

## **Cost Accounting Level 3**



International  
Qualifications from EDI

### **Model Answers** Series 3 2009 (3017)

# Cost Accounting Level 3

## Series 3 2009

### 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.

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## QUESTION 1

A company uses three different raw materials (RM1, RM2 & RM3) which it obtains from an outside supplier. The following information is provided relating to each raw material:

### Raw Material RM1

Balance in stores is currently 250 kg  
Stock on order 1000 kg  
Allocated stock is 350 kg

### Raw Material RM2

Daily usage varies between 240 and 360 kg  
Lead time for delivery varies between 15 and 21 days.  
Order quantity is 10,000 kg

### Raw Material RM3

Order quantity 1,000 kg  
Purchase price £2.00 per kg  
Monthly usage 1,500 kg  
Safety (buffer) stock 1,000 kg  
Ordering costs £250 per order  
Stock holding costs are 20% of the average stockholding per annum.  
The supplier has offered a discount off the purchase price if the order quantity is increased. Details are as follows:

Order Quantity	Discount
1,000 kg	-
1,500 kg	5%
3,000 kg	7.5%

## REQUIRED

- (a) For raw material RM1 calculate the free stock currently available. (2 marks)
- (b) For raw material RM2 calculate:
- (i) the reorder level
  - (ii) the minimum and maximum stock control levels. (6 marks)
- (c) For raw material RM3 determine the order quantity that would minimise the total annual costs. (8 marks)
- (d) Briefly explain the meaning of:
- (i) Re-order level
  - (ii) Allocated stock
  - (iii) Free stock. (4 marks)

**(Total 20 marks)**

## MODEL ANSWER TO QUESTION 1

- (a) Raw material RM1  
Free stock = Stock balance in stores + Stock on order - Allocated stock  
Free stock = 250kg + 1000kg - 350kg = **900kg**
- (b) Raw material RM2
- (i) Reorder level  
= maximum usage x maximum lead time  
= 360 x 21 = **7,560kg**
- (ii) Minimum stock control level  
= Re-order level - (average use x average lead time)  
= 7,560 - (300 x 18) = **2,160kg**
- Maximum stock control level  
= Re-order level - (minimum use x minimum lead time) + re-order quantity  
= 7,560 - (240 x 15) + 10,000 = **13,960kg**
- (c) Raw material RM3  
Quantity to minimise annual costs

Order quantity(kg)	1,000	1,500	3,000
Usage per year(kg)	18,000	18,000	18,000
Number of orders per year	18	12	6
Average stock <b>[W1]</b>	1,500	1,750	2,500
Material cost per kg(£)	2.00	1.90	1.85
Ordering costs(£)	4,500	3,000	1,500
Stock holding costs(£)	600	665	925
Total material cost	<u>36,000</u>	<u>34,200</u>	<u>33,300</u>
	<u>41,100</u>	<u>37,865</u>	<u>35,725</u>

Order 3,000 kg, at a discount price of £1.85 per kg, six times per year

**[W1] Average stock =  $\frac{1}{2}$  order quantity + safety stock**

## MODEL ANSWER TO QUESTION 1 CONTINUED

- (d) (i) Re-order level  
The stock level at which the business re-orders more stock.
- (ii) Allocated stock  
Stock that has been scheduled for use.
- (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 stores).

## QUESTION 2

Triple Products Ltd manufactures three products Hay, Bee and Cee. 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>Hay</b>	<b>Bee</b>	<b>Cee</b>
Production output (units)	1,000	800	400
Material per unit at £5 per kg	5kg	10kg	7.5kg
Labour per unit at £9 hour	2hrs	2hrs	3hrs
Machine time per unit	2hrs	1.5hrs	2hrs

Variable production overheads are budgeted to be absorbed at £3.50 per labour hour.

Fixed production overheads for the period are budgeted to be £66,000, absorbed on a machine hour basis.

The company is considering the introduction of an activity based costing system.

Further investigation has revealed the following activities and related overhead costs:

<b>Activities</b>	<b>Costs (£)</b>
Product inspection	24,000
Machine set-up	16,000
Machine maintenance	12,000
Packing and despatch	6,000
Material handling	<u>8,000</u>
	<u>66,000</u>

Other information:

- 1 Budgeted orders for next period: Hay 10 orders; Bee and Cee 5 orders each. Each order is expected to require one machine set up and two inspections.
- 2 Machine maintenance is carried out regularly based on a predetermined number of machine running hours.
- 3 Each product is packed and despatched in crates containing the following number of products per crate: Hay 50 units, Bee 25 units and Cee 50 units. The number of crates used influences product despatch costs.
- 4 Material handling costs are influenced by the quantity of material used.

## REQUIRED

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

- (i) Traditional absorption costing
- (ii) Activity based costing.

(16 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 2

(a)	Hay	Bee	Cee	Total
Output(units)	1,000	800	400	
Machine time per unit	2 hrs	1.5 hrs	2 hrs	
Total machine hrs	2,000	1,200	800	4,000

Fixed overhead for period(£) 66,000

Overhead absorption rate = £66,000 / 4,000 = £16.5 per machine hour

### Production cost (Traditional absorption costing)

(i)	Hay		Bee		Cee	
	£		£		£	
Material	25	(5 x £5)	50	(10 x £5)	37.5	(7.5 x £5)
Labour	18	(2 x £9)	18	(2 x £9)	27	(3 x £9)
Variable overheads	7	(2 x £3.50)	7	(2 x £3.50)	10.5	(3 x £3.50)
Fixed overheads	<u>33</u>	(2 x £16.50)	<u>24.75</u>	(1.50 x £16.50)	<u>33</u>	(2 x £16.50)
Total unit cost	<u>83</u>		<u>99.75</u>		<u>108</u>	

### Activity Based Costing

(ii)	Hay		Bee		Cee	
<b>Overhead</b>						
<b>Product inspection</b>						
No of inspections	20	(10 x 2)	10	(5 x 2)	10	(5 x 2)
Total cost (£'000)	12	(24 x 20/40)	6	(24 x 10/40)	6	(24 x 10/40)
Cost per unit (£)	<b>12</b>	(12,000/1,000)	<b>7.5</b>	(6,000/800)	<b>15</b>	(6,000/400)
<b>Machine set-up</b>						
No of machine set-ups	10	(10 x 1)	5	(5 x 1)	5	(5 x 1)
Total cost (£'000)	8	(16 x 10/20)	4	(16 x 5/20)	4	(16 x 5/20)
Cost per unit (£)	<b>8</b>	(8,000/1,000)	<b>5</b>	(4,000/800)	<b>10</b>	(4,000/400)
<b>Machine maintenance</b>						
No of machine hours	2,000	(1,000 x 2)	1,200	(800 x 1.50)	800	(400 x 2)
Total cost (£'000)	6	(12 x 2,000/4,000)	3.6	(12 x 1,200/4,000)	2.4	(12 x 800/4,000)
Cost per unit (£)	<b>6</b>	(6,000/1,000)	<b>4.5</b>	(3,600/800)	<b>6</b>	(2,400/400)
<b>Packing &amp; despatch</b>						
No of crates	20	(1,000/50)	32	(800/25)	8	(400/50)
Total cost (£'000)	2	(6 x 20/60)	3.2	(6 x 32/60)	0.8	(6 x 8/60)
Cost per unit (£)	<b>2</b>	(2,000/1,000)	<b>4</b>	(3,200/800)	<b>2</b>	(800/400)
<b>Material handling</b>						
Quantity of material (kg)	5,000	(1,000 x 5)	8,000	(800 x 10)	3,000	(400 x 7.5)
Total cost (£'000)	2.5	(8 x 5,000/16,000)	4	(8 x 8,000/16,000)	1.5	(8 x 3,000/16,000)
Cost per unit (£)	<b>2.5</b>	(2,500/1,000)	<b>5</b>	(4,000/800)	<b>3.75</b>	(1,500/400)

## MODEL ANSWER TO QUESTION 2 CONTINUED

### Overhead cost per unit

	Hay	Bee	Cee
	£	£	£
Product inspection	12	7.5	15
Machine set-up	8	5	10
Machine maintenance	6	4.5	6
Product despatch	2	4	2
Material handling	<u>2.5</u>	<u>5</u>	<u>3.75</u>
Cost per unit	<b><u>30.5</u></b>	<b><u>26</u></b>	<b><u>36.75</u></b>

### Production cost (Activity based costing)

	Hay	Bee	Cee
	£	£	£
Material	25	50	37.5
Labour	18	18	27
Variable overheads	7	7	10.5
Fixed overheads	<u>30.5</u>	<u>26</u>	<u>36.75</u>
Total unit cost	<b><u>80.5</u></b>	<b><u>101</u></b>	<b><u>111.75</u></b>

### Cost drivers

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

#### Examples:

- Number of inspections
- Number of machine set-ups
- Number of machine hours
- Number of boxes
- Weight of material moved



### QUESTION 3

James is planning to start a new business, commencing January year 10, by investing £10,000 of his own capital and obtaining a bank loan of £20,000. His bank manager has asked him to prepare a cash budget as part of his business plan.

James has used a market research survey to evaluate probable sales and has produced the following budgeted data:

All sales will be made at £15 per unit. James anticipates 20% cash sales with remaining customers being allowed one month credit. Sales units are estimated to be as follows:

January	0	July	2,500
February	1,800	August	2,700
March	2,000	September	2,800
April	2,000	October	2,500
May	2,200	November	2,200
June	2,400	December	2,000
		January (year 11)	2,200

It is estimated that 2% of credit sales will be bad debts.

James has also provided the following information:

All units will be produced in the month before they are required for sale.

Material used for production will be purchased in the month they are used at a cost of £8 per unit. James anticipates his first four months' purchases will be for cash with the supplier allowing one months credit on purchases thereafter.

Direct labour will be paid at a rate of £4 per unit of finished product payable in the month of production. A bonus payment of £1 per unit will be paid for all additional monthly production in excess of 2,000 units. This bonus will be paid in the month following the production.

Overheads will amount to £4,000 per month and are paid in the month in which they are incurred.

Equipment costing £20,000 will be purchased and paid for in January using the bank loan of £20,000. The loan will be repaid over 4 years with an annual interest charge of £1,000. Repayments will be made on a quarterly basis in equal instalments commencing in March. The equipment will be depreciated over the term of the loan. The depreciation charge has been included in the overheads.

### REQUIRED

- (a) Prepare the cash budget, in tabular format, for submission to the bank for each of the following three month periods:

January to March  
April to June  
July to September  
October to December.

(16 marks)

- (b) State two advantages of having a cash budget.

(4 marks)

**(Total 20 marks)**

### MODEL ANSWER TO QUESTION 3

Workings

#### Receipts:

	<b>Sales units</b>	<b>Revenue (£)</b>	<b>Cash (20%)</b>	<b>Credit (80% x 0.98)</b>	<b>Receipts per month</b>	<b>Receipts per 3 month period</b>
Jan	0	0	0	0		
Feb	1,800	27,000	5,400	0	5,400	
Mar	2,000	30,000	6,000	21,168	27,168	32,568
Apr	2,000	30,000	6,000	23,520	29,520	
May	2,200	33,000	6,600	23,520	30,120	
Jun	2,400	36,000	7,200	25,872	33,072	92,712
Jul	2,500	37,500	7,500	28,224	35,724	
Aug	2,700	40,500	8,100	29,400	37,500	
Sep	2,800	42,000	8,400	31,752	40,152	113,376
Oct	2,500	37,500	7,500	32,928	40,428	
Nov	2,200	33,000	6,600	29,400	36,000	
Dec	2,000	30,000	6,000	25,872	31,872	108,300

#### Payments:

##### Material

	<b>Sales units</b>	<b>Production units</b>	<b>Purchases £</b>	<b>Cash £</b>	<b>Credit £</b>	<b>Payment(£) per month</b>	<b>Payments(£) per 3 month period</b>
Jan	0	1,800	14,400	14,400	0	14,400	
Feb	1,800	2,000	16,000	16,000	0	16,000	
Mar	2,000	2,000	16,000	16,000	0	16,000	46,400
Apr	2,000	2,200	17,600	17,600	0	17,600	
May	2,200	2,400	19,200	0	0	0	
Jun	2,400	2,500	20,000	0	19,200	19,200	36,800
Jul	2,500	2,700	21,600	0	20,000	20,000	
Aug	2,700	2,800	22,400	0	21,600	21,600	
Sep	2,800	2,500	20,000	0	22,400	22,400	64,000
Oct	2,500	2,200	17,600	0	20,000	20,000	
Nov	2,200	2,000	16,000	0	17,600	17,600	
Dec	2,000	2,200	17,600	0	16,000	16,000	53,600

## MODEL ANSWER TO QUESTION 3 CONTINUED

### Labour

	Production units	Bonus units	Basic rate cost(£)	Bonus payment(£)	Payment(£) per month	Payments(£) per 3 month period
Jan	1,800	0	7,200	0	7,200	
Feb	2,000	0	8,000	0	8,000	
Mar	2,000	0	8,000	0	8,000	23,200
Apr	2,200	200	8,800	0	8,800	
May	2,400	400	9,600	200	9,800	
Jun	2,500	500	10,000	400	10,400	29,000
Jul	2,700	700	10,800	500	11,300	
Aug	2,800	800	11,200	700	11,900	
Sep	2,500	500	10,000	800	10,800	34,000
Oct	2,200	200	8,800	500	9,300	
Nov	2,000	0	8,000	200	8,200	
Dec	2,200	200	8,800	0	8,800	26,300

### Depreciation

$\text{£}20,000 / 4 = \text{£}5,000$  per year, =  $5,000 / 4 = \text{£}1,250$  per quarter

Overheads =  $\text{£}4,000 \times 3 - \text{£}1,250 = \text{£}10,750$  per quarter

### Bank loan

Repayment =  $\text{£}20,000 / 4 + \text{£}1,000 = \text{£}6,000$  per year

=  $\text{£}6,000 / 4 = \text{£}1,500$  per quarter

### Cash budget

(a)	Jan-March	April-June	July-Sept	Oct-Dec
<b>Receipts</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>
Bank loan	20,000			
Sales	<u>32,568</u>	<u>92,712</u>	<u>113,376</u>	<u>108,300</u>
	<u>52,568</u>	<u>92,712</u>	<u>113,376</u>	<u>108,300</u>
<b>Payments</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>
Equipment	20,000			
Material	46,400	36,800	64,000	53,600
Labour	23,200	29,000	34,000	26,300
Overheads	10,750	10,750	10,750	10,750
Bank loan	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>
	<u>101,850</u>	<u>78,050</u>	<u>110,250</u>	<u>92,150</u>
Net cash flow	-49,282	14,662	3,126	16,150
Opening balance	<u>10,000</u>	<u>-39,282</u>	<u>-24,620</u>	<u>-21,494</u>
Closing balance	<u>-39,282</u>	<u>-24,620</u>	<u>-21,494</u>	<u>-5,344</u>

**MODEL ANSWER TO QUESTION 3 CONTINUED**

- (b) (i) Cash shortages revealed early and arrangements can be made for overdraft on best terms.
- (ii) Cash surpluses revealed and can be invested.

#### QUESTION 4

A company which manufactures and sells four products (A,B,C and D), has presented the following budget details for year 10.

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Sales (units per year)	2,500	2,000	1,000	600
Selling price (per unit)	£10	£12	£16	£25
Variable cost (per unit)	£6	£6	£10	£16

Fixed costs £16,700 for the year.

#### REQUIRED

- (a) Calculate the contribution to sales ratio (to the nearest £) for each product and for the company overall. (5 marks)
- (b) Calculate the budgeted profit for year 10. (2 marks)
- (c) Calculate the break-even revenue based on the budgeted sales mix. (3 marks)
- (d) Draw a contribution break-even chart for the budgeted sales mix. Indicate clearly on the chart the break-even revenue, the margin of safety and the contribution area. (8 marks)
- (e) Calculate the sales revenue required (to the nearest £ hundred), based on the budgeted sales mix, to achieve a net profit of £20,000. (2 marks)

**(Total 20 marks)**

#### MODEL ANSWER TO QUESTION 4

(a) Contribution to sales ratio

Product A	<b>40%</b>	$[(10 - 6) / 10 \times 100\%]$
Product B	<b>50%</b>	$[(12 - 6) / 12 \times 100\%]$
Product C	<b>37.50%</b>	$[(16 - 10) / 16 \times 100\%]$
Product D	<b>36%</b>	$[(25 - 16) / 25 \times 100\%]$

Overall **41.75%**

Workings:

$$\begin{aligned} \text{Total sales (£)} &= (10 \times 2,500) + (12 \times 2,000) + (16 \times 1,000) + (25 \times 600) \\ &= \text{£}80,000 \end{aligned}$$

$$\begin{aligned} \text{Total contribution (£)} &= (4 \times 2,500) + (6 \times 2,000) + (6 \times 1,000) + (9 \times 600) \\ &= \text{£}33,400 \end{aligned}$$

$$\begin{aligned} \text{Overall contribution to sales ratio} &= 33,400 / 80,000 \\ &= 41.75\% \end{aligned}$$

(b) Budgeted profit

	£
Contribution	33,400
Fixed costs	<u>16,700</u>
Profit	<b><u>16,700</u></b>

(c) Break-even revenue (£)

Fixed cost	16,700
Overall contribution ratio	0.4175
Break-even revenue	$16,700 / 0.4175$
	<b>= £40,000</b>

(d) Contribution break-even chart

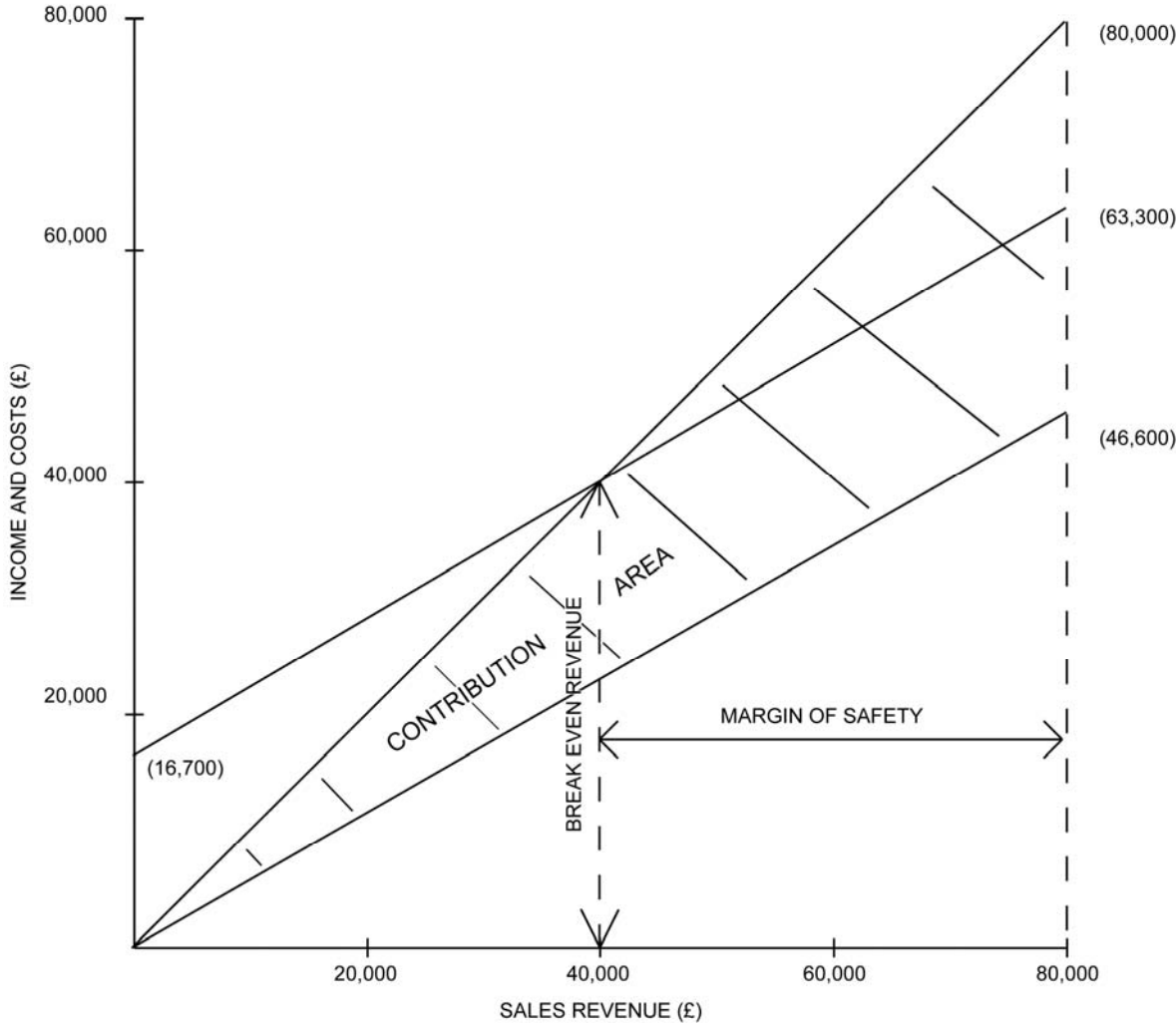
Heading	Margin of safety
Labels	Contribution area
Break-even revenue	Lines

(e) Sales revenue (£)

Fixed cost	16,700
Required profit	20,000
Overall contribution ratio	0.4175
Sales revenue (£)	$(16,700 + 20,000) / 0.4175$
	<b>= 87,904</b>
	<b>= £87,900 (to nearest £100)</b>

QUESTION 4 CONTINUED

CONTRIBUTION BREAK-EVEN CHART



## QUESTION 5

Sole Products Ltd, which uses a standard costing system, produces a monthly reconciliation statement showing the variances between standard production costs and actual production costs. The following is the statement for May year 9.

	£	£
Standard cost of production		44,200
Variations:		
Material price	100 Adv	
Material usage	600 Fav	
Labour rate	250 Adv	
Labour efficiency	1,000 Fav	
Idle time (machine breakdown)	500 Adv	
Fixed overhead expenditure	1,500 Adv	
Fixed overhead volume	1,200 Fav	
		<u>450 Fav</u>
Actual cost of production		<u>43,750</u>
Actual production for the month	650 units	

The standard direct costs for one unit of production are:

Direct material	4kg at £6 per kg
Direct labour	2 hours at £10 per hour.

Fixed overheads are absorbed at a rate of £12 per direct labour hour.

### REQUIRED

(a) Calculate for the month:

- (i) The actual quantity of direct materials used and the total actual direct material cost (assume usage quantity equals purchased quantity)
- (ii) The actual labour hours worked, the idle time due to machine breakdown and the total direct labour cost
- (iii) The actual fixed production overhead incurred
- (iv) The budgeted production units.

(16 marks)

(b) Describe the possible reasons for the variances on:

- (i) Direct material
- (ii) Direct labour.

(4 marks)

**(Total 20 marks)**



## MODEL ANSWER TO QUESTION 5

(a)

(i) Material usage variance	=	Std price (std usage for actual prod - actual usage)
600F	=	6 (650 x 4 - actual usage)
Actual usage	=	(650 x 4) - 100
<b>Actual usage</b>	=	<b>2,500kg</b>
Material price variance	=	Actual usage (std price - actual price)
Material price variance	=	(Actual usage x std price) - actual cost
100A	=	(2,500 x 6) - actual cost
Actual cost	=	(2,500 x 6) + 100
<b>Actual cost</b>	=	<b>£15,100</b>

(ii) Labour efficiency variance	=	Std rate (std hours - actual hours worked)
1,000F	=	10 (650 x 2 - actual hours worked)
Actual hours worked	=	(650 x 2) - 100
<b>Actual hours worked</b>	=	<b>1,200 hours</b> (does not include idle time hours)

Idle time variance	=	std rate x idle time hours
500A	=	10 x idle time hours
Idle time hours	=	500 / 10
<b>Idle time hours</b>	=	<b>50 hours</b>

Labour rate variance	=	(Actual hours + idle time hours) x (std rate - actual rate)
Labour rate variance	=	[(Actual hours + idle time) x std rate] - actual direct labour cost
250A	=	[(1,200 + 50) x 10] - actual direct labour cost
Actual direct labour cost	=	12,500 + 250
<b>Actual direct labour cost</b>	=	<b>£12,750</b>

(iii) Fixed o/h volume variance	=	Std rate x std hours - budgeted o/h
1,200F	=	12 x (650 x 2) - budgeted o/h
Budgeted overhead	=	15,600 - 1,200
<b>Budgeted overhead</b>	=	<b>£14,400</b>
Fixed o/h expenditure variance	=	Budgeted o/h - Actual o/h
1,500A	=	14,400 - actual o/h
Actual fixed production o/h	=	14,400 + 1,500
<b>Actual fixed production o/h</b>	=	<b>£15,900</b>

(iv) Budgeted production (units)	=	Budgeted o/h / Fixed o/h absorption rate per unit
Budgeted production (units)	=	14,400 / (12 x 2)
<b>Budgeted production (units)</b>	=	<b>600 units</b>

## QUESTION 5 CONTINUED

(b) (i) Direct material variance

The company could have found a new supplier who offered a better quality material at a higher unit price per kg (adverse price variance) and as a consequence less material than standard could have been used (favourable usage variance).

(ii) Direct labour variance

The company could have increased the employees rate of pay (adverse rate variance) which in turn motivated the employees to complete the work in a production time that was quicker than the standard time (favourable efficiency variance).

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