Fixed distribution costs | | \$120,000 | \$120,000 |
| Selling costs: | | | |
| Variable cost per unit | | \$3 | \$3.20 |
| Fixed selling costs | | \$180,000 | \$180,000 |
| Administration costs | \$200,000 | \$900,000 | \$1,500,000 |

Note: You should ignore the time value of money.

Required:

(a) Calculate the life cycle cost per unit. (6 marks)

- (b) After preparing the cost estimates above, the company realises that it has not taken into account the effect of the learning curve on the production process. The variable manufacturing cost per unit above, of \$40 in year 2 and \$42 in year 3, includes a cost for 0.5 hours of labour. The remainder of the variable manufacturing cost is not driven by labour hours. The year 2 cost per hour for labour is \$24 and the year 3 cost is \$26 per hour. Subsequently, it has now been estimated that, although the first unit is expected to take 0.5 hours, a learning curve of 95% is expected to occur until the 100th unit has been completed.

Calculate the revised life cycle cost per unit, taking into account the effect of the learning curve.

Note: the value of the learning co-efficient, b, is -0.0740005 . (10 marks)

(c) Discuss the benefits of life cycle costing. (4 marks)

(20 marks)

- 5 Choc Co is a company which manufactures and sells three types of biscuits in packets. One of them is called 'Ooze' and contains three types of sweeteners: honey, sugar and syrup. The standard materials usage and cost for one unit of 'Ooze' (one packet) is as follows:

| | | \$ |
|-------|------------------------------|------|
| Honey | 20 grams at \$0.02 per gram | 0.40 |
| Sugar | 15 grams at \$0.03 per gram | 0.45 |
| Syrup | 10 grams at \$0.025 per gram | 0.25 |
| | | 1.10 |

In the three months ended 30 November 2011, Choc Co produced 101,000 units of 'Ooze' using 2,200 kg of honey, 1,400 kg of sugar and 1,050 kg of syrup. Note: there are 1,000 grams in a kilogram (kg).

Choc Co has used activity-based costing to allocate its overheads for a number of years. One of its main overheads is machine set-up costs. In the three months ended 30 November 2011, the following information was available in relation to set-up costs:

Budget

| | |
|--------------------------------|----------|
| Total number of units produced | 264,000 |
| Total number of set ups | 330 |
| Total set-up costs | \$52,800 |

Actual

| | |
|--------------------------------|----------|
| Total number of units produced | 320,000 |
| Total number of set ups | 360 |
| Total set-up costs | \$60,000 |

Required:

(a) Calculate the following variances for materials in Ooze:

- (i) **Total materials usage variance;** (4 marks)
- (ii) **Total materials mix variance;** (4 marks)
- (iii) **Total materials quantity (yield) variance.** (4 marks)

(b) Calculate the following activity-based variances in relation to the set-up cost of the machines:

- (i) **The expenditure variance;** (3 marks)
- (ii) **The efficiency variance.** (3 marks)

(c) Briefly outline the steps involved in allocating overheads using activity based costing. (2 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

Regression analysis

$$y = a + bx$$

$$b = \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - (\sum x)^2}$$

$$a = \frac{\sum y}{n} - \frac{b\sum x}{n}$$

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

Demand curve

$$P = a - bQ$$

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

$$a = \text{price when } Q = 0$$

$$MR = a - 2bQ$$

End of Question Paper