Cost Accounting
Level 3

International Qualifications from EDI

Model Answers
Series 4 2009 (3017)

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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

Blue Stock Ltd maintains stock record cards that show the physical stock, allocated stock, amount on order and free stock. The stock record card for one item of stock, material M, recorded the following information and balances at the beginning of month 11:

Reorder level	400 kg of free stock
Reorder quantity	250 kg
Physical stock	450 kg
Allocated stock	50 kg
Amount on order	250 kg

The following transactions relating to material M took place during month 11:

Date

2nd 150kg issued to job number 122 (not previously allocated)
3nd 50kg issued to job number 116 (previously allocated)
4th 100kg allocated to job number 121
8th Materials ordered at end of month 10 received.
15th 40kg returned to supplier as faulty. Supplier agreed to replace
20th 60kg allocated to job number 117
27th Supplier replaced material returned on 15th of month

REQUIRED

(a) Write up the detailed stock record card for material M for month 11. (8 marks)

During the forthcoming year, Blue Stock Ltd has budgeted to use 12,000kg of material P. No safety stock of this part is to be carried by the company and production will be evenly distributed throughout the year.

The following information related to this part is available:

Cost per kg of material P	£10
Ordering costs	£200 per order
Stockholding costs	12% of the average stock value per annum
Order sizes available	1,000kg, 2,000kg, 3,000kg and 4,000kg

REQUIRED

(b) (i) Produce a table showing the total annual ordering and stockholding costs, for material P, for each order size and identify the optimum order size in order to minimise total cost.

(ii) Use the EOQ formula to verify your answer to part (i) above.

(8 marks)

(c) State **two** examples of each of the following:

(i) Stock holding costs
(ii) Stock-out costs

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

(a) Stock record card: Material M

Date	Receipts (kg)	Issues (kg)	Stock in hand (kg)	Allocated stock (kg)	Stock on order (kg)	Free stock (kg)
Month 11						
1st			450	50	250	650
2nd		150	300	50	250	500
3rd		50	250	0	250	500
4th			250	100	250	400
4th			250	100	500	650
8th	250		500	100	250	650
15th		40	460	100	290	650
20th			460	160	290	590
27th	40		500	160	250	590

(8 marks)

(b) (i) Cost table: Material P

Order size (kg)	No of orders	Order costs (£)	Average stock (kg)	Storage costs (£)	Total costs (£)
1,000	12	2,400	500	600	3,000
2,000	6	1,200	1,000	1,200	2,400
3,000	4	800	1,500	1,800	2,600
4,000	3	600	2,000	2,400	3,000

Optimum order size = 2,000 kg

(ii) EOQ

$$EOQ = \sqrt{\frac{2CoD}{Ch}}$$

$$= \sqrt{\frac{2 \times 200 \times 12{,}000}{10 \times 0.12}}$$

$$= 2{,}000$$

Optimum order size = 2,000 kg

(8 marks)

(c) (i) Stock holding costs
Any two of the following:
Insurance, material handling, storekeeper's salary, interest

(ii) Stock-out costs
Costs resulting from any two of the following:
Lost sales – customer goes elsewhere
Late delivery
Production disrupted or halted

(4 marks)

(Total 20 marks)

QUESTION 2

Sole Products Ltd manufactures its product in a single process. All materials are introduced at the start of the process and any losses that occur have no scrap value. The company uses the first-in-first-out (FIFO) method of valuation.

Production overheads are absorbed at the rate of £12 per direct labour hour.

Direct labour is paid at the rate of £10 per hour.

The following information is available for the month of Oct Year 9.

Opening stock of work-in-progress (60% complete with respect to labour and overheads)	500kg	£12,000
Material introduced	10,000kg	£63,000
Direct labour utilised		£26,400
Transfer to finished goods		8,000kg
Closing stock of work-in-progress (50% complete with respect to labour and overheads)		800kg

A normal loss of 1,000kg was expected.

REQUIRED

(a) For the month of Oct Year 9:

(i) calculate equivalent units and cost per unit for each element of cost

(ii) calculate the value of the transfer to the finished goods and of the closing stock of work-in-progress

(iii) prepare the process account showing both quantities and values

(16 marks)

(b) Contrast briefly the cost accounting treatment of normal loss and abnormal loss. (4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2

(a) (i) **Table of equivalent units**

	Finished stock (kg)	Abnormal loss (kg)	Closing stock (kg)	Opening stock (kg)	Equivalent units	Cost (£)	Unit cost (£)
Material	8,000	700	800	(500)	**9,000**	63,000	**7**
Labour	8,000	700	400	(300)	**8,800**	26,400	**3**
Overheads	8,000	700	400	(300)	**8,800**	31,680	**3.6**
							13.6

Workings:

Abnormal loss = 500 + 10,000 – 8,000 – 1,000 – 800 = 700kg

(ii) Cost of closing work in progress
(800 x 7.00) + [400 x (3.00 + 3.60)] = **£8,240**
Cost of opening work in progress completed
12,000 + [500 – 300 x (3.00 + 3.60)] = £13,320
Finished goods
Cost of opening stock completed + Cost of output wholly processed
= £13,320 + [(8,000 – 500) x £13.60] = **£115,320**
Abnormal loss
700 x £13.60 = £9,520

(iii) **Process account**

	Units	Cost (£)		Units	Cost (£)
Open WIP	500	12,000	Fin goods	8,000	115,320
Material	10,000	63,000	Normal loss	1,000	0
Labour		26,400	Abnormal loss	700	9,520
Overheads		31,680	Closing WIP	800	8,240
	10,500	133,080		10,500	133,080

(16 marks)

(b) Normal losses are built into the cost of good units. Abnormal losses/gains do not affect unit costs as they are separately valued as if they were completed production and are charged as a separate cost item (net of any disposal costs).

Normal Losses.
Normal loss units and normal loss scrap income are credited to the Process Account and debited to the Normal Loss Account whereas the normal loss disposal costs are debited to the Process Account and credited to the Normal loss Account.

Abnormal Losses.
Abnormal loss units and their value, as completed production units, are credited to the Process Account and debited to the Abnormal Loss Account. Any scrap income generated from abnormal loss is credited to the Abnormal Loss Account and debited to the Normal Loss Account whereas any disposal costs resulting from the abnormal loss is credited to the Normal Loss Account and debited to the Abnormal Loss Account. The resulting balance being transferred to the Profit and Loss Account.

(4 marks)

(Total 20 marks)

QUESTION 3

During the next period, a company plans to sell 75,000 units of its single product, at a selling price of £15 per unit. Fixed overheads and net profit for the next period are expected to be £240,000 and £360,000 respectively, using the existing production process.

The company is considering a change to its production process. The change would increase the fixed overheads by £85,000 in the next period and reduce the variable costs to £6 per unit. The selling price will remain constant regardless of production process.

Production capacity in both the existing and changed processes would be 100,000 units in the period.

REQUIRED

(a) For the existing production process, calculate for the next period the expected:

(i) break-even point in units

(ii) margin of safety as a % of sales

(iii) contribution sales ratio

(6 marks)

(b) Advise management, using supporting calculations, whether to change the the production process if the sales are 75,000 units in the period.

(5 marks)

(c) Advise management, using supporting calculations, of the sales level (units) at which the changed and existing process profits would be the same.

(6 marks)

(d) Identify **three** limitations of break-even analysis. (3 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

(a) (i) Planned total contribution = Fixed overheads + profits
= £240,000 + £360,000
= £600,000

Unit contribution = £600,000/75,000
= £8 per unit

Break-even point = Fixed overheads/unit contribution
= £240,000/£8
= **30,000 units**

(ii) Margin of safety = [(Unit sales – break-even sales)/Unit sales]
= [(75,000 – 30,000)/75,000]
= **60%**

(iii) Contribution sales ratio = (Unit contribution/Unit sales price) x 100%
= (£8/£15) x 100%
= **53.33%**

(6 marks)

(b) Supporting calculations for management advice

Existing method

Planned profit at 75,000 units output = **£360,000**

Changed method (proposed)

Unit contribution = Selling price – Unit variable cost
= £15 - £6
= £9 unit

Contribution at 75,000 units output = 75,000 x £9
= £675,000
= Total contribution – fixed overheads
= £675,000 – (240,000 + £85,000)
= **£350,000**

Advice

Continue with existing method at 75,000 units of sales

(5 marks)

Alternative answer 1

Sales revenue for both processes is equal hence only changes in cost are relevant

For proposed method

Increase in fixed overheads		£85,000
Decrease in variable cost (7-6) x 75,000	=	(£75,000)
Net increase		£10,000

Continue with existing method as proposed method increases costs by £10,000

Alternative answer 2

Sales revenue = Fixed costs + Variable costs + Profits

For Proposed method

(75,000 x £15) = (240,000 + 85,000) + (75,000 x £6) + Profit

Profit = 75,000(15-6) - £325,000

Profit = £350,000

Continue with existing method as proposed method reduces profit by £10,000

(c) Supporting calculations for management advice

Sales level where profits are equal for both methods

Profit	=	Total contribution – Fixed costs
Existing method	=	(£8 x output) - £240,000
Changed method	=	(£9 x output) - £240,000 + £85,000)

Therefore

(£8 x output) - £240,000	=	(£9 x output - £325,000
Output level	=	(325,000 - £240,000)/(£9 - £8)
	=	85,000 units

Advice

The existing and the changed production process would record the same profit at a sales level of 85,000 units.

(6 marks)

Alternative answer:

Sales revenue and profits for both processes are equal hence costs for both processes must be equal.

Existing costs (fixed + variable)	= £240,000 + 7 x sales units
Proposed costs	= (£240,000 + £85,000) + 6 x sales units
Sales units	= 85,000

Advice

The existing and proposed production processes would record the same profit at a sales level of 85,000 units.

(d) Limitations of break-even analysis

(i) It assumes unit selling price remain constant, regardless of how many products are sold.
(ii) It assumes total fixed costs remain constant.
(iii) It assumes variable costs per unit remain constant.
(iv) It assumes costs can be split into fixed and variable costs.

(3 marks)

(Total 20 marks)

QUESTION 4

Singular Ltd uses a batch production method to produce its single product by combining two materials, Aye and Bee. The company has budgeted for a material mix ratio of 60:40 for Aye and Bee respectively.

The following information relates to each batch:

Direct material input	400kg
Material Aye standard price	£2 per kg
Material Bee standard price	£5 per kg
Standard yield	320kg of product

The waste generated has no value.

Actual results for Month 10 were as follows:

Output	16,000 kg	
Material Aye	11,400 kg	£21,800
Material Pee	8,400 kg	£44,500

There is no stock of raw material.

REQUIRED

(a) Calculate, for month 10, the following variances:

(i) Material price for each material and in total

(ii) Material mix for each material and in total

(iii) Material yield in total.

(12 marks)

(b) Explain the meaning of:

(i) Material mix variance
(ii) Material yield variance.

(4 marks)

(c) Calculate the total material usage variance and reconcile this with the appropriate variances calculated in part (a).

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4

(a) (i) **Material price variance**

(Actual usage x std price) – actual cost	
Aye (11,400 x £2) - £21,800	**1,000F**
Bee (8,400 x £5) - £44,500	**2,500A**
	1,500A

(3 marks)

(ii) **Material mix variance**

(Actual usage in std proportions – actual usage) x std price	
Aye [60% of (11,400 + 8,400) – 11,400] x £2	**960F**
Bee [40% of (11,400 + 8,400) – 8,400] x £5	**2,400A**
	1,440A

(5 marks)

Alternative solution for (ii)

(Actual input quantity – budgeted material input quantity for output produced) x (standard weighted average cost per unit – standard cost per input unit)

Aye [11,400 – 16,000/(320/400) x 0.6] x [3.2 – 2.0]	**720A**
Bee [8,400 – 16,000/(320/400) x 0.4] x [3.2 – 5.0]	**720A**
	1,440A

(iii) **Material yield variance**

(Actual material input quantity – budgeted material input quantity for output produced) x standard weighted average cost per unit of output

[(11,400 + 8,400) – 16,000 / (320/400) x 3.2 **640F**

(4 marks)

Alternative solution for (iii)

(Actual output – budgeted output for the actual material input) x standard weighted average cost per unit of output

[16,000 – (11,400 + 8,400) x 320/400] x 4 **640F**

Workings:

Standards cost of mix

Aye	(400 x 0.6)kg x £2	£480
Bee	(400 x 0.4)kg x £5	£800
		£1,280

Standard weighted average cost (material input)

£1,280/400 £3.20 per kg

Standard weighted average cost (material output)

£1,280/320 £4.00 per kg

(b) (i) Material mix variances occur where substitutes within the mix of materials input are possible and when the materials are not mixed in standard proportions. It is a measure of whether the mix is cheaper or more expensive than the standard mix (at standard prices).

(ii) A yield variance arises where there is a difference between what the input should have been for the output achieved and the actual input.

or

The difference between the output achieved and what should have been achieved with the material used.

(4 marks)

QUESTION 4 CONTINUED

(c) Material usage variance

(Std usage – actual usage) x std price		
Aye [(16,000/(320/400) x 0.6 – 11,400] x £2		1,200F
Bee [(16,000/(320/400) x 0.4 – 8,400] x £5		2,000A
		800A
Material mix variance	1,440A	
Material yield variance	640F	
		800A

(4 marks)

(20 marks)

QUESTION 5

Dual Products Ltd manufactures and sells two products (Product Tee and Pee). The sales budget for the next period is as follows:

Tee	**Pee**
10,000 units	24,000 units

Stocks of finished goods, for both products, at the beginning of the budgeted period are expected to be 25% of the budgeted sales. Production is to be budgeted to increase the finished products stock by 10% over the period.

Three raw materials (Material X, Y and Z) are used by the company in the manufacture of the two products, in the following combinations:

	Tee (per unit)	**Pee** (per unit)
Material X	0.20 kg	0.12 kg
Material Y	0.16 kg	0.18 kg
Material Z	0.24 kg	0.25 kg

A 20% weight loss of Material Y is expected during the manufacturing process. No weight loss is expected with Material X or Z.

Stocks of raw materials at the beginning of the period are expected to be:

Material X	1,022 kg
Material Y	585 kg
Material Z	610 kg

Purchases of Material X are budgeted so that the stock at the end of the period is expected to be sufficient to manufacture 2,500 units of Product Tee and 6,000 units of Product Pee. No changes in the level of stocks of Material Y or Z are to be budgeted.

Standard product costs are budgeted to be:

Raw material:	
Material X	£4 per unit
Material Y	£3 per unit
Material Z	£2 per unit
Direct labour:	
Product Tee	0.50 hrs per unit at £8.00 per hour
Product Pee	0.25 hrs per unit at £8.00 per hour
Variable production overheads	£2 per direct labour hour
Fixed production overheads for the period	£25,000

REQUIRED

Prepare the following budgets for the next period:

(a) Production (units of each product) (4 marks)

(b) Material purchases of each material (kg) (11 marks)

(c) Production cost by cost element and in total. (5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5

(a) Production budget (units)

	Tee	Pee
Sales	10,000	24,000
less opening stock	(2,500)	(6,000)
add closing stock	2,750	6,600
Production	**10,250**	**24,600**

(4 marks)

(b) Material purchases budget (kg)

	Material X	Material Y	Material Z
Product Tee (10,250 x kg per unit)	2,050	1,640	2,460
Product Pee (24,600 x kg per unit)	2.952	4,428	6,150
Add weight loss	Nil	1,517	Nil
Material usage	5,002	7,585	8,610
less opening stock	1,022	585	610
Add closing stock	1,220	585	610
Material purchases budget	**5,200**	**7,585**	**8,610**

(11 marks)

Workings:

Material Y weight loss
Total material weight in finished product = 1,640 + 4,428 = 6,068kg
Material required before weight loss = 6,068/0.8 = 7,585kg
Weight loss = 7,585 - 6,068 = 1,517kg

Closing stock for Material X

Required for product Tee	2,500 units @ 0.2 kg/unit =	500 kg
Required for product Pee	6,000 units @ 0.12 kg/unit =	720 kg
		1,220kg

(c) Production cost budget (£)

Raw Material			
Material X	20,008		(5,002 x £4)
Material Y	22,755		(7,585 x £3)
Material Z	17,220		(8,610 x £2)
		59,983	
Labour			
Product Tee	41,000		(10,250 x 0.5 x £8)
Product Pee	49,200		(24,600 x 0.25 x £8)
		90,200	
Variable production overheads			
Product Tee	10,250		(10,250 x 0.5 x £2)
Product Pee	12,300		(24,600 x 0.25 x £2)
		22,550	
Fixed production overheads		25,000	
Production cost budget		**197,733**	

(5 marks)

(Total 20 marks)

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