LCCI International Qualifications

Management Accounting
Level 3

LCCI
International
Qualifications from EDI

Model Answers
Series 3 2011 (3024)

Management Accounting Level 3
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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 manufactures and sells two products using the same direct material and direct labour. The following details are available for the coming period:

	Product A	Product B
	£ per unit	£ per unit
Selling price	228	186
Direct material costs (£26 per kg)	104	52
Direct labour costs (£16 per hour)	48	80
Other variable costs	36	24

The availability of direct materials and direct labour will be limited to 10,200 kg and 15,000 hours respectively, for the coming period. The company is also contracted to supply 600 units of Product B to one of its major customers.

REQUIRED

(a)   Formulate the problem presented above as a linear programme, given that the company's objective is to maximise total contribution in the period.

(6 marks)

(b)   Draw a graph for the linear programming problem formulated in part (a), clearly indicating the binding constraints and the feasible area for a solution.

(8 marks)

(c)   Reading from the graph drawn in part (b), list all the production plans in units of Product A and Product B that are attainable at the corner points of the feasible area of solution.

(4 marks)

(d)   Determine which one of the production plans listed in part (c) will maximise the company's contribution for the coming period and calculate the total amount of this contribution.

(2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

Syllabus Topic 3: Short-term decision-making (3.8)

(a) The decision variables and the objective function of the linear programme (LP) are represented by the following symbols:

$A =$ units of Product A to be produced and sold
$B =$ units of Product B to be produced and sold
$Z =$ value of total contribution for the period.

The LP is formulated as follows:

Maximise $\qquad\qquad Z^* = 40A + 30B$ (objective function) **1**

Subject to: $\qquad 4A + 2B \leq 10,200$ (Availability of direct materials in kg) **1**

$\qquad\qquad\quad 3A + 5B \leq 15,000$ (Availability of direct labour hours) **1**

$\qquad\qquad\qquad\quad B \geq 600 \qquad$ (Minimum production units of Product B) **1**

and $\qquad\qquad\qquad A \geq 0 \qquad$ (Non-negative constraint) **1**

Workings

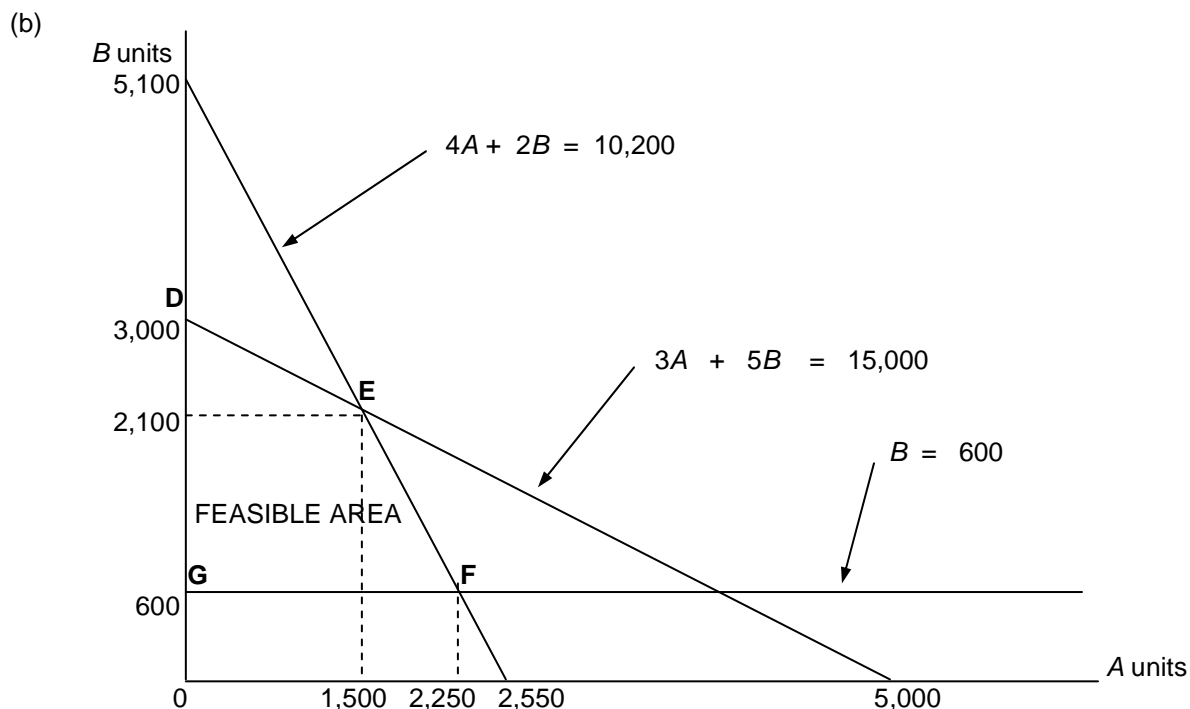Contribution per unit = Selling price − Variable costs per unit

Product A £228 − £(104 + 48 + 36) = £40 per unit **½**

Product B £186 − £(52 + 80 + 24) = £30 per unit **½**

(6 marks)

QUESTION 1 CONTINUED

(b)

Appropriate labelling of A-axis and B-axis   **1**

Plot of the constraints for direct material, direct labour and the minimum units of Product B

(2 marks each)   **6**

Indication of feasible area **DEFG**   **1**

(8 marks)

(c)   Reading from the graph, the following production plans are attainable at the corner points of the feasible area **DEFG**:

Point **D**   A = 0 units,   B = 3,000 units   **1**

Point **E**   A = 1,500 units,   B = 2,100 units   **1**

Point **F**   A = 2,250 units,   B = 600 units   **1**

Point **G**   A = 0 units,   B = 600 units   **1**

(4 marks)

(d)   By substituting the values for *A* and *B* into the objective function Z = £40*A* + £30*B* at points D, E and F, the maximum contribution is calculated as follows:

Point D   (£40 x 0) + (£30 x 3,000) = £90,000
Point E   (£40 x 1,500) + (£30 x 2,100)   = £123,000
Point F   (£40 x 2,250) + (£30 x 600+ = £108,000

Thus, the maximum contribution is obtained at point E   **2**

(2 marks)

(Total 20 marks)

QUESTION 2

A company's budget for the manufacture and sale of its single product for a recent period was 7,500 units at a selling price of £380.00 each. The standard for direct labour for each unit was set at 5 hours, payable at the hourly rate of £16.20. Fixed production overheads were absorbed at the rate of £87.50 per unit based on direct labour hours.

The actual results for the period were as follows:

Production and sales	7,860 units
Sales revenue	£2,937,650
Direct labour costs (40,850 hours)	£649,240

REQUIRED

(a) Calculate the following variances for the period:

   (i)   sales price

   (2 marks)

   (ii)   direct labour rate

   (2 marks)

   (iii)   direct labour efficiency

   (2 marks)

   (iv)   fixed production overhead volume

   (2 marks)

   (v)   fixed production overhead capacity

   (2 marks)

   (vi)   fixed production overhead efficiency.

   (2 marks)

When the management of the company reviewed the actual results for the period, it concluded that the original standard selling price should have been set at £365.00 per unit, given the prevailing conditions in the marketplace. Furthermore, the standard for direct labour should have been set at 5.25 hours per unit for the period, due to a revision of the level of efficiency of the workers being trained for the manufacture of the product.

REQUIRED

(b) Using ex-post standards, calculate the following variances for the period:

   (i)   sales price planning

   (2 marks)

   (ii)   sales price operational

   (2 marks)

   (iii)   direct labour efficiency planning

   (2 marks)

   (iv)   direct labour efficiency operational.

   (2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

Syllabus Topic 6: Standard costing and variances (6.2), (6.5) & (6.14)

(a)
(i)   **Sales price variance**

(Standard price × Actual units)   − (Actual price × Actual units)
    (£380.00 × 7,860 units)   − £2,937,650
        £2,986,800   − £2,937,650   =   **£49,150 Adverse**   **2**

<div align="right">(2 marks)</div>

(ii)   **Direct labour rate variance**

(Standard rate × Actual hours)   − (Actual rate × Actual hours)
    (£16.20 × 40,850 hours)   − £649,240
        £661,770   − £649,240   =   **£12,530 Favourable**   **2**

<div align="right">(2 marks)</div>

(iii)   **Direct labour efficiency variance**

(Standard rate × Standard hours)   − (Standard rate × Actual hours)
[(£16.20 × (5 hours × 7,860 units)]   − (£16.20 × 40,850 hours)
        £636,660   − £661,770   =   **£25,110 Adverse**   **2**

<div align="right">(2 marks)</div>

(iv)   **Fixed production overhead volume variance**

(Standard rate × Standard hours)   − (Standard rate × Budgeted hours)
[£17.50* × (5 hours × 7,860 units)]   − [£17.50* × (5 hours × 7,500 units)]
        £687,750   − £656,250   =   **£31,500 Favourable 2**

*Fixed production overhead absorption rate (FPOAR) per hour

$$\frac{\text{FPOAR per unit}}{\text{Direct labour hour per unit}} \quad = \quad \frac{£87.50}{5} \quad = \quad £17.50 \text{ per hour}$$

<div align="right">(2 marks)</div>

(v)   **Fixed production overhead capacity variance**

(Standard rate × Budgeted hours)   − (Standard rate × Actual hours)
[£17.50 × (5 hours × 7,500 units)]   − (£17.50 × 40,850 hours)
        £656,250   − £714,875   =   **£58,625 Favourable 2**

<div align="right">(2 marks)</div>

(vi)   **Fixed production overhead efficiency variance**

(Standard rate × Standard hours)   − (Standard rate × Actual hours)
[£17.50 × (5 hours × 7,860 units)]   − [£17.50 × 40,850 hours)]
        £687,750   − £714,875   =   **£27,125 Adverse**   **2**

<div align="right">(2 marks)</div>

(b)

(i) **Sales price planning variance**

(Revised std price × Actual units) – (Original std price × Actual units)
(£365.00 × 7,860 units) – (£380.00 × 7,860 units)
£2,868,900 – £2,986,800 = **£117,900 Adverse** **2**

(2 marks)

(ii) **Sales price operational variance**

(Revised std price × Actual units) – (Actual price × Actual units)
(£365.00 × 7,860 units) – £2,937,650
£2,868,900 – £2,937,650 = **£68,750 Favourable** **2**

(2 marks)

(iii) **Direct labour efficiency planning variance**

(Standard rate × Standard hours) – (Standard rate × Revised standard hours)
[(£16.20 × (5 hours × 7,860 units)] – [£16.20 × (5.25 hours × 7,860 units)]
£636,660 – £668,493 = **£31,833 Adverse** **2**

(2 marks)

(iv) **Direct labour efficiency operational variance**

(Standard rate × Actual hours) – (Standard rate × Revised standard hours)
(£16.20 × 40,850 hours) – [£16.20 × (5.25 hours × 7,860 units)]
£661,770 – £668,493 = **£6,723 Favourable** **2**

(2 marks)

(Total 20 marks)

QUESTION 3

The following information is extracted from a recent year's financial records of a company which makes a single product:

	£
Sales	486,500
Production cost of sales	328,450
Purchase of raw materials	256,250
Stocks: raw materials	49,150
work-in-progress	23.400
finished goods	58,500
Trade debtors	106,640
Trade creditors	35,120
Bank overdraft	21,960

All sales and purchases were made on credit. Assume that 1 year = 365 days.

REQUIRED

(a)   Calculate for the year, the:

(i)   current and acid-test (quick) ratios (each rounded to 1 decimal place)

(3 marks)

(ii)   working capital cycle (rounded to whole days).

(5 marks)

(b)   Advise the company on what steps may be taken to reduce its working capital cycle.

(6 marks)

The company is considering reducing the average debtors collection period to 60 days in the coming year and believes that this would result in a 10% reduction in sales. The cost of sales, average stocks and trade creditors are all expected to vary with the volume of sales.

REQUIRED

(c)   Calculate the expected working capital requirement if the average debtors collection period is reduced to 60 days in the coming year.

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

Syllabus Topic 5: Cash and working capital management (5.5), (5.6), (5.8) & (5.10)

(a) (i) **Current ratio** = $\dfrac{£(49,150 + 23,400 + 58,500 + 106,640)}{£(35,120 + 21,960)}$ = $\dfrac{£237,690}{£57,080}$ = 4.2 : 1 **2**

Acid-test ratio = $\dfrac{£106,640}{£57,080}$ = 1.9 : 1 **1**

(3 marks)

(ii) Working capital cycle

Stockholding period:
raw materials	(£49,150 ÷ £256,250) × 365	=	70 days	**1**
work-in-progress	(£23,400 ÷ (£328,450) × 365	=	26 days	**1**
finished goods	(£58,500 ÷ £328,450) × 365	=	65 days	**1**

Debtors collection period   (£106,640 ÷ £486,500) × 365   =   80 days **1**
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Less: Creditors payment period   (£35,120 ÷ £256,250) × 365   =   50 days **1**
Working capital cycle   191 days

(5 marks)

(b)   The following steps may be taken to reduce the working capital cycle:

Shortening the production period by reducing the level of work-in-progress   **1**

Reducing stocks of raw materials and finished goods   **1**

Shortening the period of credit allowed to trade customers   **1**

Increasing the time taken to pay trade suppliers   **1**

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The wider implications of taking the above steps should, however, be carefully considered since, for example, reducing stocks of raw materials may result in stock-outs and lost production, while increasing the time taken to pay creditors may put future supplies in jeopardy.   **2**

(6 marks)

(c)   Expected working capital requirement

Stock: £
raw materials	(£49,150 × 90%)	=	44,235	**1**
work-in-progress	(£23,400 × 90%)	=	21,060	**1**
finished goods	(£58,500 × 90%)	=	52,650	**1**

Trade debtors   [(£486,500 × 90%) × (60 ÷ 365)]   =   71,975 **2**
189,920

Less: Trade creditors   (£35,120 × 90%)   =   31,608 **1**
Expected working capital requirement   158,312

(6 marks)

(Total 20 marks)

QUESTION 4

(a)   Describe **three** strengths and **three** weaknesses of the internal rate of return as a method of evaluating investment projects.

(6 marks)

A company is considering introducing a product which requires investment of £720,000 in new equipment. The equipment will have a 4 year lifespan with a residual value of £80,000 at end of Year 4 prices.

5,000 units of the product are expected to be manufactured and sold per annum. The selling price would be £75.00 per unit for the first year, but would be increased by 6% per annum in each future year.

In the first year of manufacture, the product will have variable costs of £24.00 per unit and incremental fixed costs (exclusive of depreciation of new equipment) of £40,000, both at current prices. The annual inflation rates for costs are estimated as follows:

        Variable costs   10%
        Fixed costs   5%

It is to be assumed that net cash flows occur at the end of the years to which they relate.

The company's cost of capital, in money terms, is 12% per annum.

Discount factors for 12%:

        Year 1   0.893
            2   0.797
            3   0.712
            4   0.636

REQUIRED

(b)   Calculate the net present value of the investment in the new equipment.

(12 marks)

(c)   Advise the company on whether the investment is worthwhile, giving reasons for your decision.

(2 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

Syllabus Topic 7: Long-term decision-making (7.6), (7.7) & (7.14)

(a)   Strengths and weaknesses of the internal rate of return method include the following:

Strengths
It takes into account the time value of money.   **1**
It is expressed as a simple percentage which is easily understood. **1**
It can be used to establish a target rate of return. **1**

Weaknesses
It is not useful for comparing two mutually exclusive investments.   **1**
Projects with unconventional cash flows can have either negative or multiple IRRs. **1**
It ignores absolute monetary value of return on investment. **1**

<div align="right">(6 marks)</div>

(b)   Calculation of annual net cash flows and net present value:

				£		£
Year 1	Sales (5,000 × £75)					375,000 **½**
	Less Variable costs (5,000 × £24 × 1.1)	132,000	**½**			
	Fixed costs (£40,000 × 1.05)	42,000	**½**		174,000	
	Net cash flows				201,000	

Year 2	Sales (5,000 × £75 × 1.06)					397,500 **½**
	Less Variable costs (5,000 × £24 × 1.1^2)	145,200	**½**			
	Fixed costs (£40,000 × 1.05^2)	44,100	**½**		189,300	
	Net cash flows				208,200	

Year 3	Sales (5,000 × £75 × 1.06^2)					421,350 **½**
	Less Variable costs (5,000 × £24 × 1.1^3)	159,720	**½**			
	Fixed costs (£40,000 × 1.05^3)	46,305	**½**		206,025	
	Net cash flows				215,325	

Year 4	Sales (5,000 × £75 × 1.06^3)					446,631 **1**
	Less Variable costs (5,000 × £24 × 1.1^4)	175,692	**1**			
	Fixed costs (£40,000 × 1.05^4)	48,620	**½**		224,312	
	Net cash flows				222,319	

Year	Cash flow £	Factor	Present value £	
0	(720,000)	1.000	(720,000)	**½**
1	201,000	0.893	179,493	**1**
2	208,200	0.797	165,935	**1**
3	215,325	0.712	153,311	**1**
4	302,319*	0.636	192,275	**1½**
		NPV =	(28,986)	

* £222,319 + £80,000

<div align="right">(12 marks)</div>

(c)   The investment in the new machine is not worthwhile since its negative net present value will
reduce the value of the company by £28,986.   **2**

<div align="right">(2 marks)</div>

<div align="right">**(Total 20 marks)**</div>

QUESTION 5

A division of a company has the following summary information for the year just ended:

	£000
Net profit	320
Fixed assets (net book value)	1,800
Net current assets	760

The company's cost of capital is 10% per annum.

REQUIRED

(a)   Calculate the return on capital employed (ROCE) and the residual income (RI) of the division for the year.

(5 marks)

The division is considering undertaking a new investment project which will cost £740,000 and result in a constant net profit (after deducting depreciation) of £76,000 per annum.

REQUIRED

(b)   Calculate the ROCE and the RI of the division if it undertakes the new investment project in the next year.

(6 marks)

(c)   Comment on whether the divisional manager would be willing to undertake the new investment project on the basis of the calculations of the ROCE and the RI in part (b).

(3 marks)

A company is comprised of two divisions, J and K. Division J's budgeted production of its single product for a period is 4,000 units at a total cost of £60 per unit. Division J transfers 30% of its production to Division K at a transfer price of cost plus 25%, and sells the remainder to external customers for £80 per unit.

Division K incurs additional costs of £15 per unit in converting the transferred units from Division J into a single product which is sold to external customers for £120 per unit.

REQUIRED

(d)   Prepare a budgeted profit statement for each division for the period.

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

Syllabus Topic 8: Performance evaluation and transfer pricing (8.3), (8.4) & (8.9)

(a)

ROCE $=$ $\dfrac{\text{Net profit}}{\text{Capital employed}}$ $\times\ 100\%$ $=$ $\dfrac{£320,000}{£2,560,000*}$ $\times\ 100\%$ $=$ 12.5% **2**

* £1,800,000 + £760,000 = £2,560,000

Residual income (RI) = Net profit − (Capital employed × Cost of capital)

                                1   **2**

£320,000 − (£2,560,000 × 10%) = £320,000 − £256,000 = £64,000

(5 marks)

(b)

ROCE $=$ $\dfrac{£(320,000 + 76,000)}{£(2,560,000 + 740,000)}$ $\times\ 100\%$ $=$ $\dfrac{£396,000}{£3,300,000}$ $\times\ 100\%$ $=$ 12% **3**

                               1   **2**

RI = £396,000 − (£3,300,000 × 10%) = £396,000 − £330,000 = £66,000

(6 marks)

(c)

The divisional manager would be unwilling to undertake the new investment project since it will result in a reduction of its existing ROCE to 12% per annum, even though the rate is above the company's cost of capital of 10% per annum. **1½**

On the other hand, the manager would be motivated to undertake the new investment project since it will result in additional residual income of £2,000 to both the division and the company overall. **1½**

(3 marks)

(d)

	Division J		Division K	
	£000		£000	£000
Sales				
External market (2,800**×£80)	224 **1**	(1,200***×£120)		144 **1**
Transfers to Division K (1,200***×£60×1.25)	90 **1½**			–
	314			144
Less: Costs				
Transfer from Division J		(1,200***×£60×1.25)	90 **½**	
Own production (4,000×£60)	240 **1**	(1,200***×£15)	18 **1**	108
Budgeted net profit	74			36

  ** 4,000 × 70% = 2,800 units

  *** 4,000 × 30% = 1,200 units

(6 marks)

(Total 20 marks)

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