# Management Accounting
# Level 3

International Qualifications from EDI

## Model Answers
Series 4 2010 (3024)

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# Management Accounting Level 3
## Series 4 2010

**How to use this booklet**

Model Answers have been developed by 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.

**QUESTION 1**

A company has prepared the following estimate of costs for a contract that will take one year to complete:

| | | £ | Notes |
|---|---|---|---|
| Material P | (9,000 kilos × £26 per kilo) | 234,000 | 1 |
| Material Q | (5,000 kilos × £37 per kilo) | 185,000 | 2 |
| Material R | (7,000 kilos × £41 per kilo) | 287,000 | 3 |
| Unskilled labour | (8,000 hours × £7 per hour) | 56,000 | 4 |
| Skilled labour | (15,000 hours × £18 per hour) | 270,000 | 5 |
| Supervision labour | | 92,000 | 6 |
| Lease of machine | | 40,000 | 7 |
| Depreciation of machinery | | 60,000 | 7 |
| General overhead | (15,000 hours × £21.50 per hour) | 322,500 | 8 |

**Notes**

1 Material P is in continual use and there are 3,000 kilos of material in stock, which was purchased at £26.00 per kilo. The current cost of the material is £32 per kilo

2 Material Q has not yet been ordered; its current cost is £37 per kilo.

3 Material R was purchased a few years ago at a cost of £41 per kilo, but it does not have an alternative use. If not used for the contract, the existing stock of 7,000 kilos could be sold for £28.00 per kilo. However, costs of £6,000 would be incurred in getting the material to the customer.

4 Unskilled labour is only employed when such workers are required.

5 The existing skilled workers are fully employed on various contracts, but would be willing to work overtime for the required hours at one and a quarter times their hourly pay rate. Alternatively, additional skilled labour could be hired for the duration of the contract at £21.00 per hour.

6 Supervision labour cost includes the salaries of two supervisors. The first supervisor, who is paid £42,000 per annum, is due to retire immediately, but will be willing to work specifically on the contract for another year. The second supervisor is paid £50,000 per annum for working on existing contracts. If she specifically supervises the contract, her replacement will cost £44,000 for the duration of the contract.

7 Two machines are required for the contract. The first machine was purchased four years ago at a cost of £300,000 with an annual straight-line depreciation of £60,000. The machine has no scrap value and is due to be dismantled at a cost of £5,000. However, if it is used for the contract, the dismantling cost is expected to be £8,000 when the contract is completed. The second machine would need to be leased at a cost of £40,000 for the duration of the contract.

8 General overheads are absorbed on the basis of skilled labour hours used on the contract. The variable element of general overheads is £11.60 per hour.

**REQUIRED**

(a) Prepare a revised estimate of costs for the contract, using a relevant cost basis.

(14 marks)

(b) Explain the meaning of the terms **opportunity cost** and **relevant cost** used in the context of decision-making.

(6 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 1**

(a)

| | | £000 | £000 | £000 |
|---|---|---|---|---|
| **Material** | | | | |
| Material P | (9,000 kilos × £32.00 per kilo) | | 288 | |
| Material Q | (5,000 kilos × £37.00 per kilo) | | 185 | |
| Material R | (7,000 kilos × £28.00 per kilo) | 196 | | |
| | Less disposal cost | ( 6) | 190 | |
| | | | | 663 |
| **Labour** | | | | |
| Unskilled labour | (8,000 hours × £7.00 per hour) | | 56 | |
| Skilled labour | (15,000 hours × £21.00 per hour) | | 315 | |
| Supervision labour | – 1st supervisor | 42 | | |
| | – 2nd supervisor replacement | 44 | 86 | |
| | | | | 457 |
| **Overheads** | | | | |
| Dismantling cost of 1st machine | (£8,000 – £5,000) | | 3 | |
| Lease of 2nd machine | | | 40 | |
| Incremental variable costs | (15,000 × £11.60) | | 174 | |
| | | | | 217 |
| **Total relevant costs** | | | | 1,337 |

(b) An **opportunity cost** is the benefit sacrificed in favour of an alternative course of action. Every decision, which involves making a choice between two or more mutually exclusive alternatives, has an opportunity cost. The concept of opportunity cost plays a crucial role in ensuring that scarce resources are used efficiently.

A **relevant cost** is a future cash flow arising as a direct consequence of the decision under review. Decisions involve making choices among alternative courses of action. Because decisions relate to what will happen in the future, the consequences of each course of action are the future costs that are expected to arise for the different choices.

**QUESTION 2**

A company is preparing a budget for the single product which it manufactures and sells for £280 per unit. The standard costs data for each unit of the product are as follows:

| | |
|---|---|
| Direct material | 4 kilos at £27.50 per kilo |
| Direct labour | 5 hours at £14.80 per hour |
| Fixed production overhead | 5 hours at £8.60 per hour |

Non-production overhead costs are budgeted at £12,000 per period.

The budgeted sales figures for the next four periods are:

| | |
|---|---|
| Period 6 | 450 units |
| Period 7 | 350 units |
| Period 8 | 500 units |
| Period 9 | 400 units |

Stocks of raw materials and finished goods at the beginning of Period 6 are:

| | |
|---|---|
| Raw materials | 1,950 kilos |
| Finished goods | 420 units |

The company has an end of period stocking policy of holding 90% of the following period's budgeted sales units and 110% of the following period's raw materials required for production. There are no stocks of work-in-progress at the end of any period.

**REQUIRED**

(a) Prepare the following budgets for each of Period 6 and Period 7:

(i) sales (£)

(2 marks)

(ii) production (units)

(4 marks)

(iii) materials purchases (kilos and £)

(6 marks)

(iv) direct labour (hours and £)

(3 marks)

(b) Prepare a combined profit budget for Periods 6 and 7.

(5 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 2**

(a)

(i) **Sales budget** (**£**)

| | **Period 6** | **Period 7** |
|---|---|---|
| Budgeted sales units | 450 | 350 |
| Selling price per unit | × £280 | × £280 |
| **Budgeted sales** | £126,000 | £98,000 |

(ii) **Production budget** (**units**)

| | **Period 6** | **Period 7** |
|---|---|---|
| Budgeted sales units | 450 | 350 |
| Add Closing stock | (350 × 0.9) 315 | (500 × 0.9) 450 |
| | 765 | 800 |
| Less: Opening stock | 420 | 315 |
| **Budgeted production units** | 345 | 485 |

(iii) **Materials purchases budget** (**kilos** and **£**)

| | **Period 6** | **Period 7** |
|---|---|---|
| Budgeted production units | 345 | 485 |
| Material required per unit | × 4 | × 4 |
| Kilos required for production | 1,380 | 1,940 |
| Add Closing stock | (1,940 × 1.1) 2,134 | (1,640* × 1.1) 1,804 |
| | 3,514 | 3,744 |
| Less Opening stock | 1,950 | 2,134 |
| **Budgeted purchases (kilos)** | 1,564 | 1,610 |
| × Cost of material per kilo | × £27.50 | × £27.50 |
| **Budgeted purchases (cost)** | £43,010 | £44,275 |

*Kilos required in Period 8 = [500 + (400 × 0.9 = 360) – 450] = 410 × 4 = 1,640 kilos

(iv) **Direct labour budget** (**hours** and **£**)

| | **Period 6** | **Period 7** |
|---|---|---|
| Budgeted production units | 345 | 485 |
| Hours required per unit | × 5 | × 5 |
| **Budgeted labour hours** | 1,725 | 2,425 |
| × Cost of labour per hour | × £14.80 | × £14.80 |
| **Budgeted labour cost** | £25,530 | £35,890 |

(b) **Budgeted profit for Periods 6 and 7**

| | **£** | **£** |
|---|---|---|
| Sales (800 × £280) | | 224,000 |
| Less Production cost of sales | | |
| Direct material (800 × 4 × £27.50) | 88,000 | |
| Direct labour (800 × 5 × £14.80) | 59,200 | |
| Fixed overhead (800 × 5 × £8.60) | 34,400 | 181,600 |
| Gross profit | | 42,400 |
| Less: Non-production overhead (2 × £12,000) | | 24,000 |
| **Budgeted profit** | | 18,400 |

**QUESTION 3**

A company manufactures a single product which sells for £475 per unit. The product's standard cost card for Period 7 contains the following information:

| | | **£ per unit** |
|---|---|---|
| Direct material | (3.25 kilos × £48.00 per kilo) | 156.00 |
| Direct labour | (7.5 hours × £16.50 per hour) | 123.75 |
| Fixed production overhead | (7.5 hours × £9.90 per hour) | 74.25 |

Actual results for the period are as follows:

| | |
|---|---|
| Production and sales | 5,560 units |
| Sales | £2,689,372 |
| Direct material costs (16,124 kilos) | £830,386 |
| Direct labour costs | £650,520 |
| Fixed production overhead | £388,840 |

The following variances were extracted from the company's control records for Period 7:

| | |
|---|---|
| Sales volume profit | |
| £29,040 Adverse | |
| Direct labour rate | |
| £10,008 Favourable | |
| Direct labour efficiency | |
| £27,522 Favourable | |
| Fixed overhead expenditure | £41,810 Favourable |
| Fixed overhead volume | |
| £17,820 Adverse | |

**REQUIRED**

(a) Calculate the following variances for Period 7:

(i) sales price

(2 marks)

(ii) direct material price

(2 marks)

(iii) direct material usage.

(3 marks)

(b) Calculate the following for Period 7:

(i) budgeted production units

(3 marks)

(ii) actual direct labour hours worked

(4 marks)

(iii) average actual direct labour rate per hour

(2 marks)

(c) Define the terms: **ideal standard** and **attainable standard**.

(4 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 3**

(a)

(i) **Sales price variance**

| | | | | |
|---|---|---|---|---|
| (Standard price × Actual units) | – | (Actual price × Actual units) | | |
| (£475.00 × 5,560 units) | – | £2,689,372 | | |
| £2,641,000 | – | £2,689,372 | = | **£48,372 Favourable** |

(ii) **Direct material price variance**

| | | | | |
|---|---|---|---|---|
| (Standard price × Actual usage) | – | (Actual price × Actual usage) | | |
| (£48.00 × 16,124 kilos) | – | £830,386 | | |
| £773,952 | – | £830,386 | = | **£56,434 Adverse** |

(iii) **Direct material usage variance**

| | | | | |
|---|---|---|---|---|
| (Standard price × Standard usage) | – | (Standard price × Actual usage) | | |
| [£48.00 × (5,560 × 3.25 kilos)] | – | (£48.00 × 16,124 kilos) | | |
| £867,360 | – | £773,952 | = | **£93,408 Favourable** |

(b)

(i) **Budgeted production units**

| | **£** |
|---|---|
| Actual fixed production overhead | 388,840 |
| Add Fixed overhead expenditure variance | 41,810 |
| Budgeted fixed production overhead | 430,650 |

**Budgeted units** = Budgeted fixed production overhead / Fixed overhead absorption rate = £430,650 / £74.25 = 5,800 units

(ii) **Actual direct labour hours worked**

| | **£** |
|---|---|
| Actual direct labour costs | 650,520 |
| Add Direct labour rate variance | 10,008 |
| Standard cost of actual labour hours | 660,528 |

**Actual hours** = Standard cost of actual labour hours / Standard direct labour rate per hour = £660,528 / £16.50 = 40,032 hours

(iii) **Average actual direct labour rate per hour**

**Actual rate** = Actual direct labour costs / Actual direct labour hours worked = £650,520 / 40,032 = £16.25 per hour

(2 marks)

(c) An **ideal standard** is a standard that can be attained only under the most efficient operating conditions. It makes no allowance for normal loss, waste or machine downtime.

An **attainable standard** is a standard that assumes efficient levels of operation but which includes allowance for normal loss, waste and machine downtime.

**QUESTION 4**

A company is considering investing in new plant and equipment to introduce a new product with an estimated lifespan of 5 years. The plant and equipment is expected to cost £2,150,000 with a residual value of £250,000 after five years.

The sales forecast for the product is as follows:

| **Year** | **£000** |
|---|---|
| 1 | 1,200 |
| 2 | 1,680 |
| 3 | 3,040 |
| 4 | 2,560 |
| 5 | 1,920 |

The product is expected to have a constant contribution/sales ratio of 37.5% and budgeted annual incremental fixed costs of £160,000 (excluding straight-line depreciation of new plant and equipment).

Assume that net cash inflows occur at the end of the years to which they relate.

The company's cost of capital is 15% per annum.

Discount factors:

| *Year* | *10%* | *12%* | *15%* | *18%* | *20%* |
|---|---|---|---|---|---|
| 1 | 0.909 | 0.893 | 0.870 | 0.847 | 0.833 |
| 2 | 0.826 | 0.797 | 0.756 | 0.718 | 0.694 |
| 3 | 0.751 | 0.712 | 0.658 | 0.609 | 0.579 |
| 4 | 0.683 | 0.636 | 0.572 | 0.516 | 0.482 |
| 5 | 0.621 | 0.567 | 0.497 | 0.437 | 0.402 |

**REQUIRED**

(a) Calculate, in relation to the investment in new plant and equipment, the:

(i) accounting rate of return (using the average investment value);

(8 marks)

(ii) net present value;

(6 marks)

(iii) internal rate of return.

(3 marks)

(b) Advise the company on whether the investment in new plant and equipment is worthwhile, on the basis of the net present value and internal rate of return in part (a).

(3 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 4**

(a)

(i) **Accounting rate of return (ARR)**

| | Contribution | – Fixed cost | = Net operating cash flows | – Depreciation | = Accounting profit |
|---|---|---|---|---|---|
| Year 1 | (1,200 × 0.375) | 450 | – 160 = 290 | – 380* | = (£90,000) |
| Year 2 | (1,680 × 0.375) | 630 | – 160 = 470 | – 380* | = £90,000 |
| Year 3 | (3,040 × 0.375) | 1,140 | – 160 = 980 | – 380* | = £600,000 |
| Year 4 | (2,560 × 0.375) | 960 | – 160 = 800 | – 380* | = £420,000 |
| Year 5 | (1,920 × 0.375) | 720 | – 160 = 560 | – 380* | = £180,000 |

* Annual depreciation = (2,150 – 250) ÷ 5 years = £380,000

Average annual accounting profit = $\frac{[\,(90) + 90 + 600 + 420 + 180\,]}{5 \text{ years}}$ = £240,000

Average investment value = $\frac{£2,150 + 250}{2}$ = £1,200,000

**ARR** = $\frac{£\ 240,000}{£1,200,000} \times 100\%$ = 20%

(ii) **Net present value (NPV)**

| Year | Net cash flow | Disc. Factor @ 15% | Present values |
|---|---|---|---|
| | £000 | | £000 |
| 0 | (2,150) | 1.000 | (2,150.00) |
| 1 | 290 | 0.870 | 252.30 |
| 2 | 470 | 0.756 | 355.32 |
| 3 | 980 | 0.658 | 644.84 |
| 4 | 800 | 0.572 | 457.60 |
| 5 | 810** | 0.497 | 402.57 |
| | | **NPV** = | ( 37.37) |

**£560,000 + £250,000 (residual value)

(iii) **Internal rate of return (IRR)**

| Year | Net cash flow | Disc. Factor @ 12% | Present values |
|---|---|---|---|
| | **£000** | | **£000** |
| 0 | (2,150) | 1.000 | (2,150.00) |
| 1 | 290 | 0.893 | 258.97 |
| 2 | 470 | 0.797 | 374.59 |
| 3 | 980 | 0.712 | 697.76 |
| 4 | 800 | 0.636 | 508.80 |
| 5 | 810 | 0.567 | 459.27 |
| | | **NPV** = | 149.39 |

**IRR** = 12% + {3% × [149.39 ÷ (149.39 + 37.37)]} = 14.4%

(b) The investment should not be undertaken by the company since it generates a negative NPV and earns an IRR of 14.4% which is lower than the cost of capital of 15%.

**QUESTION 5**

Investment Centre A operates as a retailing division in a company. The investment centre's financial information for the past two years is presented as follows:

| | Year 4 | Year 3 |
|---|---|---|
| | £000 | £000 |
| Fixed assets (net book value) | 399 | 267 |
| Current assets | 403 | 278 |
| Current liabilities | 167 | 112 |
| Stock of finished goods | 202 | 135 |
| Trade debtors | 170 | 109 |
| Sales | 765 | 650 |
| Cost of sales | 536 | 455 |
| Net profit | 131 | 119 |

All sales were made on credit terms, and a constant gross profit margin of 30% was earned throughout the two-year period.

Assume that 1 year = 365 days

**REQUIRED**

(a) Calculate, in relation to Investment Centre A, the following ratios for each of Year 4 and Year 3:

(i) net profit to sales (%)

(2 marks)

(ii) net asset turnover (number of times)

(2 marks)

(iii) return on capital employed (%)

(2 marks)

(iv) stock turnover (number of times)

(2 marks)

(v) debtors payment period (rounded to whole days)

(2 marks)

(vi) current

(2 marks)

(vii) acid test (quick)

(2 marks)

(b) Using the ratios calculated in part (a), comment on the investment centre's performance in terms of its profitability, asset utilisation and liquidity over the two-year period.

(6 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 5**

(a)

| | | Year 4 £000 | Year 3 £000 |
|---|---|---|---|
| (i) | $\frac{\text{Net profit}}{\text{Sales}} \times 100\%$ | $\frac{131}{765} \times 100\% = 17.1\%$ | $\frac{119}{650} \times 100\% = 18.3\%$ |
| (ii) | $\frac{\text{Sales}}{\text{Capital employed*}}$ | $\frac{765}{635} = 1.2$ times | $\frac{650}{433} = 1.5$ times |
| | *Capital employed = Fixed assets + Current assts – Current liabilities | | |
| (iii) | $\frac{\text{Net profit}}{\text{Capital employed}} \times 100\%$ | $\frac{131}{635} \times 100\% = 20.6\%$ | $\frac{119}{433} \times 100\% = 27.5\%$ |
| (iv) | $\frac{\text{Cost of sales}}{\text{Stock of goods}}$ | $\frac{536}{202} = 2.7$ times | $\frac{455}{135} = 3.4$ times |
| (v) | $\frac{\text{Trade debtors}}{\text{Sales}} \times 365$ | $\frac{170}{765} \times 365 = 81$ days | $\frac{109}{650} \times 365 = 61$ days |
| (vi) | $\frac{\text{Current assets}}{\text{Current liabilities}}$ | $\frac{403}{167} = 2.4 : 1$ | $\frac{278}{112} = 2.5 : 1$ |
| (vii) | $\frac{\text{Current assets – Stock}}{\text{Current liabilities}}$ | $\frac{403 - 202}{167} = 1.2 : 1$ | $\frac{278 - 135}{112} = 1.3 : 1$ |

(b)

Profitability ratios

There is a decline in both net profit ratio and return on capital employed ratio, despite a significant increase in sales over the two-year period. The substantial rise in sales may be attributed to the investment centre's pricing policies, product mix, increased terms granted to customers or increase in market share.

However, the lack of control on costs and operating expenses is likely to be the cause of the decline in the profitability ratios.

Asset Utilisation

The utilisation of assets compared to the sales generated has declined over the two-year period. The net asset turnover has fallen, from 1.5 times in Year 3 to 1.2 times in Year 4, thereby indicating the inefficient use of the investment centre's capital.

The stock turnover ratio's drop, from 3.4 times in Year 3 to 2.7 times in Year 4, is an indication of over-stocking or the holding of out-dated or slow-moving stock items.

The increase in debtors' collection period of 20 days may be due to increased credit terms granted to some or all of the investment centre's trade customers; this, partly, might have accounted for the significant rise in sales over the two-year period. However, the increase in debtors' collection period may indicate the investment centre's failure to follow up its debts efficiently.

Liquidity ratios

Both current ratio and acid-test (quick) ratio demonstrate healthy liquidity situation, although the two ratios are fairly high (i.e. they are above the ideal levels of 2:1 and 1:1, respectively).

 

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