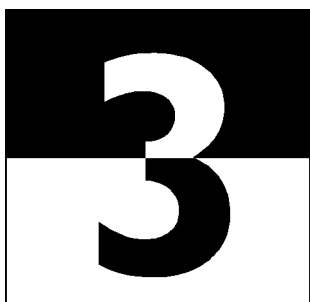


# Cost Accounting



*Level 3*

*Series 4 2003*

*(Code 3016)*

**Model Answers**





# **Cost Accounting Level 3**

## **Series 4 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 4 2003

#### QUESTION 1

Dual Products Ltd uses a batch production method to make its two products, Tee and Pee. At present the company uses a traditional absorption costing system to establish the costs of production. Budgeted production data for the next period is as follows:

	<b>Tee</b>	<b>Pee</b>
Production output	6,000 units	5,000 units
Production batch sizes	30 units	50 units
Machine time per batch	6 hours	8 hours
Material per batch	20 kg at £20 per kg	30 kg at £15 per kg
Labour per batch at £12 per hour	7 hours	9 hours

Variable overheads are budgeted to be absorbed at £3 per labour hour.

Budgeted fixed overheads for the period are £73,600 absorbed at a predetermined rate on a machine hour basis.

The company is considering the introduction of activity based costing for attributing total production overhead costs to products. Further investigation has revealed the following activities and related overhead costs:

<b>Activities</b>	<b>Costs (£)</b>
Product inspection	33,000
Machine set-up	15,000
Machine maintenance	14,900
Product packaging	6,600
Material handling	<u>11,000</u>
	<u>80,500</u>

Other information

- (1) One in every ten products is inspected.
- (2) The company uses a single machine to produce both its products. After each product batch is completed the machine requires setting up again.
- (3) Machine maintenance is carried out regularly based on a predetermined number of machine running hours.
- (4) Both products are packed and despatched in crates of 50 units.
- (5) Material handling costs are influenced by the units of output of each product.

#### REQUIRED

(a) Calculate the cost of one production batch for each product using:

- (i) Traditional absorption costing (4 marks)
- (ii) Activity based costing. (12 marks)

(b) Explain the meaning of the term cost driver. Your explanation should include **two** examples to illustrate your answer.

(4 marks)

**(Total 20 marks)**

### Model Answer to Question 1

<b>Product</b>	<b>Tee</b>	<b>Pee</b>
Output	6,000	5,000
Batch size	30	50
No of batches required	200 (6,000/30)	100 (5,000/50)
Machine hours required	1,200 (200 x 6)	800 (100 x 8)
Total machine hours (Tee + Pee)	2,000	
Fixed overheads for period	£73,600	
Overhead recovery rate	£36.80	per machine hour

(a)

(i) **Batch cost (Traditional absorption costing)**

<b>Product</b>	<b>Tee</b>	<b>Pee</b>
	<b>£</b>	<b>£</b>
Material	400.00	450.00
Labour	84.00	108.00
Variable overheads	21.00	27.00
Fixed overheads	<u>220.80</u> (36.8 x 6)	<u>294.40</u> (36.8 x 8)
Total batch cost	<u>725.80</u>	<u>879.40</u>

(ii) **Batch cost (Activity based costing)**

Overhead costs related to activities (£)

	<b>Tee</b>	<b>Pee</b>
Product inspection		
Number of inspections	600	500
Total overhead (£000)	18 (33 x 600/1,100)	15 (33 x 500/1,100)
<b>Overhead per batch</b>	<b>£90</b>	<b>£150</b>
Machine set-up		
Number of set-ups	200	100
Total overhead (£000)	10 (15 x 200/300)	5 (15 x 100/300)
<b>Overhead per batch</b>	<b>£50</b>	<b>£50</b>
Machine maintenance		
Number of machine hours	1,200	800
Total overhead (£000)	8.94 (14.9 x 1,200/2,000)	5.96 (14.9 x 800/2,000)
<b>Overhead per batch</b>	<b>£44.70</b>	<b>£59.60</b>
Product packaging		
Number of crates	120	100
Total overhead (£000)	3.6 (6.6 x 120/220)	3 (6.6 x 100/220)
<b>Overhead per batch</b>	<b>£18</b>	<b>£30</b>
Material handling		
Number of units	6,000	5,000
Total overhead (£000)	6 (11 x 6,000/11,000)	5 (11 x 5,000/11,000)
<b>Overhead per batch</b>	<b>£30</b>	<b>£50</b>
<b>Total overheads per batch</b>	<b><u>£232.70</u></b>	<b><u>£339.60</u></b>

**Batch costs (£)**

Material	400.00	450.00
Labour	84.00	108.00
Overheads	<u>232.70</u>	<u>339.60</u>
	<b><u>716.70</u></b>	<b><u>897.60</u></b>

**Model answer to Question 1 continued**

**(b) Cost drivers**

A cost driver is any factor which causes a change in the cost of an activity.

Examples:

Number of inspections

Number of set-ups

Number of machine hours

Number of crates

Units of output of each product

## QUESTION 2

Filla Fabrications Ltd is budgeting to make and sell 6,000 units of its single product in their next financial year. Production capacity is currently 7,000 units. The following further budgeted information has been prepared for this product:

Selling price	£65 per unit
Material	£12 per unit
Labour	£10 per unit
Variable overheads	£3 per unit
Fixed overheads	£160,000 for the year

### REQUIRED

- (a) Prepare a profit volume chart. Indicate on the chart the break-even point and the margin of safety. (6 marks)
- (b) State **two** assumptions that apply when producing break-even charts. (2 marks)

An enquiry has been received from a mail order company which is considering including this product in its catalogue. A summary of the enquiry details are as follows:

Minimum quantity	1,000 units per year
Maximum quantity	2,000 units per year
Price offered	£45 per unit

If orders are forthcoming from this enquiry it will be in addition to the planned output for this period. Additional facilities would be required to increase output capacity from 7,000 to 8,000 units.

These additional facilities would not change the unit variable costs of the product but would increase the fixed overheads by £10,000 per year.

### REQUIRED

Assuming Filla Fabrications is considering accepting orders from the mail order company:

- (c) Prepare a budgeted profit statement, in marginal costing format for the next financial year, for **each** of the following situations:
- (i) Sales of 7,000 units (including 1,000 units to the mail order company) (4 marks)
- (ii) Sales of 8,000 units (including 2,000 units to the mail order company). (4 marks)
- (d) Calculate the minimum annual sales to the mail order company that would make it worthwhile to invest in the additional facilities required to increase output to 8,000 units. (4 marks)

**(Total 20 marks)**

**Model Answer to Question 2**

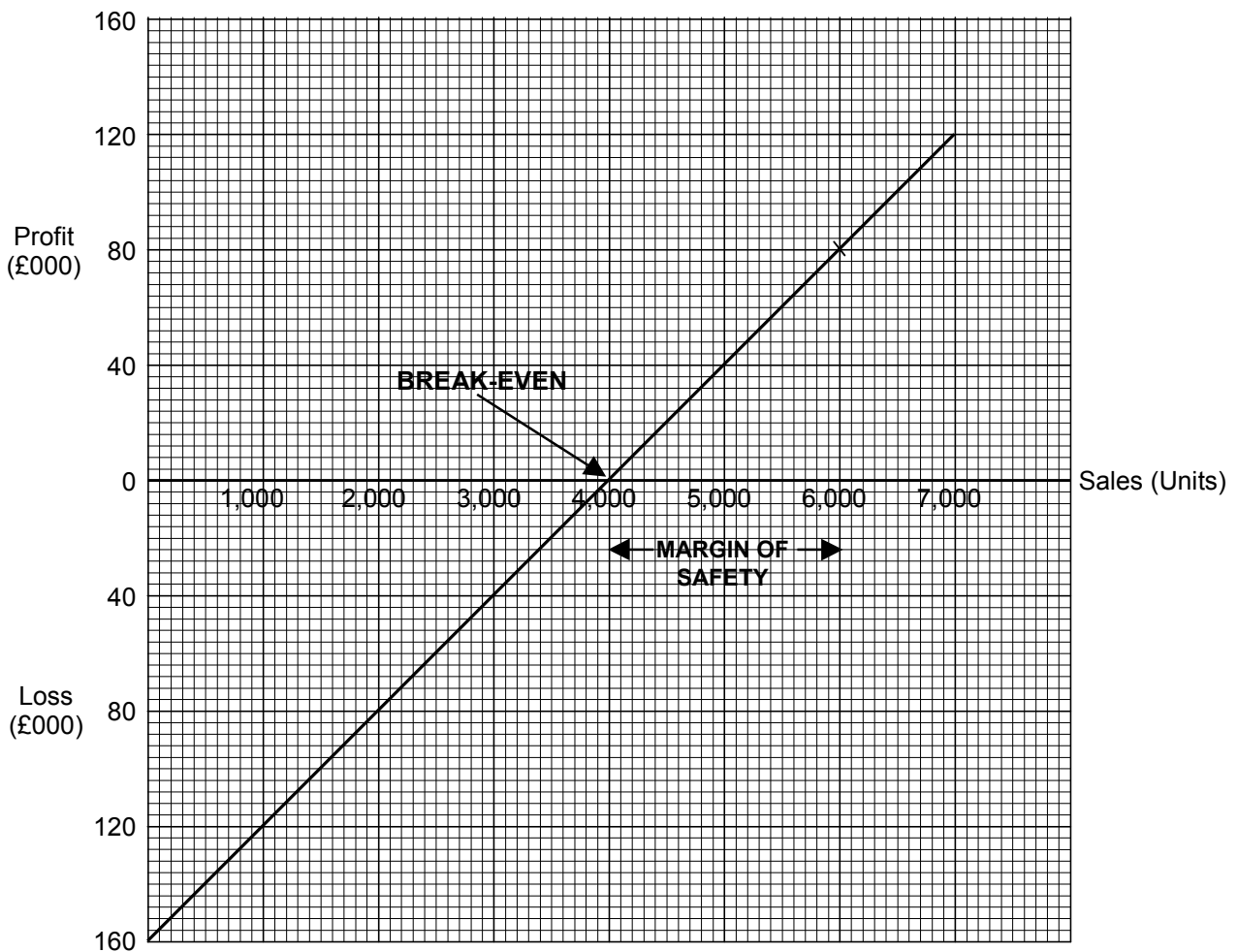
(a) Profit statement for the year

	£	£
Sales		390,000
Materials	72,000	
Labour	60,000	
Variable overhead	<u>18,000</u>	<u>150,000</u>
Contribution		240,000
Fixed overheads		<u>160,000</u>
Net profit		<u>80,000</u>

Break-even point =  $160,000 / (65 - 25)$   
 = 4,000 units

Margin of safety =  $6,000 - 4,000$   
 = 2,000 units

**Profit Volume Chart**



## QUESTION 2 CONTINUED

- (b) Assumptions made when producing break-charts  
 Fixed costs remain fixed for all levels of activity  
 Variable costs per unit remain constant  
 Unit selling price remains constant  
 All costs can be separated into fixed and variable elements

(c)

- (i) Sales of 7,000 units (No additional facilities required)

	£	£
Sales		435,000
Materials	84,000	
Labour	70,000	
Variable overhead	<u>21,000</u>	<u>175,000</u>
Contribution		260,000
Fixed overheads		<u>160,000</u>
Net profit		<u>100,000</u>

- (ii) Sales of 8,000 units (Additional facilities required)

Sales		480,000
Materials	96,000	
Labour	80,000	
Variable overhead	<u>24,000</u>	<u>200,000</u>
Contribution		280,000
Fixed overheads		<u>170,000</u>
Net profit		<u>110,000</u>

- (d) Minimum sales to the mail order company

Calculations based on assumption that a minimum profit of £100,000 (ie the maximum profit achieved with the current facilities) must be obtained if new facilities are to be installed.

Let X = The size of the additional order.

Profit = Total contribution from planned sales plus total contribution from additional order minus fixed overheads.

$$100,000 = 6,000 (65 - 25) + X (45 - 25) - 170,000$$

$$100,000 = 240,000 + 20X - 170,000$$

$$X = 1,500$$

A minimum order size of 1,500 units would be necessary for the Filla Fabrications to invest in additional facilities.

### Alternative answer

Additional contribution required to cover cost of additional facilities	£10,000
Mail company order would provide (£45 – £25)	£20 contribution per unit
Extra units required	500
Therefore minimum order	1,500 units

### QUESTION 3

A company produces a single product by passing two raw materials, A and B, in the ratio of 2 : 1 respectively, through a mechanical process. A 10% loss of both raw materials, occurs during the process. The following sales and production cost data were recorded for the company's first year in operation:

	£
Sales at £25 per tonne	107,500
Direct labour (at £700 per week)	36,400
Material A purchases (£4 per tonne)	16,800
Material B purchases (£6 per tonne)	12,600
Fixed overheads for year	43,180

The following stocks of raw material were recorded at the end of the year:

Material A	1,000 tonnes
Material B	500 tonnes

#### REQUIRED

- (a) Calculate the closing stock (in tonnes) of the finished product at the end of the year. (5 marks)
- (b) Prepare a gross profit statement for the year using absorption costing. (6 marks)

The company is concerned about the loss of output and cost of repairs due to mechanical breakdowns of the process, and is considering introducing a routine preventative maintenance scheme. The company is confident it can sell any additional output resulting from a reduction in breakdown time. The following two alternatives are being considered:

- (1) A maintenance team to work each Saturday at a weekly cost of £200. This would be expected to halve the breakdown time and repair costs.
- (2) A maintenance team to work on a night shift at a weekly cost of £500. This would be expected to save three-quarters of the present breakdown time and repair costs.

These two alternative maintenance schemes will have no effect on any other overheads or direct labour costs. Due to local regulations the company is restricted to a maximum of 40 hours per week. This restriction however does not apply to maintenance work.

During the year the company recorded the following information:

Number of weeks worked – 48 weeks  
Number of hours per week – 40 hours (Monday to Friday only)  
Hours lost to breakdown – 10 hours per week  
Cost of repairs to mechanical processes – £400 per week  
Saleable output from mechanical process – 3 tonnes per hour

#### REQUIRED

- (c) Advise the company on the best course of action. (Support your advice with relevant calculations). (9 marks)

**(Total 20 marks)**

### Model Answer to Question 3

(a)	Material A Tonnes	Material B Tonnes	Total Tonnes
Purchases	4,200	2,100	
Less closing stock	<u>1,000</u>	<u>500</u>	
Input to process	3,200	1,600	4,800
Less 10% loss			<u>480</u>
Output from process			*4,320
Less product sales			<u>4,300</u>
<b>Closing stock of finished products</b>			<b><u>20</u></b>

#### \*Alternative answer to Output from process

3 tonnes per hour x 30 hours per week x 48 weeks per year = 4,320 tonnes

(b)	£	£	£
Sales			107,500
Direct materials			
A	16,800		
B	<u>12,600</u>	29,400	
Less closing stock of raw materials			
A	4,000		
B	<u>3,000</u>	<u>7,000</u>	
		22,400	
Direct labour		36,400	
Fixed overheads		<u>43,180</u>	
Total cost of production		101,980	
Less closing stock (101,980/4,320 x 20)		<u>472</u>	
Production cost of sales			<u>101,508</u>
<b>Gross Profit</b>			<b><u>5,992</u></b>

(c) Alternative maintenance schemes compared with present scheme.

#### Alternative 1

Half the breakdown hours saved ie 5 hours per week

	£	£
Additional sales income (25 x 5 x 3)		375.00
Less material costs		
A	44.44	
B	<u>33.33</u>	<u>77.78</u>
		297.22
Add repair costs savings		200.00
Less maintenance team costs		<u>200.00</u>
Additional weekly contribution		<u>297.22</u>

#### Alternative 2

Three-quarters of the breakdown hours save ie 7.5 hours per week

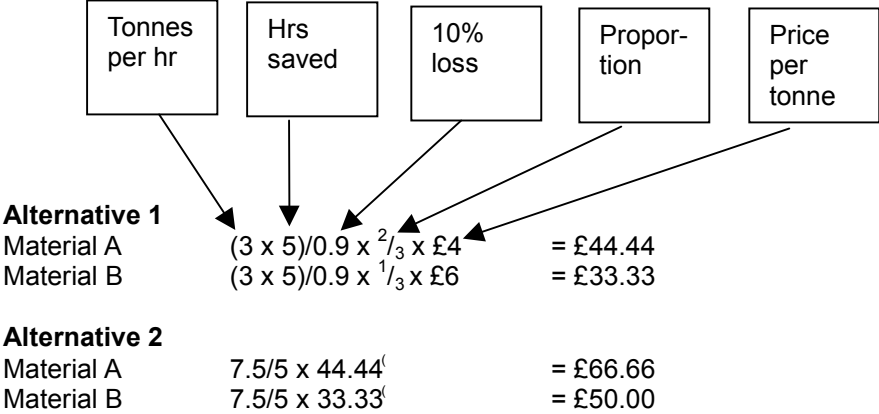
	£	£
Additional sales income (25 x 7.5 x 3)		562.50
Less material costs		
A	66.66	
B	<u>50.00</u>	<u>116.67</u>
		445.83
Add repair costs savings		300.00
Less maintenance team costs		<u>500.00</u>
Additional weekly contribution		<u>245.83</u>

#### Advice

Select Alternative 1 maintenance scheme

**Model answer to Question 3 continued**

Material costs workings



#### QUESTION 4

A company that manufactures and sells a lubrication fluid requests your help in preparing production budgets for the forthcoming six months. The following information has been provided:

(1) **The Product**

The product is manufactured and sold in 9-litre containers.

(2) **Sales**

Budgeted sales (in containers) by month:

January	February	March	April	May	June	July
1,000	600	1,200	800	1,200	1,200	1,100

(3) **Finished Stock Policy**

The business has a policy of maintaining a minimum stock level of completed containers at the end of each month, which is equivalent to half the estimated sales for the following month. The business, however, has a capacity problem and as a result the stock level cannot exceed 800 containers. Stock at January 1 is expected to be 600 containers.

(4) **Manufacturing Capacity**

The production capacity per month, in normal hours, is 1,000 containers. Output per month can be increased with overtime to 1,400 containers. This capacity applies to the months of January, February, March, May and June.

During the month of April, output, restricted due to holidays, is 800 containers in normal hours. Output can be increased in April, with overtime, to 1,200 containers. It is company policy to fill normal capacity each month, except where there is a storage capacity problem, and only work the minimum amount of overtime that is required to comply with the company's minimum finished policy stock.

(5) **Manufacturing Process**

The product is made up of two fluids, A and B, which are processed together in a ratio of 4:1 respectively by volume. A 10% volume loss of both input fluids occurs during the manufacturing process.

(6) **Purchasing Policy**

Fluid A: Based on an order being placed on the first day of each month.  
Reorder quantity to be equivalent to the production requirement for that month.  
Orders placed on the first day of the month will be delivered before the end of the same month.

Fluid B: Based on a fixed quantity reorder system.  
Reorder level 2,000 litres.  
Reorder quantity 6,000 litres.  
Orders placed during the month to be delivered at the beginning of the following month.

**Stock Levels expected 1 January**

Fluid A	10,000 litres
Fluid B	5,000 litres

#### REQUIRED

Prepare the following month by month budgets for the six months January to June:

- (a) Production output budget (containers) (5 marks)
- (b) Closing finished stock budget (containers) (3 marks)
- (c) Material purchase budget for each fluid (litres) (5 marks)
- (d) Closing stock budget for each fluid (litres). (7 marks)

**(Total 20 marks)**

### Model Answer to Question 4

Workings for (a) and (b) (all in units of containers)

	Jan	Feb	March	April	May	June
Opening stock	600	600	800	600	600	600
Production – Normal hours	1,000	800	1,000	800	1,000	1,000
– On overtime					200	150
	<u>1,600</u>	<u>1,400</u>	<u>1,800</u>	<u>1,400</u>	<u>1,800</u>	<u>1,750</u>
Less sales	1,000	600	1,200	800	1,200	1,200
Closing stock	600	800	600	600	600	550
Stock holding level	OK	Max	OK	Min	Min	Min

#### (a) Production budget (in containers)

Normal	1,000	800*	1,000	800	1,000	1,000
Overtime					200	150
Total output	<u>1,000</u>	<u>800</u>	<u>1,000</u>	<u>800</u>	<u>1,200</u>	<u>1,150</u>

\*Output restricted in Feb due to capacity problem

#### (b) Closing finished stock budget (in containers)

	600	800	600	600	600	550
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Input fluids required per 9-litre container

Fluids (A+B) =  $9/0.9 = 10$  litres (10% volume loss)

Fluid A 8 litres\*

Fluid B 2 litres\*

\* Ratio 4:1

Workings for (c) and (d)

Fluid A

Production (containers)	1,000	800	1,000	800	1,200	1,150
Purchases budget (litres)	8,000	6,400	8,000	6,400	9,600	9,200

Closing stock will be 10,000 litres for each month.

Fluid B

Opening stock	5,000	3,000	1,400	5,400	3,800	1,400
Add purchases (receipts)			6,000			6,000
Less production	<u>2,000</u>	<u>1,600</u>	<u>2,000</u>	<u>1,600</u>	<u>2,400</u>	<u>2,300</u>
Closing stock	3,000	1,400	5,400	3,800	1,400	5,100

#### (c) Material purchase budget (litres)

Fluid A	8,000	6,400	8,000	6,400	9,600	9,200
Fluid B		6,000			6,000	

#### (d) Closing stock budget (litres)

Fluid A	10,000	10,000	10,000	10,000	10,000	10,000
Fluid B	3,000	1,400	5,400	3,800	1,400	5,100

## QUESTION 5

A company produces a single product and uses a standard absorption costing system. The production department budgets include the following for Month 3.

Production output	10,000 units
Direct labour per unit	4 hours @ £5 per hour
Direct material per unit	5 kg @ £3 per kg
Variable overheads	£160,000
Fixed overheads	£320,000

Both variable and fixed production overheads are absorbed on the basis of standard direct labour hours.

The actual results for the period were as follows:

Production output	9,800 units
Direct labour	39,500 hours, at a total cost of £192,080
Direct materials used	48,000 kg at a total cost of £140,000
Variable overheads	£154,200
Fixed overheads	£312,000

### REQUIRED

(a) Calculate for the period the following production ratios:

- (i) Efficiency
- (ii) Capacity.

(6 marks)

(b) Calculate for the period the following variances:

- (i) Direct labour rate
- (ii) Direct labour efficiency
- (iii) Direct material price
- (iv) Direct material usage
- (v) Variable production overhead expenditure
- (vi) Variable production overhead efficiency
- (vii) Fixed production overhead expenditure
- (viii) Fixed production overhead volume.

(14 marks)

**(Total 20 marks)**

### Model Answer to Question 5

(a) (i) **Production efficiency ratio (%)**

$$\frac{\text{Standard direct labour hours of actual production}}{\text{Actual direct labour hours worked}} \times 100\%$$

$$= \frac{9,800 \times 4}{39,500} \times 100\% = \mathbf{99.24\%}$$

(ii) **Production capacity ratio (%)**

$$\frac{\text{Actual direct labour hours worked}}{\text{Budgeted direct labour hours}} \times 100\%$$

$$= \frac{39,500}{10,000 \times 4} \times 100\% = \mathbf{98.75\%}$$

(b) (i)	Labour rate variance	$192,080 - 39,500 \times 5$	<b>£ 5,420F</b>
(ii)	Labour efficiency variance	$39,500 \times 5 - 9,800 \times 4 \times 5$	<b>1,500A</b>
(iii)	Material price variance	$140,000 - 48,000 \times 3$	<b>4,000F</b>
(iv)	Material usage variance	$48,000 \times 3 - 9,800 \times 5 \times 3$	<b>3,000F</b>
(v)	Variable overhead expenditure variance	$154,200 - 39,500 \times 4$	<b>3,800F</b>
(vi)	Variable overhead efficiency variance	$39,500 \times 4 - 9,800 \times 4 \times 4$	<b>1,200A</b>
(vii)	Fixed overhead expenditure variance	$312,000 - 320,000$	<b>8,000F</b>
(viii)	Fixed overhead volume variance	$320,000 - 9,800 \times 4 \times 8$	<b>6,400A</b>

## QUESTION 6

Haze 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, Part Number CA110, recorded the following information and balances at the beginning of Month 2:

Reorder level	2,500 kg of free stock
Reorder quantity	2,000 kg
Physical stock	1,250 kg
Allocated stock	550 kg
Amount on order	2,000 kg

The following transactions relating to Part Number CA110 took place during Month 2:

Day	
2nd	300 kg allocated to job number 121
3rd	550 kg issued to job number 116 (previously allocated)
4th	100 kg issued to job number 122 (not previously allocated)
8th	Materials ordered at end of Month 1 received
10th	500 kg issued to job number 123 (not previously allocated)
14th	400 kg allocated to job number 124
15th	250 kg returned to supplier as faulty. Supplier agreed to replace
20th	300 kg issued to job number 121 (previously allocated)
26th	750 kg issued to job number 125 (not previously allocated)
28th	Materials ordered in Month 2 received plus replacement for materials returned on 15th of month
30th	250 kg issued to job number 126 (not previously allocated)

### REQUIRED

- (a) Write up the detailed stock record card for Part Number CA110 for Month 2. (14 marks)
- (b) Briefly explain the meaning of:
- (i) Reorder level
  - (ii) Allocated stock
  - (iii) Free stock.

(6 marks)

**(Total 20 marks)**

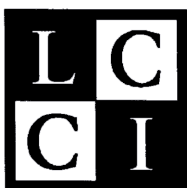
**Model Answer to Question 6**

(a) **STOCK RECORD CARD**

Stock Part Number CA110  
 Reorder level 2,500 kg of free stock  
 Reorder quantity 2,000 kg

Date	Receipts	Issues	Stock in hand	Allocated stock	Stock on order	Free
Month 2	Kg	Kg	Kg	Kg	Kg	Kg
1st			1,250	550	2,000	2,700
2nd			1,250	850	2,000	2,400
2nd			1,250	850	4,000	4,400
3rd		550	700	300	4,000	4,400
4th		100	600	300	4,000	4,300
8th	2,000		2,600	300	2,000	4,300
10th		500	2,100	300	2,000	3,800
14th			2,100	700	2,000	3,400
15th		250	1,850	700	2,250	3,400
20th		300	1,550	400	2,250	3,400
26th		750	800	400	2,250	2,650
28th	2,250		3,050	400	0	2,650
30th		250	2,800	400	0	2,400
30th			2,800	400	2,000	4,400

- (b) (i) **Reorder level**  
 The stock level at which the business reorders more items.
- (ii) **Allocated stock**  
 Stock reserved for or allocated to customer.
- (iii) **Free stock**  
 Stock that is available for reservation or allocation, (or immediate issue from stock, without prior reservation, provided there is physical stock in



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