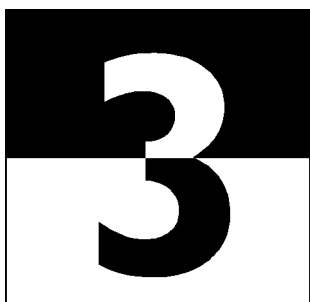


Cost Accounting



Level 3

Series 3 2003

(Code 3016)

Model Answers

Cost Accounting Level 3

Series 3 2003

How to use this booklet

Model Answers have been developed by LCCIEB to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCIEB examinations. 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.

The London Chamber of Commerce and Industry Examinations Board provides Model Answers to help candidates gain a general understanding of the standard required. The Board accepts that candidates may offer other answers that could be equally valid.

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Cost Accounting Level 3

Series 3 2003

QUESTION 1

Carryit Farr is a transport business operating five heavy goods vehicles. The business, owned solely by C Farr and located in rented premises near a local quarry, employs one full time administration officer. C Farr acts as Transport Manager. The business operates two Type A vehicles and three Type B vehicles. Drivers are contracted on a daily basis from an agency.

It is budgeted that each vehicle will complete 120,000 km per year.

The following additional information is provided regarding the business.

Vehicle data	Type A	Type B
Number of vehicles	2	3
Gross weight per vehicle	30 tonnes	24 tonnes
Maximum load	20 tonnes	16 tonnes
Number of tyres per vehicle	10	6

Agency driver costs

Cost per day	£80	£70
Jobs are charged with driver costs directly according to time taken.		

Vehicle costs

Purchase price per vehicle	£42,500	£31,500
Road fund licence (per vehicle per year)	£900	£800
Insurance (per vehicle per year)	£1,700	£1400
Service (every 15,000 km per vehicle)	£300	£250
Tyres (renewed per 60,000 km)	£250 each	£250 each
Fuel consumption (average)	1 litre per 2.5 km	1 litre per 3.0 km

Fuel costs £0.70 per litre.

Depreciation charged at 20% annually in equal installments on the purchase price of each vehicle less the cost of tyres.

Office costs

Premises rent	£20,000 per year
Premises insurance	£2,000 per year
Administration expenditure	£7,000 per year
Administration officer salary	£15,000 per year
C Farr (Transport Manager)	£22,000 per year

Both vehicle and office costs are absorbed into the cost of jobs at a pre-determined rate per kilometre for each type of vehicle. Office costs are apportioned to vehicle types based on total gross vehicle weight.

REQUIRED

(a) For **each** vehicle type calculate the:

- (i) vehicle cost absorption rate per kilometre
- (ii) office cost absorption rate per kilometre.

(14 marks)

QUESTION 1 CONTINUED

The following information relates to a recent job enquiry:

- (1) 640 tonnes of gravel are required to be delivered from a local quarry to a building site. The distance from the quarry to the delivery point and return is 100 km.
- (2) It is possible to complete two deliveries per day per vehicle.
- (3) Only two vehicles are available for this job (one Type A and one Type B).

REQUIRED

- (b) Calculate the minimum time required, in days, and the cost to deliver the 640 tonnes of gravel assuming
 - (i) only the Type A vehicle is used
 - (ii) only the Type B vehicle is used.

(6 marks)

(Total 20 marks)

Model Answer to Question 1

(a)

(i)

	Vehicles	
	Type A	Type B
Vehicle costs per year (£)		
Road fund licence	900	800
Insurance	1,700	1,400
Service	2,400	2,000
Tyres	5,000	3,000
Fuel	33,600	28,000
Depreciation	<u>8,000</u>	<u>6,000</u>
	<u>51,600</u>	<u>41,200</u>

Workings

Service every 15,000 km	120/15	= 8 per year	
Type A	8 x 300	= £2,400 per year	
Type B	8 x 250	= £2,000 per year	
Tyre change every 60,000 km	120/60	= 2 per year	
Type A	2 x 10 x 250	= £5,000 per year	
Type B	2 x 6 x 250	= £3,000 per year	
Fuel	Type A	0.7 x	= £33,600 per year
		120,000/2.5	
	Type B	0.7 x	= £28,000 per year
		120,000/3.0	
Depreciation	Type A	(42,500 - 10 x 250) x 20%	= £8,000
	Type B	(31,500 - 6 x 250) x 20%	= £6,000

Vehicle costs absorption rate

Type A	51,600/120,000	= £0.43 per vehicle km
Type B	41,200/120,000	= £0.34 3 per vehicle km

Model Answer to Question 1 continued

(ii)

Office costs per year (£)	
Rent	20,000
Insurance	2,000
Administration	7,000
Salary	15,000
C Farr	<u>22,000</u>
	<u>66,000</u>

Costs apportioned on total gross vehicle weight

Total gross vehicle weight Type A	= 30 x 2	= 60 tonnes
Total gross vehicle weight Type B	= 24 x 3	= 72 tonnes

Office costs apportioned per vehicle

Type A	$(66,000 \times 60/132)/2$	= £15,000
Type B	$(66,000 \times 72/132)/3$	= £12,000

Office overhead absorption rate

Type A	15,000/120,000	£0.125 per vehicle km
Type B	12,000/120,000	£0.100 per vehicle km

(b)

	Type A	(Workings)	Type B	(Workings)
Number of days (i)	16	$(640/20)/2$	20	$(640/16)/2$
Distance covered (km)	3,200	$(640/20) \times 100$	4,000	$(640/16) \times 100$
Driver costs (£)	1,280	80 x 16	1,400	70 x 20
Vehicle costs (£)	1,376	0.43 x 3,200	1,373	0.343 x 4,000
Office costs (£)	<u>400</u>	0.125 x 3,200	<u>400</u>	0.10 x 4,000
Total costs (£) (ii)	<u>3,056</u>		<u>3,173</u>	

QUESTION 2

Dennis is planning to start a window fitting business. His plans include the purchase of made-to-measure windows, from an established manufacturer, employing a sales person and two fitters and renting a specially fitted-out van.

Dennis has estimated the following costs:

Advertising	£2,000 per month
Sales person salary	Basic £6,000 per year plus 5% commission on all sales
Fitters wages	£16,000 per year each
Van rental	£10,400 per year
Van running costs (incurred at maximum capacity)	£80 per week (varies directly proportional to sales value)
Office administration	£2,600 per year

Additional information

- (1) The fitting team could fit windows with a bought-in cost of £4,000 per week, if working at maximum capacity.
- (2) The fitting team work 47 weeks per year.
- (3) The selling price will be set by doubling the bought-in cost of the windows.
- (4) Dennis requires a profit of £35,000 per year.

REQUIRED

(a) Calculate:

- (i) the contribution/sales ratio
- (ii) the level of sales at which Dennis will achieve a profit of £35,000 per annum
- (iii) the total profit per annum assuming there are sufficient sales for the fitters to be fully employed.

(9 marks)

If the business is very successful, Dennis is satisfied he would not require an additional sales person, the administration costs would not rise and the manufacturer would be able to handle all orders. However, he would have to consider hiring a further van and employing another fitting team.

REQUIRED

(b) Assuming Dennis rents a second van and employs a second fitting team, calculate:

- (i) the level of sales at which a profit of £35,000 per annum is achieved
- (ii) the level of annual sales where this option becomes more profitable.

(7 marks)

(c) Identify and explain **two** limitations of break-even analysis

(4 marks)

(Total 20 marks)

Model Answer to Question 2

(a)

Fixed costs per year (£)		
	Advertising	24,000
	Sales person's salary	6,000
	Fitting staff wages	32,000
	Van rental	10,400
	Office administration	<u>2,600</u>
		<u>75,000</u>

Variable costs per week (£) at maximum capacity		
	Direct materials (windows)	4,000
	Van running costs	80
	Sales commission	<u>400</u>
		<u>4,480</u>

Sales per week (£) at maximum capacity 8,000

(i)		
Contribution sales ratio	$(8,000 - 4,480)/8,000$	0.44
or	$50\% - 5\% - (80/8,000 \times 100\%)$	44%

(ii)		
Level of sales for £35,000 profit	$(35,000 + 75,000)/0.44$	£250,000

(iii)		
Sales for year	$8,000 \times 47$	
Contribution for year	$8,000 \times 47 \times 0.44$	£165,440
Profit for year	$165,440 - 75,000$	£90,440

(b)

Fixed costs increased by:

	Fitting staff wages	32,000
	Van rental	<u>10,400</u>
		<u>42,400</u>

Revised fixed costs for year $(75,000 + 42,400)$ £117,400

(i)		
Level of sales for £35,000 profit	$(35,000 + 117,400)/0.44$	£346,364

(ii)		
Maximum profit with one fitting team and van		£90,440

Profit (two fitting teams and vans)	= Total contribution - £117,400	
Total contribution (minimum)	$90,440 + 117,400$	£207,840
Sales level (minimum)	$207,840/0.44$	£472,364

(c)

Limitations of break-even analysis

- (i) It assumes selling price remains constant regardless of how many products are sold.
- (ii) It assumes variable costs increase in a linear fashion. In practice, economies of scale may mean costs do not rise as fast as output.
- (iii) It assumes fixed costs remain constant. However, to achieve higher outputs, additional costs may be necessary thus producing stepped fixed costs.

QUESTION 3

James Evershaw is planning to start a new business on 1 January 2004 by producing and selling a single product. James will invest £20,000 of his own capital of which £15,000 is available at the outset with the balance in April 2004.

Prior to commencement of the business James intends to purchase machinery for £8,480 and invest £5,000 in materials stock. Both these purchases will be paid for before commencement of the business in January. His bank manager has asked for a cash budget and a profit statement to support a loan application.

James has estimated his sales for the first 6 months of trading as follows:

Month	Unit Sales
January	–
February	300
March	320
April	340
May	360
June	400
July	400

All sales will be made at £25 per unit. James anticipates 20% cash sales with the remaining customers being allowed one-month credit.

Other information:

- (1) Sales-related expenses are expected to be £1 per unit payable in the month of the sale.
- (2) All units will be produced in the month before they are required for sale.
- (3) Material will be purchased at £10 per unit of product in the month before the product is required for sale. The supplier has agreed to allow James one month's credit on 50% of his purchases for the first three months and after that will allow one-month credit on all purchases.
- (4) James intends to maintain a month-ending material stock level value of £5,000.
- (5) Direct labour will be paid on a piecework basis at a rate of £3 per unit and will be paid in the month incurred.
- (6) Fixed production overheads, excluding depreciation, are expected to be £6,360 in the first six months payable quarterly in advance. These overheads, absorbed at a rate per unit based on the first six months estimated production, are expected to accrue evenly over this period.
- (7) Variable production overheads are expected to be £1.60 per unit payable in the month incurred.
- (8) Machinery is expected to have a 10-year life with no scrap value and be depreciated in equal instalments over its life.
- (9) James intends to withdraw £1,000 per month for his own use.

REQUIRED

(a) Prepare a cash budget for each month from January to June. (14 marks)

(b) Prepare a budgeted profit statement for the six month period January to June. (6 marks)

(Total 20 marks)

Model Answer to Question 3

(a)

Receipts	January	February	March	April	May	June
Cash sales	0	1,500	1,600	1,700	1,800	2,000
Credit sales	0	0	6,000	6,400	6,800	7,200
Capital				5,000		
	<u>0</u>	<u>1,500</u>	<u>7,600</u>	<u>13,100</u>	<u>8,600</u>	<u>9,200</u>
Payments						
Cash purchases	1,500	1,600	1,700			
Credit purchases	0	1,500	1,600	1,700	3,600	4,000
Labour	900	960	1,020	1,080	1,200	1,200
Fixed prod o/h	3,180			3,180		
Variable prod o/h	480	512	544	576	640	640
Sales expenses	0	300	320	340	360	400
Drawings	1,000	1,000	1,000	1,000	1,000	1,000
	<u>7,060</u>	<u>5,872</u>	<u>6,184</u>	<u>7,876</u>	<u>6,800</u>	<u>7,240</u>

Cash budget for the period Jan to June Year 8

Net cash flow	-7,060	-4,372	1,416	5,224	1,800	1,960
Opening bank	<u>1,520</u>	<u>-5,540</u>	<u>-9,912</u>	<u>-8,496</u>	<u>-3,272</u>	<u>-1,472</u>
Closing bank	<u>-5,540</u>	<u>-9,912</u>	<u>-8,496</u>	<u>-3,272</u>	<u>-1,472</u>	<u>488</u>

Workings: Opening bank = £15,000 - £8,480 - £5,000 = £1,520

(b)

Statement for the six month period January to June

Sales						43,000
Opening stock of materials		5,000				
Purchases of materials		21,200				
Closing stock of materials		<u>5,000</u>				
Cost of materials stock used				21,200		
Direct labour				<u>6,360</u>		
				27,560		
Variable prod o/h		3,392				
Fixed prod o/h		6,360				
Depreciation		<u>424</u>		<u>10,176</u>		
Cost of goods completed					37,736	
Less stock of finished goods					<u>7,120</u>	
Cost of sales						<u>30,616</u> *
Gross profit						12,384
Sales expenses						<u>1,720</u>
Net profit						<u>10,664</u>

Workings Stock of finished goods = $37,736 / 2,120 \times 400 = 7,120$
 OR $400 \times (10 + 3 + 1.60 + 3 + 0.20) = 7,120$

*

Alternative method for calculating cost of sales

Materials	17,200 (1,720 units at £10)
Labour	5,160 (1,720 units at £3)
Variable prod o/h	2,752 (1,720 units at £1.60)
Fixed prod o/h	5,160 (£6,360 - £6,360/2,120 x 400)
Depreciation	<u>344</u> (£424 - £424/2,120 x 400)
Cost of sales	<u>30,616</u>

QUESTION 4

A company, which produces a single product and uses a standard costing system, produces a monthly reconciliation statement showing the budgeted and actual gross profit together with the variances.

The following is the statement for March Year 8:

Budgeted Gross Profit		£20,000
Variances:		
Sales price	2,950F	
Sales volume profit	1,120A	
Material price	540A	
Material usage	250F	
Labour rate	330F	
Labour efficiency	540A	
Variable overhead expenditure	100A	
Variable overhead efficiency	300A	
Fixed overhead expenditure	610A	
Fixed overhead volume	<u>600A</u>	<u>280A</u>
Actual Gross Profit		<u>£19,720</u>

Budgeted sales and production for the month – 625 units

Actual production for month – 600 units

The standard cost for one unit was as follows:

Direct materials 6 kg @ £5.00 per kg

Direct labour 2 hours @ £4.50 per hour

Variable overhead absorbed at a rate of £2.50 per direct labour hour

Fixed overhead absorbed at a rate of £12.00 per direct labour hour

REQUIRED

Calculate for the month

- (a) the actual number of units sold and their selling price (6 marks)
- (b) the actual quantity of direct materials used and the total actual direct material cost. (Assume usage quantity equals purchased quantity.) (4 marks)
- (c) the actual total labour hours worked and the actual total direct labour cost (4 marks)
- (d) the actual fixed and variable production overhead costs incurred. (6 marks)

(Total 20 marks)

Model Answer to Question 4

(a)

Budgeted unit profit = £20,000/625 = £32. Standard selling price = Profit £32 + Std Cost £68 = £100.

Sales volume profit variance		Budgeted profit - actual sales units x budgeted unit profit
1120A	=	20,000 – actual sales units x 32
Actual sales volume		590 units
Sales price variance	=	Actual sales x std price - actual sales x actual price
2950F	=	590 (100 - actual price)
Actual selling price		£105

(b)

Material usage variance		Std price(std usage for actual production - actual usage)
250F	=	5.00 (6 x 600 - actual usage)
Actual quantity of material used		3,550 kg
Material price variance	=	Actual usage x std price - total actual cost
540A	=	3,550 x 5 - total actual cost
Actual material cost		£18,290
OR		(600 x 30) - 250 + 540 = £18,290

(c)

Labour efficiency variance		Std rate (std hours - actual hours)
540A	=	4.50 (2 x 600 - actual hours)
Actual hours worked		1,320 hours
Labour rate variance	=	Std rate x actual hours - actual direct labour cost
330F	=	4.50 x 1,320 - actual direct labour cost
Actual direct labour cost		£5,610
OR		(600 x 9) + 540 – 330 = £5,610

(d)

Variable o/h efficiency variance		Std rate x std hours for actual production
		- std rate x actual hours
300A	=	2.50 x 2 x 600 - std rate x actual hours
Std rate x actual hours	=	3,300
Variable o/h expenditure variance		Std rate x actual hours - actual cost
100A	=	3,300 - actual cost
Actual cost		£3,400
OR		(600 x 5) + 400 = £3,400

Fixed o/h volume variance		Std rate x std hours - std rate x budgeted hours
600A	=	12 x 600 x 2 - std rate x budgeted hours
Std rate x budget hours	=	15,000 = budget
Fixed o/h expenditure variance		Budget - actual cost
Actual fixed o/h cost		£15,610
OR		(600 x 24) + 1,210 = £15,610
OR		(625 x 24) + 610 = £15,610

QUESTION 5

Makit Ltd manufactures a 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 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 May Year 8:

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

A normal loss of 1,000 kg was expected.

REQUIRED

(a) For the month of May Year 8

- (i) calculate equivalent units and the cost per unit for each element of cost
- (ii) calculate the value of the transfer to finished goods and of the closing stock of work-in-progress
- (iii) prepare the process account showing both quantities and values.

(16 marks)

(b) Define **normal loss** and **abnormal loss** and contrast briefly their cost accounting treatment.

(4 marks)

(Total 20 marks)

Model Answer to Question 5

(a)

(i)

Table of workings for equivalent units

	Finished Stock	Abnormal Loss	Closing Stock	Opening Stock	Equivalent Units	Cost (£)	Unit cost (£)
Material	8,000	700	800	(500)	9,000	63,000	7.00
–Labour	8,000	700	400	(300)	8,800	26,400	3.00
Overheads	8,000	700	400	(300)	8,800	31,680	<u>3.60</u>
							<u>13.60</u>

Workings: Abnormal loss = 500 + 10,000 - 8,000 - 1,000 - 800 = 700

(ii)

Cost of opening work in progress completed

$$12,000 + (500 - 300) \times (3.00 + 3.60)$$

= £13,320

Cost of closing work in progress

$$(800 \times 7.00) + [400 \times (3.00 + 3.60)]$$

= £8,240

Abnormal loss

$$700 \times 13.60$$

= £9,520

Finished goods

= Cost of opening stock completed + Cost of output wholly processed

$$= 13,320 + [(8,000 - 500) \times 13.60]$$

= £115,320

(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	Abnorm Loss	700	9,520
Overheads		31,680	Closing WIP	800	8,240
	<u>10,500</u>	<u>133,080</u>		<u>10,500</u>	<u>133,080</u>

(b)

Normal loss

A loss that is expected in production under normal operating conditions.

Abnormal loss

A loss that exceeds the normal loss indicating inefficient operations.

Normal losses are built into the cost of good units. Abnormal losses 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 proceeds).

Model Answer to Question 6

(a)

Standard cost of one unit

	£
Material	20
Labour	18
Overheads	<u>21</u>
	<u>59</u>

Budgeted profit for month 4

$$= 3,600 (70 - 59) - 18,200$$

£21,400

Actual profit for month 4

Sales		262,000
Direct materials:		
O/stock	35,000	
Purchases	<u>60,860</u>	
	95,860	
C/stock	<u>36,000</u>	
Direct material used	59,860	
Direct labour	51,980	
Fixed production O/H	<u>74,130</u>	
Production cost of goods completed		185,970
Add o/s of finished goods		53,100
Less c/s of finished goods		<u>(14,750)</u>
Production cost of goods sold		<u>224,320</u>
Gross profit		37,680
Less administration o/h		<u>18,720</u>
Net profit		<u>£18,960</u>

Workings

Raw material stock values

$$\text{Opening stock} = 5 \times 7,000 = 35,000$$

$$\text{Closing stock} = 5 (7,000 + 12,000 - 11,800) = 36,000$$

Finished goods stock value

$$\text{Opening stock} = 59 \times 900 = 53,100$$

$$\text{Closing stock} = 59(900 + 2,850 - 3,500) = 14,750$$

Alternative answer – Actual profit for month 4

	£	£
Actual sales (3,500 units)		262,000
Less Standard Production cost of sales @ 5q		<u>206,500</u>
		55,500

Adjust for Production cost variances:

Direct materials	– Price (12,000 x 5 – 60,860) =	860 Adv	
	– Usage (2,850 x 4 – 11,800) x 5 =	2,000 Adv	
Direct labour	– Total (2,850 x 18 – 51,980) =	680 Adv	
Fixed overhead	– Total (2,850 x 21 – 74,130) =	<u>14,280 Adv</u>	<u>(17,820)</u>
Actual Gross Profit			37,680
Less Actual Fixed Administration overhead			<u>(18,720)</u>
Actual Net Profit			<u>18,960</u>

Model Answer to Question 6 continued

(b)

Raw material stock

O/Stock	35,000	Price var	860
Purchases	60,860	WIP	59,000
	<u>95,860</u>	C/Stock	<u>36,000</u>
			<u>95,860</u>

Price variance = $12,000 \times 5 - 60,860 = 860$

Work in progress

Material	59,000	Fin Stock	168,150
Dir labour	52,200	Lab eff variance	900
Fixed O/H	60,900	Mat usage variance	2,000
	<u>172,100</u>	Fix vol eff variance	<u>1,050</u>
			<u>172,100</u>

Labour efficiency variance = $6(2,850 \times 3 - 8,700) = 900A$
 Material usage variance = $5(2,850 \times 4 - 11,800) = 2000A$
 Fixed volume efficiency variance = $7(2,850 \times 3 - 8,700) = 1050A$

Finished goods stock

O/bal	53,100	Cost of sales	206,500
WIP	<u>168,150</u>	C/Balance	<u>14,750</u>
	<u>221,250</u>		<u>221,250</u>

Production overheads

Act fix o/h	74,130	WIP	60,900
Fix o/h expend		Fixed o/h	
variance	<u>1,470</u>	capacity var	<u>14,700</u>
	<u>75,600</u>		<u>75,600</u>

Fixed o/h expenditure variance = $(3,600 \times 7 \times 3) - 74,130 = 1470F$
 Fixed o/h capacity variance = $7[(3,600 \times 3) - 8,700] = 14700A$

Practice varies concerning the stage in the accounting records when certain variances are first posted. The following alternatives would earn full marks:

Raw material stock

o/stock	35,000	WIP	59,000
Purchases (at Std)	<u>60,000</u>	c/stock	<u>36,000</u>
	<u>95,000</u>		<u>95,000</u>

Work-in-progress

D material	59,000	Material usage	2,000
D labour	52,200	Labour effcy	900
Fixed o/head (budget)	75,600	Fixed o/h – effcy	1,050
	<u>186,800</u>	Fixed o/h – cap	14,700
		Fin stock	<u>168,150</u>
			<u>186,800</u>

Production overheads

Actual cost	74,130	WIP (Budget)	75,600
Fixed expenditure	<u>1,470</u>		
	<u>75,600</u>		<u>75,600</u>



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