

Fundamentals Level – Skills Module

# Performance Management

Monday 2 December 2013



**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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Paper

**ACCA**

**ALL FIVE questions are compulsory and MUST be attempted**

- 1 Process Co has two divisions, A and B. Division A produces three types of chemicals: products L, M and S, using a common process. Each of the products can either be sold by Division A to the external market at split-off point (after the common process is complete) or can be transferred to Division B for individual further processing into products LX, MX and SX.

In November 2013, which is a typical month, Division A's output was as follows:

Product	Kg
L	1,200
M	1,400
S	1,800

The market selling prices per kg for the products, both at split-off point and after further processing, are as follows:

	\$		\$
L	5.60	LX	6.70
M	6.50	MX	7.90
S	6.10	SX	6.80

The specific costs for each of the individual further processes are:

	\$
Variable cost of \$0.50 per kg of LX	
Variable cost of \$0.70 per kg of MX	
Variable cost of \$0.80 per kg of SX	

Further processing leads to a normal loss of 5% at the beginning of the process for each of the products being processed.

**Required:**

- (a) Calculate and conclude whether any of the products should be further processed in Division B in order to optimise the profit for the company as a whole. (10 marks)
- (b) It has been suggested that Division A should transfer products L and M to Division B for further processing, in order to optimise the profit of the company as a whole. Divisions A and B are both investment centres and all transfers from Division A to Division B would be made using the actual marginal cost. As a result, if Division A were to make the transfers as suggested, their divisional profits would be much lower than if it were to sell both products externally at split-off point. Division B's profits, however, would be much higher.

**Required:**

**Discuss the issues arising from this suggested approach to transfer pricing.** (5 marks)

- (c) Process Co is becoming increasingly concerned that environmental costs may be increasing within the company. However, the company has not yet developed a structured way for accounting for these costs. It has heard of a number of different management accounting techniques which can be used to account for environmental costs, including 'input/output analysis', 'flow cost accounting', 'environmental activity-based costing' and 'life cycle costing'.

**Required:**

**Briefly describe TWO of these techniques in the context of environmental management accounting.** (5 marks)

**(20 marks)**

- 2 Solar Systems Co (S Co) makes two types of solar panels at its manufacturing plant: large panels for commercial customers and small panels for domestic customers. All panels are produced using the same materials, machinery and a skilled labour force. Production takes place for five days per week, from 7 am until 8 pm (13 hours), 50 weeks of the year. Each panel has to be cut, moulded and then assembled using a cutting machine (Machine C), a moulding machine (Machine M) and an assembly machine (Machine A).

As part of a government scheme to increase renewable energy sources, S Co has guaranteed not to increase the price of small or large panels for the next three years. It has also agreed to supply a minimum of 1,000 small panels each year to domestic customers for this three-year period.

Due to poor productivity levels, late orders and declining profits over recent years, the finance director has suggested the introduction of throughput accounting within the organisation, together with a 'Just in Time' system of production. Material costs and selling prices for each type of panel are shown below.

	Large panels	Small panels
	\$	\$
Selling price per unit	12,600	3,800
Material costs per unit	4,300	1,160

Total factory costs, which include the cost of labour and all factory overheads, are \$12 million each year at the plant.

Out of the 13 hours available for production each day, workers take a one hour lunch break. For the remaining 12 hours, Machine C is utilised 85% of the time and Machines M and A are utilised 90% of the time. The unproductive time arises either as a result of routine maintenance or because of staff absenteeism, as each machine needs to be manned by skilled workers in order for the machine to run. The skilled workers are currently only trained to work on one type of machine each. Maintenance work is carried out by external contractors who provide a round the clock service (that is, they are available 24 hours a day, seven days a week), should it be required.

The following information is available for Machine M, which has been identified as the bottleneck resource:

	Large panels	Small panels
	Hours per unit	Hours per unit
Machine M	1.4	0.6

There is currently plenty of spare capacity on Machines C and A. Maximum annual demand for large panels and small panels is 1,800 units and 1,700 units respectively.

**Required:**

- (a) Calculate the throughput accounting ratio for large panels and for small panels and explain what they indicate to S Co about production of large and small panels. (9 marks)
- (b) Assume that your calculations in part (a) have shown that large panels have a higher throughput accounting ratio than small panels.

**Required:**

Using throughput accounting, prepare calculations to determine the optimum production mix and maximum profit of S Co for the next year. (5 marks)

- (c) Suggest and discuss THREE ways in which S Co could try to increase its production capacity and hence increase throughput in the next year without making any additional investment in machinery. (6 marks)

**(20 marks)**

- 3 Mic Co produces microphones for mobile phones and operates a standard costing system. Before production commenced, the standard labour time per batch for its latest microphone was estimated to be 200 hours. The standard labour cost per hour is \$12 and resource allocation and cost data were therefore initially prepared on this basis.

Production of the microphone started in July and the number of batches assembled and sold each month was as follows:

Month	No of batches assembled and sold
July	1
August	1
September	2
October	4
November	8

The first batch took 200 hours to make, as anticipated, but, during the first four months of production, a learning effect of 88% was observed, although this finished at the end of October. The learning formula is shown on the formula sheet and at the 88% learning rate the value of b is  $-0.1844245$ .

Mic Co uses 'cost plus' pricing to establish selling prices for all its products. Sales of its new microphone in the first five months have been disappointing. The sales manager has blamed the production department for getting the labour cost so wrong, as this, in turn, caused the price to be too high. The production manager has disclaimed all responsibility, saying that, 'as usual, the managing director prepared the budgets alone and didn't consult me and, had he bothered to do so, I would have told him that a learning curve was expected.'

**Required:**

- (a) Calculate the actual total monthly labour costs for producing the microphones for each of the five months from July to November. (9 marks)
- (b) Discuss the implications of the learning effect coming to an end for Mic Co, with regard to costing, budgeting and production. (4 marks)
- (c) Discuss the potential advantages and disadvantages of involving senior staff at Mic Co in the budget setting process, rather than the managing director simply imposing the budgets on them. (7 marks)

**(20 marks)**

- 4 Protect Against Fire Co (PAF Co) manufactures and sells fire safety equipment and also provides fire risk assessments and fire safety courses to businesses. It has been trading for many years in the country of Calana, where it is the market leader.

Five years ago, the directors of PAF Co established a similar operation in its neighbouring country, Sista, renting business premises at various locations across the country. The fire safety market in Sista has always been dominated by two other companies, and when PAF Co opened the Sista division, its plan was to become market leader there within five years. Both the Calana division (Division C) and the Sista division (Division S) usually restrict themselves to a marketing budget of \$0.5 million per annum but in 2013, Division S launched a \$2m advertising campaign in a final push to increase market share. It also left its prices for products and services unchanged in 2013 rather than increasing them in line with its competitors.

Although the populations of both countries are similar, geographically, the country of Sista is twice as large as Calana and its customers are equally spread across the country. The products and services offered by the two divisions to their customers require skilled staff, demand for which is particularly high in Sista. Following the appointment of a new government in Sista at the end of 2012, stricter fire safety regulations were immediately introduced for all companies. At the same time, the government introduced a substantial tax on business property rents which landlords passed on to their tenants.

International shortages of fuel have led to a 20% increase in fuel prices in both countries in the last year.

Summary statements of profit or loss for the two divisions for the two years ended 30 November 2012 and 30 November 2013 are shown below.

	Division S 2013 \$'000	Division S 2012 \$'000	Division C 2013 \$'000	Division C 2012 \$'000
Revenue	38,845	26,937	44,065	40,359
Material costs	(3,509)	(2,580)	(4,221)	(3,385)
Payroll costs	(10,260)	(6,030)	(8,820)	(7,700)
Property costs	(3,200)	(1,800)	(2,450)	(2,320)
Gross profit	21,876	16,527	28,574	26,954
Distribution and marketing costs	(10,522)	(7,602)	(7,098)	(5,998)
Administrative overheads	(7,024)	(6,598)	(12,012)	(11,974)
Operating profit	4,330	2,327	9,464	8,982
Employee numbers	380	241	420	385
Market share	30%	25%	55%	52%

**Required:**

Using all the information above, assess the financial performance of Division S in the year ended 30 November 2013. State clearly where further information might be required in order to make more reasoned conclusions about the division's performance.

Note: Up to 7 marks are available for calculations.

(20 marks)

- 5 Bedco manufactures bed sheets and pillowcases which it supplies to a major hotel chain. It uses a just-in-time system and holds no inventories.

The standard cost for the cotton which is used to make the bed sheets and pillowcases is \$5 per m<sup>2</sup>. Each bed sheet uses 2 m<sup>2</sup> of cotton and each pillowcase uses 0.5 m<sup>2</sup>. Production levels for bed sheets and pillowcases for November were as follows:

	Budgeted production levels (units)	Actual production levels (units)
Bed sheets	120,000	120,000
Pillowcases	190,000	180,000

The actual cost of the cotton in November was \$5.80 per m<sup>2</sup>. 248,000 m<sup>2</sup> of cotton was used to make the bed sheets and 95,000 m<sup>2</sup> was used to make the pillowcases.

The world commodity prices for cotton increased by 20% in the month of November. At the beginning of the month, the hotel chain made an unexpected request for an immediate design change to the pillowcases. The new design required 10% more cotton than previously. It also resulted in production delays and therefore a shortfall in production of 10,000 pillowcases in total that month.

The production manager at Bedco is responsible for all buying and any production issues which occur, although he is not responsible for the setting of standard costs.

**Required:**

- (a) Calculate the following variances for the month of November, for both bed sheets and pillow cases, and in total:

- (i) Material price planning variance; (3 marks)
- (ii) Material price operational variance; (3 marks)
- (iii) Material usage planning variance; (3 marks)
- (iv) Material usage operational variance. (3 marks)

- (b) Assess the performance of the production manager for the month of November. (8 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**