

P2 – Performance Management September 2012 examination

Examiner's Answers

Note: *Some of the answers that follow are fuller and more comprehensive than would be expected from a well-prepared candidate. They have been written in this way to aid teaching, study and revision for tutors and candidates alike.*

These Examiner's answers should be reviewed alongside the question paper for this examination which is now available on the CIMA website at www.cimaglobal.com/p2papers

The Post Exam Guide for this examination, which includes the marking guide for each question, will be published on the CIMA website by early October at www.cimaglobal.com/P2PEGS

SECTION A

Answer to Question One

Rationale

The question examines candidates' knowledge and understanding of the learning curve and its application with a simple scenario. The learning outcome tested is B1 (e) *apply learning curves to estimated time and cost for new products and services.*

Suggested Approach

Carefully read the data provided and recognise that the four figures required are simply a doubling of the time for the first batch. By use of the simpler doubling approach, or by use of the more complex learning curve formula, calculate the average time per batch for all 4 levels of production and multiply the resultant figures by the number of batches.

Part (b) involved using the answer from part (a) to calculate the approximate break-even level of sales of the product. (Only an approximate figure could be calculated as the direct labour cost per unit constantly reduces whilst a learning curve is in existence.)

Part (c) required understanding of the workings of the learning curve in that labour cost per unit will increase (and the break-even point will also increase) if the rate of learning moves from 80% to 90%.

(a)

No of units	No of batches	Average direct labour cost	Total direct labour cost	
100	1	\$6,000	\$6,000	
200	2	\$4,800	\$9,600	
400	4	\$3,840	\$15,360	
800	8	\$3,072	\$24,576	Ans (i)
1,600	16	\$2,457.60	\$39,321.60	Ans (ii)
3,200	32	\$1,966.08	\$62,914.56	Ans (iii)
6,400	64	\$1,572.86	\$100,663.30	Ans (iv)

(b)

No of units	3,200	6,400
	\$	\$
Sales	224,000	448,000
Direct material and other non-labour related costs	144,000	288,000
Direct labour cost	62,914.56	100,663.30
Fixed cost	60,000	60,000
Total costs	266,914.56	448,663.30
(Loss)	(42,914.56)	(663.30)

As can be seen from the table above the breakeven point seems to be slightly above 6,400 units.

- (c) If the rate of learning were to be 90% instead of 80% this means that the labour time (and hence labour cost) per unit would reduce more slowly. Assuming that all other data remained unchanged then costs would be higher and hence the break-even level of sales would also be higher.

Answer to Question Two

Rationale

The question examines candidates' knowledge of the Balanced Scorecard in the context of a passenger transport company. The learning outcome tested in C3 (c) *compare and contrast traditional approaches to budgeting with recommendations based on the balanced scorecard.*

Suggested Approach

Carefully read the scenario provided to identify relevant information. Use the information provided to explain the balanced scorecard and how it could be used by the transport company, including an explanation of two measures, from different perspectives, that the company would use.

- (a) The Balanced Scorecard can be used to measure the performance of an organisation. Traditionally, performance was only measured in financial terms, but it is now recognised that financial measures alone are not enough; hence the development of the Balanced Scorecard.

There are different variations of the Balanced Scorecard that may be used since it facilitates internal performance measurement and thus is designed by each organisation to meet their requirements. However, most Balanced Scorecards contain four perspectives. These are: Customer perspective; Internal Business perspective; Innovation & Learning perspective and Financial perspective. Each of these perspectives represents a different but equally important viewpoint on the operation of the organisation. Each of these contribute to the success of the organisation, in fact many argue that success in the first three of these perspectives leads to financial success that can be measured by an increase in profits. By measuring its performance from all of these different perspectives CX can identify the things that it does well and the things that it needs to improve if it is to improve its performance and hence its profits. For example CX may discover that it needs to change the frequency of its bus services at certain times of the day; or on some of its routes. This understanding of cause and effect can lead CX towards improved profits and long term success.

- (b) CX could use the Balanced Scorecard to measure the performance of each of its routes by recognising that there are a number of different measures that can be used to measure performance.

For example CX could measure the capacity utilisation of each of its buses at different times of the day and on different days of the week. This could be a measure of both customer satisfaction (customer perspective) (because if the buses are too full passengers may have to stand or wait for the next service) or of the company's efficiency (internal business perspective) in operating the appropriate frequency of buses to match customer demand.

Another measure that CX could use would be the number of breakdowns of buses. This would be a measure of CX's internal business processes to ensure that preventative maintenance avoids unnecessary breakdowns.

Answer to Question Three

Rationale

In part (a) the question tests learning outcome C1 (b) *explain the concept of responsibility accounting and its importance in the construction of functional budgets that support the overall master budget.*

Suggested Approach

Part (a) Carefully read and understand the data provided, confirm your knowledge of budgets, standard costs and flexible budgeting and explain the links between them.

Part (b) Carefully read the question and then discuss the importance of your answer to (a), particularly how the use of planning and operational variances is important for management control.

- (a) An original budget is determined by predicting the expected level of activity and using standard costs to determine the expected variable cost for that level of activity. To this would then be added the expected fixed cost.

Standard costs are based on estimated resource requirements and the expected price of those resources for each unit. These values are then multiplied by the expected activity level to determine the expected variable cost of that level of activity.

Budgets are a statement of the total costs, revenues and resource requirements expected for the budgeted level of activity. It is this budget that is approved by the Board of Directors and used as the basis of comparison with actual results. However, it is most likely that the actual level of activity will differ from that budgeted. In such circumstances a simple comparison between the actual results and the original budget would be both meaningless and unfair because some of the costs and the revenues vary with the level of activity. In order to make a fair comparison flexible budgeting must be used.

Flexible budgeting recognises that, within the original budget, there are some costs and revenues that are affected by the level of activity (variable) and others that are not affected by activity levels (fixed). Using this analysis it is possible to produce a flexible budget showing the expected costs and revenues of the actual activity level. This can then be compared with the actual costs and the differences (variances) used as a measure of performance.

- (b) In order to fairly measure performance actual activity must be compared with the original budget to understand why the actual activity level differed from those budgeted; and actual costs and revenues should be compared with the flexible budget to fairly measure the actual costs and revenues against those expected for the actual activity achieved. Thus it is important to understand the appropriate uses of each of the original and flexed budget and how standard costs are used to compile the original budget and assist in the preparation of the flexed budget for cost comparison purposes.

Answer to Question Four

Rationale

The question examines candidates' knowledge of quality costs and the reporting of quality costs. The learning outcome tested is B1 (d) *prepare cost of quality reports*.

Suggested Approach

Part (a) carefully read the scenario to identify the relevant data. Identify which category of quality cost each item should be placed. Calculate the correct number of faulty and returned units and evaluate these numbers. Present the numbers calculated in a traditional quality cost report.

Parts (b) compare the new total quality cost figure with the quality cost figure in the question i.e. before the proposed changes had been evaluated. Recommend if the company should accept the proposal both from a financial and a non-financial perspective.

(a)

Statement of expected quality costs	\$
Prevention costs	500,000
Appraisal costs	30,000
External failure costs (note 1)	286,880
Internal failure costs (note 2)	<u>332,045</u>
Total	<u>1,148,925</u>

Note 1

Customer demand = 24,000 units, however 13% of the units delivered are rejected by customers so 24,000 units = 87% of the units despatched to customers.

The number of units despatched to customers is therefore $24,000 / 0.87 = 27,586$ units. This means that 3,586 units have to be replaced. The variable cost of producing these units is \$75 per unit and there is a redelivery cost of \$5 per unit so the total variable cost is $3,586 \times \$80 = \$286,880$

Note 2

Since 10% of the items manufactured are discovered to be faulty before they are despatched then 27,586 units represents 90% of the items tested before despatch so the initial production = $27,586 / 0.9 = 30,651$ units. Thus 3,065 units are produced and rejected. These have a variable production cost of \$75 per unit = \$229,875.

The cost of the components included in the units produced is $30,651 \text{ units} \times \$30 = \$919,530$

Since 10% of the components bought are damaged prior to their use then the cost of these damaged components = $\$919,530 \times 10/90 = \$102,170$

Thus the total Internal Failure Cost = $\$229,875 + \$102,170 = \$332,045$

(b) On purely financial grounds the company should not accept the proposal because there is an increase of \$163,040 in quality costs. However there may be other factors to consider as the company may enhance its reputation as a company that cares about quality products and this may increase the company's market share. On balance the company should accept the proposal to improve its long-term performance.

Answer to Question Five

Rationale

This question examines candidates' knowledge of the product life cycle and how unit selling prices are likely to change as the product moves through the product life cycle. The learning outcome examined is B1(i) *discuss the concept of life cycle costing and how life cycle costs interact with marketing strategies at each stage of the life cycle.*

Suggested Approach

Carefully read the scenario and understand the pricing strategy chosen for this product. This company has elected to adopt a market skimming policy which implies that the product is unique and will initially be made in small volumes.

Describe the likely effects on unit selling prices (gradual reductions) and why these would be expected.

The company has just launched an innovative new product using a market skimming pricing policy. This means that the selling price of the product is high and thus the product is only available to a small segment of the market that can afford to pay the high price for something that is unique and innovative.

There are four stages to the product life cycle: Introduction, Growth, Maturity and Decline.

In the Introduction stage the product is unique and hence the company can charge a high price. However the company's competitors will buy the product and carry out reverse engineering to see how it works and how they can develop their own similar, but different product. The competitors will be particularly attracted by the high unit selling price which should result in high unit profit. However, the company will seek to avoid this competition by lowering its selling price towards the end of the Introduction stage to deter competitors from entering the market and also to make its product more affordable to the wider market.

In the Growth stage the company will maintain its lower selling price to continue to attract new purchasers of the product. If competitors have entered the market there may need to be further reductions in selling price to maintain the growth unless the original product can be differentiated in other ways.

In the Maturity stage the selling price of the product is likely to be stable but may be reduced still further, possibly by short term one-off offers or discounts for multiple purchases so that the product continues to be financially viable for as long as possible.

In the Decline stage the product may continue to be sold provided its margin is positive. If it is not then the product may be bundled with other products or sold for less than its unit cost in order to clear the company's inventory of what has become an obsolete product.

SECTION B

Answer to Question Six

Rationale

The question examines candidates' knowledge and understanding of relevant costs in the context of a contract for a new customer. The learning outcomes tested are (part a) A1 (c) *discuss the particular issues that arise in pricing decisions and the conflict between 'marginal cost' principles and the need for full recovery of all costs*; (part b) A1(a), *discuss the principles of decision-making including the identification of relevant cash flows and their use alongside non-quantifiable factors in making rounded judgments*.

Suggested Approach

Carefully read the question to identify the resources needed, and their relevant costs, to satisfy the contract.

Prepare a statement that adopts relevant costing principles to show the relevant costs of the contract. Explain each relevant cost that has been included in the statement and explain why any values you have excluded are not relevant.

Part (b) discuss problems that could possible arise as a result of setting the price for the contract using a relevant costing approach.

(a)

	Note	\$
Material D	1	1,520
Components	2	49,920
Direct labour	3	11,050
Specialist machine	4	10,000
Machine operating costs	5	12,000
Supervision	6	500
Development time	7	NIL
General fixed overhead	8	NIL
Total relevant cost		84,990

Notes:

1. Material D is in regular use by CDF and must be replaced. Consequently its relevant value is its replacement cost. The historical cost is not relevant because it is a past cost and the resale value is not relevant because CDF is not going to sell it because the material is in regular use.
2. CDF could obtain the components externally at a cost of \$15 each which totals \$60,000 or they could be obtained from RDF. The transfer price from RDF is $(\$8 + 30\%) + 20\% = \12.48 per component. Thus the internal cost to CDF is $\$12.48 \times 4000 = \$49,920$. The opportunity cost to RDF is not relevant to CDF because from CDF's viewpoint the relevant cost is the price they have to pay to their supplier. Since this is lower than the external buying price the relevant cost for the contract is \$49,920.
3. The employees in department W will continue to be paid for their full hours regardless of how the work is completed because they are working at 100% capacity. Therefore their cost is irrelevant. The choice is between using employees from department Z at a cost of \$15 per hour (total \$12,750) or engaging sub-contract workers at a cost of \$13 per hour (total \$11,050). Since the use of sub-contract employees is the cheaper option this is the relevant cost.

4. CDF has a number of options: (a) If the machine were to be hired it would have a cost of \$15,000; (b) if the machine were bought and then sold at the end of the work it would have a net cost of \$20,000; or (c) if the machine were bought and then modified to avoid the need to buy the other machine it would have a net cost of \$10,000 (\$50,000 plus \$5,000 modifications less \$45,000 cost of another machine). Thus the most economic approach is buy the machine and then modify it so the relevant cost is \$10,000.
5. The machine operating costs are future costs of doing the work and therefore are relevant.
6. The supervisor's salary is irrelevant, but the bonus needs to be included because it is dependent on this work and therefore is relevant.
7. The development time has already been incurred. Therefore it is a past cost and not relevant.
8. General fixed overhead costs and their absorption are not relevant because they will be incurred whether the work goes ahead or not. Depreciation is also not relevant because it is an accounting entry based on the historical purchase of assets. It is not affected by the work being considered.

(b) Two main issues arise when pricing work based on relevant costs:

- Profit reporting; and
- Pricing of future work.

With regard to profit reporting, the decision as to whether to proceed with the work will have been based on the use of relevant costs, but the routine reporting of the profit from the work will be based on the company's normal accounting system. Since this system will be based on total cost, it is probable that the costs of the work reported will be greater than its relevant cost. Consequently the amount of profit reported to have been made on this order will be lower than expected and may even be a loss. This may cause difficulties for the manager who accepted the work as an explanation will be required of the reasons why there is such a difference in profit.

With regard to the pricing of future work the difficulty lies in increasing the price for similar items for the same customer in future. Once a price is set, customers tend to expect that any future items will be priced similarly. However, where a special price has been offered based on relevant cost because of the existence of spare capacity the supplier would not be able to continue to price on that basis as it does not recover its long term total costs. There may also be difficulties created by this method of pricing as other customers are being charged on a full cost basis and if they were to discover that a lower price was offered to a new customer they would feel that their loyalty was being penalised.

Answer to Question Seven

Rationale

The question examines candidates' understanding of performance ratios, investment appraisal and break-even analysis.

The learning outcomes tested are; part (a) and part (b) D2(c) *discuss alternative measures of performance for responsibility centres*, Part (c) A2(b) *interpret variable/fixed cost analysis in multiple product contexts to break even analysis and product mix decision making, including circumstances where there are multiple constraints and linear programming methods are needed to identify optimal solution*.

Suggested Approach

Part (a) establish the age of the assets of KL, and re-calculate the depreciation of HJ using the depreciation policy used by KL. Re draft the profit and loss and balance sheet extract using the new depreciation figure, and re-calculate the ratios requested.

Parts (b) calculate for KL only, and using the new figures from part (a) the break even sales value in 2013. Re-calculation of the fixed cost being the most important aspect of this part of the question.

Parts (c) complete an investment appraisal summary to establish whether or not KL should replace its existing non-current asset. (c)(ii) discuss, with supporting figures, the effect on the breakeven sales value in 2013.

(a) An analysis of KL's non-current assets shows that they are four years old:

	\$000	
Cost	1,800	
Depreciation @ 25% in year 1	<u>450</u>	
	1,350	
Depreciation @ 25% in year 2	<u>337</u>	
	1,013	
Depreciation @ 25% in year 3	<u>253</u>	
	760	
Depreciation @ 25% in year 4	<u>190</u>	
	570	as shown in the question

If the non-current assets of HJ are depreciated at the rate of 25% on a reducing balance basis (i.e. the same method as is used by KL) and its assets aged forward to year 4 then its depreciation charge for the year will be \$211,000 (see below) thus increasing its profits to \$469,000; and its non-current asset value will reduce by \$967,000 so that its capital employed is \$833,000.

As a result of these changes to HJ's results its revised ratios (and the original ratios of KL for ease of comparison) would be:

		HJ
ROCE	469 / 833	56.30%
Operating Profit margin	469 / 1,600	29.31%
Asset Turnover	1,600 / 833	1.92

<i>HJ depreciation</i>	<i>\$000</i>
Original cost	2,000
Depreciation @ 25% in year 1	<u>500</u>
	1,500
Depreciation @ 25% in year 2	<u>375</u>
	1,125
Depreciation @ 25% in year 3	<u>281</u>
	844
Depreciation @ 25% in year 4	<u>211</u>
	<u>633</u>

(b) KL's contribution to sales ratio is $\$590,000 / \$990,000 = 59.6\%$

KL's fixed costs (excluding depreciation) are \$280,000 (\$200,000 + \$80,000).

If KL continues to use the same method of depreciation in 2012 and 2013 then its depreciation charge in 2012 will be 25% of \$570,000 = \$142,500; and in 2013 it will be 25% of \$427,500 (\$570,000 - \$142,500) = \$106,875.

Thus for 2013 KL's fixed costs including depreciation are \$386,875 (\$280,000 + \$106,875)

The break-even sales value is therefore: $\$386,875 / 0.596 = \$649,119$.

(c)

(i) The effect of the investment in the new equipment is to change the cost structure.

Fixed costs (excluding depreciation) are to increase by 30% this equals

$$(\$390,000 - \$190,000) \times 30\% = \$60,000$$

Variable costs are to decrease by 20% this equals

$$\$400,000 \times 20\% = \$80,000$$

Thus there is a net cash inflow from cost savings of \$20,000 per annum

The present value of these future cost savings when discounted at 10% per annum for 5 years is

$$\$20,000 \times 3.791 = \$75,820$$

The residual value of the equipment in five year's time is \$285,000, this has a present value of $\$285,000 \times 0.621 = \$176,985$

Since the capital cost is \$1.2m less the trade in of \$427,500 there is a negative NPV of \$519,695.

As a result KL would not wish to replace its equipment.

(ii) If KL replaces its non-current assets with new equipment that has a cost of \$1.2m then this will also cause a significant increase in the depreciation charge for the year. The depreciation charge for 2013 would be \$300,000 whereas the depreciation on the existing equipment would only be \$106,875. This is an increase of \$193,125. In addition the other fixed costs are expected to increase by \$60,000 (see(c) (i)).

The fixed costs for 2013 will now be $\$200,000 + 80,000 + 60,000 + 300,000 = \$640,000$.

Variable production costs are expected to reduce by 20% (see (b) above) which will improve the contribution to sales ratio from 59.6% (590/990) to 67.7% (670/990).

If the investment goes ahead the breakeven sales value for 2013 will be $\$640,000 / .677 = \$945,668$

Without the investment the breakeven sales value is $\$649,119$ (see (b) above).

This means that KL would need to increase its sales by 45.7% in order to break-even.
