

Management Accounting Level 3



Model Answers

Series 2 2007 (Code 3023)

Management Accounting Level 3

Series 2 2007

How to use this booklet

Model Answers have been developed by Education Development International plc (EDI) to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCI International Qualifications. The contents of this booklet are divided into 3 elements:

- (1) Questions – reproduced from the printed examination paper
- (2) Model Answers – summary of the main points that the Chief Examiner expected to see in the answers to each question in the examination paper, plus a fully worked example or sample answer (where applicable)
- (3) Helpful Hints – where appropriate, additional guidance relating to individual questions or to examination technique

Teachers and candidates should find this booklet an invaluable teaching tool and an aid to success.

EDI provides Model Answers to help candidates gain a general understanding of the standard required. The general standard of model answers is one that would achieve a Distinction grade. EDI accepts that candidates may offer other answers that could be equally valid.

© Education Development International plc 2007

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the Publisher. The book may not be lent, resold, hired out or otherwise disposed of by way of trade in any form of binding or cover, other than that in which it is published, without the prior consent of the Publisher.

QUESTION 1

A company is deciding whether to invest in new machinery to enable the production and launch of a new product.

REQUIRED

- (a) Describe briefly the steps that you would take to carry out a discounted cash flow appraisal of the financial viability of the investment.
(8 marks)
- (b) Explain why companies calculate a weighted average cost of capital for use in capital investment project appraisal.
(6 marks)
- (c) Describe how risk may be incorporated into the capital investment project appraisal process.
(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

- (a) Steps in the discounted cash flow investment appraisal process:
- establish the project capital investment costs and the expected project life;
 - collect the forecast cash flow information of incremental operating costs and new product revenues, normally by year, over the life of the project;
 - estimate the impact that the new product will have on cash flows being generated by existing products;
 - estimate the initial investment required in working capital and any changes over the project life;
 - estimate the terminal value of any project assets at the end of the project life;
 - consider the impact of inflation on the various elements of project cash flows;
 - discount the estimated cash flows from the project at the company's cost of capital so as to calculate the net present value (NPV) of the project and/or calculate the discounted internal rate of return (IRR) of the project and compare this with the cost of capital;
 - advise on the financial viability of the investment project: accept project if NPV is positive or $IRR \% > \text{cost of capital } \%$.
- (b) Reasons for weighted average cost of capital:
- the investment finance available to, and used by, companies is made up of a mixture of shareholders' funds (equity) and long-term borrowing (debt);
 - the return on investment required to satisfy shareholders will not be the same as the interest payable on debt due to the differential risks involved;
 - for capital investment to be value creating for a company the return on investment must be sufficient to satisfy each of the different providers of investment finance.
- As a result, the cost of capital of a company is a weighted average, the weightings being based upon the proportion that each part of the capital employed bears to the whole.
- (c) Incorporation of risk into the capital investment project appraisal process may be in one or more ways:
- sensitivity analysis – the effect on project viability of a change in assumption regarding each of the key variables can be assessed;
 - range of estimates – a range of values ('high', 'low' as well as 'best estimate') can be estimated for each key variable and the return assessed at each level;
 - probability – probabilities can be attached to each range of values, enabling the 'expected value' of a project to be established;
 - adjustments to required return – the cost of capital can be varied according to the perceived risk of a project.

QUESTION 2

The following standards relate to the processing of a single raw material to produce a finished product:

| | |
|---|---------------------------------------|
| Raw material price | £4.50 per kg |
| Direct labour rate | £8.20 per hour |
| Loss of raw material weight in processing | 10% |
| Processing time | 10kg of output per direct labour hour |

24,000 kgs of the raw material, costing £109,680, were input to the production process during a period. 21,744 kgs of output was completed. There was no work-in-progress at either the beginning or the end of the period. 2,100 direct labour hours were worked at a cost of £17,178.

REQUIRED

- (a) Calculate the following total variances for the period:
- (i) direct materials (4 marks)
 - (ii) direct labour (3 marks)
- (b) Analyse each of the total variances, calculated in answer to part (a), in as much detail as possible from the information provided. (8 marks)

In some circumstances the raw material usage variance can be sub-divided into mix and yield variances.

REQUIRED

- (c) (i) What manufacturing circumstances are necessary to make the calculation of a material mix variance appropriate? (2 marks)
- (ii) State a formula for the calculation of the material mix variance. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a) Working:

| | |
|-----------------------------|--------------------|
| | £ per kg of output |
| Standard raw material cost | 5.00 (4.50 ÷ 0.9) |
| Standard direct labour cost | 0.82 (8.20 ÷ 10) |

(i) Total direct material variance:

| | | |
|-------------------------|-----------------|----------------------------|
| Actual cost | £109,680 | |
| Standard cost of output | <u>£108,720</u> | (21,744 kg @ £5.00 per kg) |
| | <u>£960</u> | Adverse |

(ii) Total direct labour variance:

| | | |
|-------------------------|----------------|----------------------------|
| Actual cost | £17,178 | |
| Standard cost of output | <u>£17,830</u> | (21,744 kg @ £0.82 per kg) |
| | <u>£652</u> | Favourable |

(b) Raw materials:

| | | |
|-----------------------------------|-----------------|----------------------------|
| Price variance | | |
| Actual cost | £109,680 | |
| Actual quantity at standard price | <u>£108,000</u> | (24,000 kg @ £4.50 per kg) |
| | <u>£1,680</u> | Adverse |

Usage variance

| | | |
|-----------------------------------|-----------------|------------|
| Actual quantity at standard price | £108,000 | |
| Standard cost of output | <u>£108,720</u> | |
| | <u>£720</u> | Favourable |

| | | |
|-----------------------------------|------------------|----------------------------------|
| or 24,000 x 0.9 = expected output | 21,600 kg | |
| - actual output | <u>21,744 kg</u> | |
| | <u>144 kg</u> | Favourable @ £5.00 per kg = £720 |

| | | |
|----------------------------------|------------------|----------------------------------|
| or 21,744 ÷ 0.9 = expected input | 24,160 kg | |
| - actual input | <u>24,000 kg</u> | |
| | <u>160 kg</u> | Favourable @ £4.50 per kg = £720 |

Direct labour:

Rate variance

| | | |
|-------------------------------|----------------|--------------------------------|
| Actual cost | £17,178 | |
| Actual hours at standard rate | <u>£17,220</u> | (2,100 hours @ £8.20 per hour) |
| | <u>£42</u> | Favourable |

Efficiency variance

| | | |
|-------------------------------|----------------|------------|
| Actual hours at standard rate | £17,220 | |
| Standard cost of output | <u>£17,830</u> | |
| | <u>£610</u> | Favourable |

| | |
|--|--|
| or 21,744 ÷ 10 = 2,174.4 standard hours | |
| - 2,100 actual hours | |
| <u>74.4</u> hours Favourable @ £8.20 per hour = £610 | |

MODEL ANSWER TO QUESTION 2 CONTINUED

- (c) (i) The circumstances necessary are where, in the manufacture of a product, it is possible to make substitutions from the standard mix of materials. The total weight of input to the product will not change but the content of individual materials may do so. It is important that any changes are within limits allowed so as not to jeopardise product quality.
- (ii) The mix variance measures the cost of any variation from the standard mix and may be calculated in two different ways. Whereas the total mix variance will always be the same whichever calculation method is applied, the mix variances for each material in the mix may be very different.

Formula 1:

(actual input quantity – standard input quantity for the output produced) of each raw material in the mix

x

(standard weighted average price per combined input unit – standard price per unit of each raw material in the mix)

Formula 2:

(actual input quantity – standard proportion of total actual raw material inputs) of each raw material in the mix

x

standard price per unit of each raw material in the mix

(NB The opening paragraph to the answer to part (c) (ii) above was not required in candidates answers and only one formula was required).

QUESTION 3

Product Z is manufactured in a continuous process. Relevant data for the period just ended is listed below:

| | |
|--------------------------|--|
| Opening work-in-progress | £2,820 (1,000 units complete as to materials: 60% complete as to conversion costs) |
| Closing work-in-progress | 1,400 units (complete as to materials: 40% complete as to conversion costs) |
| Output | 13,200 units |
| Raw materials used | £25,840 |
| Conversion costs | £21,714 |

No losses occur in the process.

The first-in, first-out (FIFO) method is used to apportion costs between periods.

REQUIRED

- (a) Calculate for the period just ended:
- (i) the equivalent units of production for each element of cost; (4 marks)
 - (ii) the production cost per equivalent unit; (3 marks)
 - (iii) the cost of the 13,200 units completed; (5 marks)
 - (iv) the cost of the closing work-in-progress. (3 marks)
- (b) Reconcile the input and output costs for the period i.e. demonstrate that the cost of opening work-in-progress + period costs = cost of output + cost of closing work-in-progress. (2 marks)

Losses occur in some manufacturing processes.

REQUIRED

- (c) Distinguish between normal and abnormal losses. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a) (i) Equivalent units of production:

| | Materials | Conversion costs |
|----------------------------|---------------------|-------------------------|
| Output | 13,200 | 13,200 |
| + Closing work-in-progress | 1,400 | 560 (1,400 x 0.4) |
| - Opening work-in-progress | 1,000 | 600 (1,000 x 0.6) |
| | <u>13,600</u> units | <u>13,160</u> units |

or:

| | | |
|--|---------------------|---------------------|
| Completion of opening work-in-progress | ---- | 400 |
| + Started & completed in period | 12,200 | 12,200 |
| + Closing work-in-progress | 1,400 | 560 |
| | <u>13,600</u> units | <u>13,160</u> units |

(ii) Cost per unit:

| | | |
|------------------|----------------|-------------------------|
| Period cost (£) | <u>25,840</u> | <u>21,714</u> |
| Equivalent units | 13,600 | 13,160 |
| | = £1.90/unit + | £1.65/unit = £3.55/unit |

(iii) Cost of output:

| | |
|---|----------------|
| Opening work-in-progress | £2,820 |
| + 12,200 units (13,200 – 1,000) x £1.90 | £23,180 |
| 12,600 units (13,200 – 600) x £1.65 | £20,790 |
| | <u>£46,790</u> |

or:

| | |
|--------------------------|----------------|
| Opening work-in-progress | £2,820 |
| + 400 units x £1.65 | £660 |
| + 12,200 units x £3.55 | £43,310 |
| | <u>£46,790</u> |

(iv) Cost of closing work-in-progress:

| | |
|---------------------|---------------|
| 1,400 units x £1.90 | £2,660 |
| 560 units x £1.65 | £924 |
| | <u>£3,584</u> |

(b) Input and output cost reconciliation:

| | |
|----------------------------|----------------|
| Opening work-in-progress | £2,820 |
| + Period costs | £47,554 |
| | <u>£50,374</u> |
| = | |
| Cost of output | £46,790 |
| + Closing work-in-progress | £3,584 |
| | <u>£50,374</u> |

(c) Normal and abnormal losses:

Normal losses are those losses that are expected to occur under efficient operating conditions. Abnormal losses are any losses that occur in a process in excess of the normal allowance.

QUESTION 4

A company can manufacture 5,000 units of its single product per period when operating at full capacity. Costs incurred in a period when working at full capacity are:

| | £000 |
|--------------------|-------------|
| Direct materials | 17.0 |
| Direct labour | 13.7 |
| Variable overheads | 5.9 |
| Fixed overheads | <u>15.3</u> |
| | <u>51.9</u> |

It can be assumed that total direct costs and total variable overheads vary in proportion to activity, and that total fixed overheads remain unchanged, over the relevant range of activity.

REQUIRED

At a selling price for the product of £11.90 per unit, and 75% capacity utilisation in a period, calculate the:

- (a) direct material cost (£ total); (2 marks)
- (b) total cost (£ per unit); (4 marks)
- (c) contribution/sales ratio (% to one decimal place); (3 marks)
- (d) margin of safety (sales units); (5 marks)
- (e) profit (£ total); (3 marks)
- (f) sales revenue required to earn a profit of £6,000. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) Direct material cost (£ total):

$$£17,000 \times 0.75 = £12,750$$

(b) Total cost (£ per unit):

| | |
|---------------|----------------------------------|
| Variable cost | £7.32 [(17.0 + 13.7 + 5.9) ÷ 5] |
| Fixed cost | <u>£4.08</u> [15.3 ÷ (5 × 0.75)] |
| | <u>£11.40</u> |

(c) Contribution/sales ratio:

$$\text{Contribution per unit} = 11.90 - 7.32 = 4.58$$

$$\text{Contribution/sales ratio} = [(4.58 \div 11.90) \times 100] = 38.5\%$$

(d) Margin of safety:

$$\text{Break-even} = (15,300 \div 4.58) = 3,341 \text{ units}$$

$$\text{Margin of safety} = [(5,000 \times 0.75) - 3,341] = 409 \text{ units}$$

(e) Profit (£ total):

$$[(5,000 \times 0.75) \times (11.90 - 11.40)] = £1,875$$

or

$$[(5,000 \times 0.75) \times 4.58] - 15,300 = £1,875$$

(f) Sales revenue required for £6,000 profit:

$$[(15,300 + 6,000) \div 0.385 \text{ rounded}] = £55,325$$

or

$$[(15,300 + 6,000) \div (4.58 \div 11.90)] = £55,343$$

QUESTION 5

A company is preparing budgets for the year ahead. The company manufactures and sells three products (Products A, B and C). Budgeted sales for the year, and expected finished goods stockholding at the beginning of the budget year, are:

| | Sales (units) | Finished goods stock (units) |
|------------------|----------------------|-------------------------------------|
| Product A | 210,000 | 9,200 |
| Product B | 320,000 | 8,200 |
| Product C | 129,000 | 7,500 |

The company plans to reduce the finished goods stockholding of each of Products A and B by 10% by the end of the budget year. The stockholding of Product C is planned to represent 1 month's sales at the end of the budget year.

The company uses five types of raw material (RM1, 2, 3, 4 and 5) in the manufacture of the three products. Standards set for the budget year are:

| | Standard price | Standard usage | | |
|------------|-----------------------|-----------------------|----------------------|----------------------|
| | (£ per kg) | in Product A | in Product B | in Product C |
| | | (kg per unit) | (kg per unit) | (kg per unit) |
| RM1 | 9.40 | 1 | 1 | 2 |
| RM2 | 12.00 | - | 1 | - |
| RM3 | 4.60 | 2 | 3 | 3 |
| RM4 | 8.30 | - | 1 | 1 |
| RM5 | 6.90 | 3 | - | 2 |

Expected stockholding of raw materials at the beginning of the budget year is:

| | kg |
|------------|-----------|
| RM1 | 42,300 |
| RM2 | 14,240 |
| RM3 | 89,750 |
| RM4 | 31,030 |
| RM5 | 28,200 |

No change is planned to the stockholding of raw materials RM2, RM3 or RM4 over the budget period. A gradual stock reduction of 20% is to be budgeted for both RM1 and RM5.

REQUIRED

- (a) Prepare the following budgets for the year:
- (i) production (units of each product); (6 marks)
 - (ii) raw material usage (kg of each raw material); (6 marks)
 - (iii) raw material purchases (kg of each raw material); (4 marks)
- (b) Calculate the average investment (£) in raw material stock during the period. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) (i) Production budget:

| | Product A (units) | Product B (units) | Product C (units) | |
|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------|
| Sales | 210,000 | 320,000 | 129,000 | |
| (Decrease)/increase in stock | (920) | (820) | 3,250 | [(129,000 ÷ 12) – 7,500] |
| Production | <u>209,080</u> | <u>319,180</u> | <u>132,250</u> | |

(ii) Material usage budget

| | RM1 kgs | RM2 kgs | RM3 kgs | RM4 kgs | RM5 kgs |
|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Product A | 209,080 | ----- | 418,160 | ----- | 627,240 |
| Product B | 319,180 | 319,180 | 957,540 | 319,180 | ----- |
| Product C | <u>264,500</u> | ----- | <u>396,750</u> | <u>132,250</u> | <u>264,500</u> |
| | <u>792,760</u> | <u>319,180</u> | <u>1,772,450</u> | <u>451,430</u> | <u>891,740</u> |

(iii) Material purchases budget:

| | RM1 kgs | RM2 kgs | RM3 kgs | RM4 kgs | RM5 kgs |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Usage | 792,760 | 319,180 | 1,772,450 | 451,430 | 891,740 |
| Decrease in stock | <u>(8,460)</u> | ----- | ----- | ----- | <u>(5,640)</u> |
| Purchases | <u>784,300</u> | <u>319,180</u> | <u>1,772,450</u> | <u>451,430</u> | <u>886,100</u> |

(b) Investment in raw material stock:

| | Av stock | Std price | Investment |
|-------------------------------|-----------------|------------------|-------------------|
| RM1 [(42,300 + 33,840) ÷ 2] = | 38,070 kgs x | £9.40/kg | £357,858 |
| RM2 | 14,240 kgs x | £12.00/kg | £170,880 |
| RM3 | 89,750 kgs x | £4.60/kg | £412,850 |
| RM4 | 31,030 kgs x | £8.30/kg | £257,549 |
| RM5 [(28,200 + 22,560) ÷ 2] = | 25,380 kgs x | £6.90/kg | <u>£175,122</u> |
| | | | <u>£1,374,259</u> |

QUESTION 6

Working capital ratios and requirements are to be calculated on the basis of the following financial statements of a trader:

Year-end Balance Sheet (extract):

| | £000 | £000 |
|-------------------------------|-------------|------------|
| Fixed assets (net book value) | | 190 |
| Net current assets: | | |
| Stock | 136 | |
| Debtors | 105 | |
| Bank | 28 | |
| Creditors | <u>(92)</u> | <u>177</u> |
| | | <u>367</u> |

Trading Statement for the year:

| | £000 |
|-----------------------|------------|
| Sales (all on credit) | 1,326 |
| Cost of sales | <u>832</u> |
| Gross profit | <u>494</u> |

Assume: 1 year = 364 days = 52 weeks

REQUIRED

- (a) Calculate the following working capital ratios:
- (i) Current; (2 marks)
 - (ii) Acid test (quick); (2 marks)
 - (iii) Debtor payment period (number of days); (3 marks)
 - (iv) Stock turnover (number of times). (3 marks)
- (b) Comment briefly on the liquidity of the business. (2 marks)
- (c) Calculate the effect of each of the following changes on each relevant balance sheet item (£ change and revised £ total):
- (i) reducing the level of stock by the equivalent of one week's sales; (4 marks)
 - (ii) increasing the period of credit granted to customers by two weeks. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 6

(a) Working capital ratios:

(i) Current = $269:92 = 2.9:1$

(ii) Acid test = $133:92 = 1.4:1$

(iii) Debtor payment period = $[(105 \div 1,326) \times 364] = 28.8$ days

(iv) Stock turnover = $832 \div 136 = 6.1$ times in the year

(b) Liquidity:

Liquidity seems good with both current assets and liquid assets covering current liabilities by more than the benchmark 2:1 and 1:1 respectively.

(c) Effect of working capital changes:

(i) Reducing the level of stock:

1 week's sales = $\pounds 832,000 \div 52$ weeks = $\pounds 16,000$ at cost
Stock would reduce by $\pounds 16,000$ to a new total of $\pounds 120,000$

(ii) Increasing the period of credit to customers:

2 week's sales = $\pounds 1,326,000 \div 52 \times 2 = \pounds 51,000$
Debtors would increase by $\pounds 51,000$ to $\pounds 156,000$