Cost Accounting
Level 3

Model Answers
Series 3 2012 (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

Triage Products Ltd manufactures three products Pee, Que and Tee. 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:

	Pee	**Que**	**Tee**
Production output (units)	500	400	200
Material per unit at £5 per kg	10kg	20kg	15kg
Labour per unit at £10/hour	2hrs	2hrs	3hrs
Machine time per unit	4hrs	3hrs	4hrs

Variable production overheads are budgeted to be absorbed at £3.50 per labour hour.
Fixed production overheads for the period are budgeted to be £30,000, 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 fixed overhead costs:

Activities	**Costs (£)**
Product inspection	9,600
Machine set-up	6,400
Machine maintenance	4,300
Packing and despatch	3,300
Material handling	6,400
	30,000

Other information

(i) Budgeted production is expected to consist of: Pee10 orders; Que and Tee 5 orders each. Each order is expected to require one machine set up and two inspections

(ii) Machine maintenance is carried out regularly based on a predetermined number of machine running hours.

(iii) Each product is packed and despatched in crates containing the following number of products per crate: Pee 20 units, Que 25 units and Tee 8 units. The number of crates used influences product despatch costs.

(iv) Material handling costs are influenced by the quantity of material used.

REQUIRED

(a) Calculate for the nest period, 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 and provide two examples to illustrate your answer.

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 1

Syllabus Topic 2: Costing methods and systems (2.1&2.2)

(a)

	Pee	Que	Tee	Total
Output(units)	500	400	200	
Machine per unit	4 hrs	3 hrs	4 hrs	
Total machine hrs	2,000	1,200	800	4,000

Fixed overhead for period(£) 30,000

Overhead absorption rate = £30,000 / 4,000 = £7.50 per machine hour **(1)**

Production cost (Traditional absorption costing)

(i)	Pee £		Que £		Tee £	
Material	50.0	(10 x £5)	100.0	(20 x £5)	75.0	(15 x £5)
Labour	20.0	(2 x £10)	20.0	(2 x £10)	30.0	(3 x £10)
Variable overheads	7.0	(2 x £3.50)	7.0	(2 x £3.50)	10.5	(3 x £3.50)
Fixed overheads	30.0	(4 x £7.50)	22.5	(3 x £7.50)	30.0	(4 x £7.50)
Total unit cost	**107.0**	**(1)**	**149.5**	**(1)**	**145.5**	**(1)**

(4 marks)

Activity Based Costing

(ii)	Pee £		Que £		Tee £	
Overhead						
Product inspection						
Cost driver £240 per inspection						
No of inspections	20	(10 x 2)	10	(5 x 2)	10	(5 x 2)
Total cost(£'000)	4.8	(9.6x20/40)	2.4	(9.6x10/40)	2.4	(9.6x10/40)
Cost per unit (£)	**9.6**	4,800/500	**6**	2,400/400	**12**	2,400/200
Machine set-up						
Cost driver £320 per set up						
No of machine set-ups	10	(10 x 1)	5	(5 x 1)	5	(5 x 1)
Total cost(£'000)	3.2	6.4x10/20	1.6	6.4x5/20	1.6	6.4x5/20
Cost per unit (£)	**6.4**	3,200/500	**4**	1,600/400	**8**	1,600/200
Machine maintenance						
Cost driver £1.075 per m/c hr						
No of machine hours	2,000	(500 x 4)	1,200	(400 x 3)	800	(200 x 4)
Total cost(£'000)	2.15	4.3 x (2/4)	1.29	4.3 x (1.2/4.0)	0.86	4.3 x (0.8/4.0)
Cost per unit (£)	**4.3**	2,150/500	**3.225**	1,290 / 400	**4.3**	860 /200
Packing & despatch						
Cost driver £50 per crate						
No of crates	25	500/20	16	400/25	25	200/8
Total cost(£'000)	1.25	(3.3x25/66)	0.8	3.3x16/66)	1.25	(3.3x25/66)
Cost per unit (£)	**2.5**	1,250/500	**2**	800/400	**6.25**	1,250/200

Material handling

Cost driver £0.4 per kg							
Quantity of material(kg)	5,000	(500x10)		8,000	(400x20)	3,000	(200x15)
Total cost(£'000)	2	(6.4x5,000/16,000)		3.2	6.4x8,000/16,000)	1.2	(6.4x3,000/16,000)
Cost per unit (£)	**4**	(2,000/500)		**8**	(3,200/400)	**6**	(1,200/200)

Overhead cost per unit

Cost driver £0.4 per kg							
Product inspection	9.60	**½ of**		6.00	**½ of**	12.00	**½ of**
Machine set-up	6.40	**½ of**		4.00	**½ of**	8.00	**½ of**
Machine maintenance	4.30	**½ of**		3.23	**½ of**	4.30	**½ of**
Product despatch	2.50	**½ of**		2.00	**½ of**	6.25	**½ of**
Material handling	4.00	**½ of**		8.00	**½ of**	6.00	**½ of**
Cost per unit	26.80	**½ of**		23.23	**½ of**	36.55	**½ of**

Production cost (Activity based costing)

	Pee		**Que**		**Tee**	
	£		**£**		**£**	
Material	50.00		100.00		75.00	
Labour	20.00		20.00		30.00	
Variable overheads	7.00		7.00		10.50	
Fixed overheads	26.80		23.23		36.55	
Total unit cost	**103.80**	**(1)**	**150.23**	**(1)**	**152.05**	**(1)**

Only award of for total unit costs if material, labour, variable and fixed overheads are correct

(12 marks)

(b) **Cost drivers**

A cost driver is any factor which causes a change in the cost of an activity **(2)**

Examples

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

(1 mark for any two) (2)

(4 marks)

(Total 20 marks)

QUESTION 2

Sinclair 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.

Additional Information

Production overheads are absorbed at the rate of £10 per direct labour hour.

Direct labour is paid at the rate of £12 per hour.

The following information is available for the last period:

Opening stock of work-in-progress (60% complete with respect to labour and overheads)	500kg	£4,150
Material introduced	8,000kg	£35,000
Direct labour		£16,560
Transfer to finished goods	7,000kg	
Closing stock of work-in-progress (50% complete with respect to labour and overheads)	600kg	

A normal loss of 1,000kg was expected.

All losses are detected at the end of the process.

REQUIRED

(a) For the last period calculate:

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

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

(11 marks)

(b) Prepare the process account for the last period

(4 marks)

(c) Define normal loss, abnormal loss, abnormal gain and contrast their cost accounting treatment

(5 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 2
Syllabus Topic 2: Costing methods and systems (2.3 and 2.5)

(a) (i)

	Material	Labour	Overheads	
Transfer to finished goods	7,000	7,000	7,000	
Abnormal gain	(100)	(100)	(100)	
Closing stock	600	300	300	
Opening stock	(500)	(300)	(300)	
Equivalent units	**7,000**	**6,900**	**6,900**	**(1½)**
Costs	£35,000	£16,560	£13,800	
Costs per unit	**£5.00**	**£2.40**	**£2.00**	**(1½of)**

Workings

Abnormal gain = 500 + 8,000 - 600 - 7,000 - 1,000 = (100kg) **(1)**

Overhead cost = £16,560 / 12 x 10 = £13,800 **(1)**

(ii)

Value of transfer to Finished goods = Cost of opening stock completed + cost of output wholly processed

Opening stock completed = £4,150 + (500 - 300) x (2.40 + £2.00) = £5,030 **(1of)**

Cost of output wholly processed = (7,000 - 500) x (£5 + £2.40 + £2) = £61,100 **(1of)**

Value of transfer to Finished goods = £5,030 + £61,100 = **£66,130** **(2of)** **(4)**

Cost of closing work-in-progress = (600 x £5) + 300 x (£2.4 + £2) = **£4,320** **(2)**

(11 marks)

(b) **Process Account**

	Units	Cost(£)		Units	Cost(£)	
Opening WIP	500	4,150	Finished goods	7,000	66,130	**(1 of)**
Material	8,000	35,000	Normal loss	1,000	**(1)** 0	
Labour		16,560	Closing WIP	600	4,320	**(1 of)**
Overheads		13,800				
Abnormal gain	100	940**(1)**				
	8,600	70,450		8,600	70,450	

(c) **Normal loss**: A loss that is expected in production under normal operating conditions **(1)**

Abnormal loss: A loss that exceeds the normal loss **(1)**

Abnormal gain: A gain over the expected finished goods output **(1)**

Normal losses are built into the cost of good units, any scrap value arising is normally deducted from the cost of material input. **(1)** 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 **(1)**

(5 marks)

(Total 20 marks)

QUESTION 3

Makit Ltd manufactures and sells four products (Hay, Bee, Cee and Dee) to the automobile industry. The company has prepared the following budget detail for year 2.

Product	**Hay**	**Bee**	**Cee**	**Dee**
Sales (units)	12,000	8,000	6,000	10,000
Sales price per unit	£20	£20	£25	£25
Direct material (per unit)	£6	£7	£5	£8
Direct labour (per unit)	£4	£6	£5	£6
Fixed costs (per unit)	£5	£5	£5	£5

REQUIRED

(a) Calculate the contribution to sales ratio for each product and for Makit Ltd overall.

(4 marks)

(b) Calculate the break-even revenue (to the nearest thousand) based on the budgeted sales mix.

(2 marks)

(c) Draw a conventional break-even chart for the budgeted sales mix. Indicate clearly on the chart the break-even revenue, the margin of safety and the profit for the budgeted sales of all four products

(8 marks)

The company is considering increasing its advertising on product Cee. Market research suggests that this would generate a 40% increase in the sales of product Cee, have no effect on the sales of product Bee and Dee but would reduce the sales of product Hay by 25%.

The additional advertising would increase the fixed costs by £10,000 for the year

REQUIRED

(d) Advise the company, using supporting calculations, whether to increase the advertising on product Cee.

(6 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 3

Syllabus Topic 3: Cost-volume-profit analysis (3.1,3.2,3.4 and 3.5)

(a)	**Hay**	**Bee**	**Cee**	**Dee**	**Total**	
Sales (units)	12,000	8,000	6,000	10,000		
Sales price(unit)	20	20	25	25		
Sales revenue(£)	240,000	160,000	150,000	250,000	800,000	
Direct material (£/unit)	6	7	5	8		
Direct labour (£/unit)	4	6	5	6		
Variable cost (£/unit)	10	13	10	14		
Contribution (£/unit)	10	7	15	11		**(1)**
Total contribution(£)	120,000	56,000	90,000	110,000	376,000	
Contribution to sales ratio	50%	35%	60%	44%	47%	
	(½)	**(½)**	**(½)**	**(½)**	**(1)**	

(b) **(4 marks)**

Budgeted fixed cost = £5x(12,000+8,000+6,000+10,000) = £5 x 36,000 = £180,000 **(1)**

Break-even revenue = Fixed cost / overall contribution sales ratio

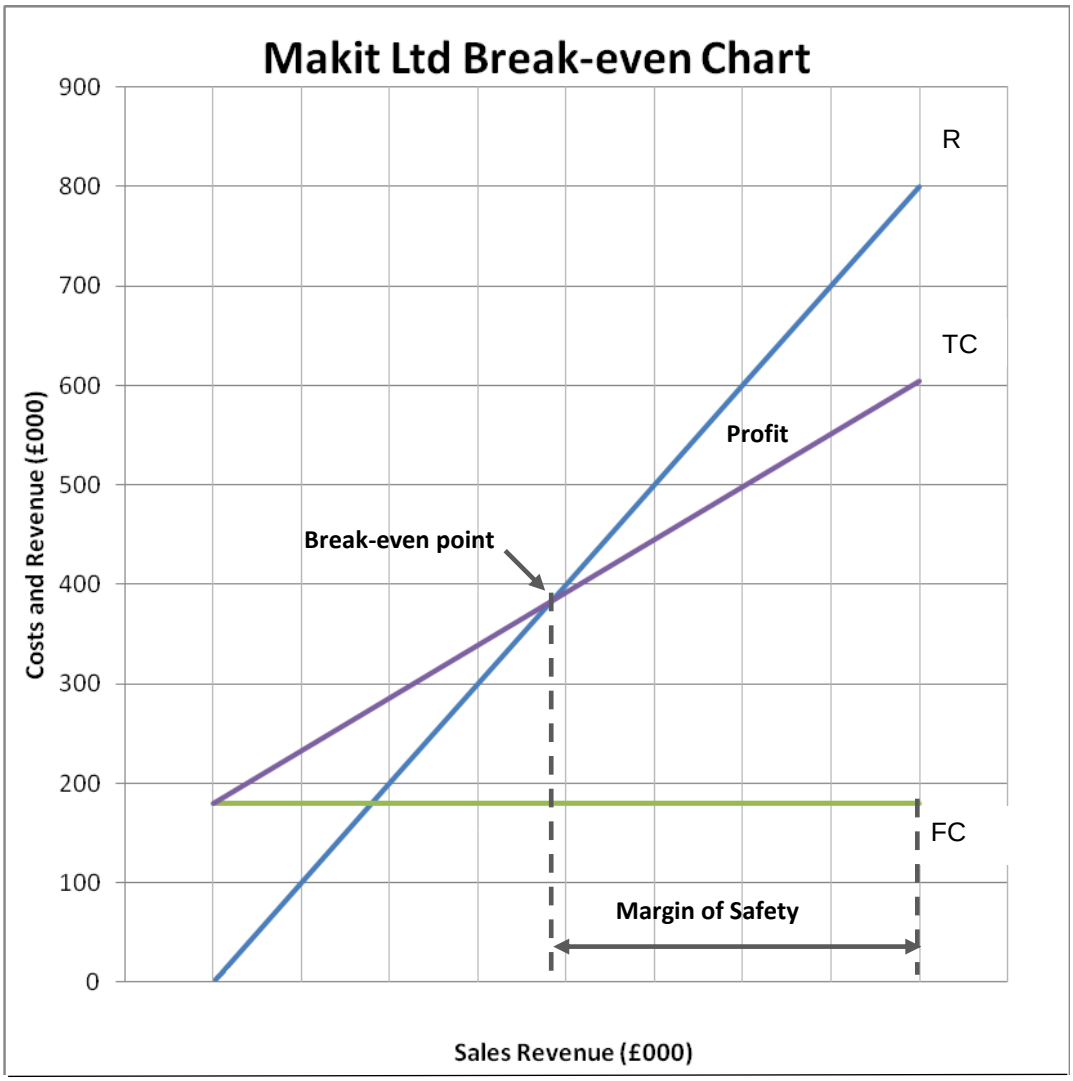
= £180,000 / 0.47 = £382,979 = £383,000 **(1of)**

(2 marks)

(c)

Break even chart	(Over the page)	
Title		**(1)**
Axis labels		**(1)**
Fixed cost line		**(1)**
Total cost line		**(1)**
Revenue Line		**(1)**
Break -even		**(1)**
Margin of safety		**(1)**
Profit		**(1)**

(8 marks)



(d)

Additional advertising

Product Cee

Increase in sales = 40% of 6,000 = 2,400 units **(1)**

Increase in contribution = 2,400 x £15 = £36,000 **(1)**

Product Hay

Decrease in sales = 25% of 12,000 = 3,000 units **(1)**

Decrease in contribution = 3,000 x £10 = £30,000 **(1)**

Overall increase in contribution (£36,000 - £30,000) = £6,000 **(1of)**

Overall increase in fixed costs = £10,000

Additional advertising would result in an overall loss of profits of £4,000 **(1of)**

Advise the company not to increase the advertising on product Cee.

(6 marks)

Alternative answer

Profit (price to additional advertising) contribution + fixed costs

(1) **(1)**

£376,000 - £180,000 = £196,000

Profit (with additional advertising)

	£	£		
Sales		800,000		
Variable costs	418,000			**(1)**
Fixed costs	190,000			
Total		(608,000)		**1of**
Profit			£192,000	**1of**

Additional advertising would result in an overall loss of profits of £4,000 **1of**

(Total 20 marks)

QUESTION 4

Travelfar Ltd, a haulage company, which operates a fleet of 8 similar heavy goods vehicles and employs 8 drivers, has prepared the following monthly flexible budget based on the number of contracted jobs.

Number of contracts	120	140	160	180
	km	**km**	**km**	**km**
Vehicle travel (contracted to customer)	24,000	28,000	32,000	36,000
Vehicle travel (not contracted to customer) i.e. return journey	18,000	21,000	24,000	27,000
	£	**£**	**£**	**£**
Income from customers	52,800	61,600	70,400	79,200
Fuel costs	8,400	9,800	11,200	12,600
Driver wages	11,300	12,350	13,400	14,450
Vehicle maintenance	5,000	5,000	6,000	6,000
Office costs	1,960	2,120	2,280	2,440
Other operational costs	9,000	9,000	9,000	9,000

The following information has been provided.

Income from customers is generated by charging a rate per km proportional to the contracted distance travelled.
Drivers are paid a fixed wage plus a variable wage proportional to the total vehicle distance travelled.
Office costs are partly related to the number of contracts completed

During month 1 the following actual data was recorded:

Number of contracts jobs	164
	km
Vehicle travel (contracted to customers)	34,000
Vehicle travel (not contracted to customers) i.e. return journey	23,800
	£
Income from customers	82,660
Fuel costs	12,980
Driver wages	12,810
Vehicle maintenance	5,500
Office costs	2,412
Other operational costs	9,400

REQUIRED

(a) Prepare a statement for month 1 showing for each budgeted item the following:

(i) The flexed budget
(ii) The actual result
(iii) The variance.

(16 marks)

(b) Explain the difference between a forecast and a budget

(4 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 4
Syllabus Topic 4: Budgetary planning and control (4.1 and 4.9)

(a) **Travelfar Ltd - Budget Report - Month 1**

(Based on 164 contracted jobs)

	Flexed km		Actual km	Variance km	
Vehicle travel (contracted to customers)	32,800	**(1)**	34,000	1,200A	**(1of)**
Vehicle travel (not contracted to customers)	24,600	**(1)**	23,800	800F	**(1of)**
	£		**£**	**£**	
Income from customers	72,160	**(1)**	82,660	10,500F	**(1of)**
Fuel costs	11,480	**(2)**	12,980	1,500A	**(½of)**
Driver wages	13,610	**(2)**	12,810	800F	**(½of)**
Vehicle maintenance	6,000	**(1)**	5,500	500F	**(½of)**
Office costs	2,312	**(2)**	2,412	100A	**(½of)**
Other operational costs	9,000		9,400	400A	**(1of)**

(16 marks)

(b)

A forecast is an estimate for a future income or expense **(1)**

A budget is a plan of action expressed in financial terms relating to a future period. Ideally, it should encompass all of the activities of the business and should involve personnel throughout the organisation in its preparation **(3)**

(4 marks)

Workings:

Vehicle travel (contracted to customers) - variable cost

Vehicle travel per contract (worked at120 contracts) = 24,000 / 120 = 200km per contract

164 contracts = 200 x 164 = **32,800km**

Vehicle travel (not contracted to customers) - variable cost

Vehicle travel per contract (worked at120 contracts) = 18,000 / 120 = 150km per contract

164 contracts = 150 x 164 = **24,600km**

Income from customers - variable based on contracted travel

Income per contracted vehicle travel (worked at 120 contracts) = £52,800 / 24,000 = £2.20 per km

164 contracts = £2.20 x 32,800 = **£72,160**

Fuel - variable cost based on total vehicle travel

Fuel cost per km travelled (worked at 120 contracts) = £8,400 / (24,000 + 18,000) = £0.20 per km

164 contracts = £0.20 x (32,800 + 24,600) = **£11,480**

Wages - semi variable partially based on total vehicle travel

High/low method based on the range 120 :180 contracts

	Costs(£)	Travel(km)
180 contracts	14,450	63,000
120 contracts	11,300	42,000
	3,150	21,000

Variable wage = 3,150 / 21,000 = £0.15 per km
Fixed element (based on 180 contracts) = £14,450 - 63,000 x 0.15 = £5,000
Wage cost for 164 contracts = 5,000 + 57,400 x 0.15 = **£13,610**

Vehicle maintenance - stepped cost
164 contracts = **£6,000**

Office costs - semi variable partially based on the number of contracts
High/low method based on the range 120 :180 contracts

	Costs(£)	**Contracts**
180 contracts	2,440	180
120 contracts	1,960	120
	480	60

Variable office cost = 480 / 60 = £8.00 per contract
Fixed element (based on 180 contracts) = £2,440 - 180 x 8.00 = £1,000
Office cost for 164 contracts = 1,000 + 164 x 8.00 = **£2,312**

Other operating costs - Fixed

(Total 20 marks)

QUESTION 5

The standard variable production costs of a company's single product in the last period were as follows:

		£
Direct materials		
M01	4kg at £2 per kg	8.00
M02	2metres at £8 per metre	16.00
Direct labour		
Grade A	3 hours at £10 per hour	30.00
Grade B	4 hours at £12 per hour	48.00

Budgeted production for this period was 480 units
Actual production and costs relating to this period were as follows:

Production	500 units

Direct materials	
Purchases	
M01	2,000 kg purchased at a total cost of £4,300
M02	800metres purchased at a total cost of £6,200
Issues to production	
M01	1,950kg
M02	900metres

Direct labour	
Grade A	1,600 hours worked at a total cost of £15,600 (includes 150 hours idle time caused by machine breakdown)
Grade B	2,100 hours worked at a total cost of £25,450 (includes 50 hours idle time caused by machine breakdown)

At the beginning of the period the following quantities of raw material were in stock:

M01	200 kg
M02	120 metres

There were no stocks of work in progress at the beginning or end of the period.
The company's policy is to calculate material price variance at the time of purchase.

REQUIRED

For the last period

(a) Calculate the following variances:

(i) Direct material price (for each type of raw material)
(ii) Direct material usage (for each type of raw material)
(iii) Direct labour rate (for each grade of labour)
(iv) Idle time (for each grade of labour)
(v) Labour efficiency (for each grade of labour)

(12 marks)

(b) Prepare the Raw Materials Stock Account for each type of direct material (include in your accounts the price variance).

(8 marks)

(Total 20 marks)

MODEL ANSWER TO QUESTION 5
Syllabus Topic 5: Standard costing and variance (5.5,5.8 and 5.9)
Syllabus Topic 6: Accounting Systems (6.3)

(a)

(i) **Direct material price variance**

	Material M01	Material M02	
Standard price	£2 per kg	£8 per metre	
Purchase quantity	2,000 kg	800 metres	
	£4,000	£6,400	
Actual cost of purchases	£4,300	£6,200	
Direct material price variance	**£300A**	**£200F**	**(2)**

(ii) **Direct material usage variance**

Production	500 units	500 units	
Standard use per unit	4kg	2 metres	
	2,000kg	1,000 m	
Actual use	1,950kg	900 m	
	50kg	100m	
Standard price	£2 per kg	£8 per metre	
Direct material usage variance	**£100F**	**£800F**	**(2)**

(iii) **Direct labour rate variance**

	Grage A	Grage B	
Actual hours	1,600	2,100	
Standard rate per hour	£10	£12	
	£16,000	£25,200	
Actual cost of labour	£15,600	£25,450	
Direct labour rate variance	**£400F**	**£250A**	**(2)**

(iv) **Idle Time Variance**

Idle time hours	150 hours	50 hours	
Standard rate per hour	£10	£12	
Idle Time Variance	**£1500A**	**£600A**	**(2)**

(v) **Direct labour efficiency variance**

Production	500 units	500units	
Standard hours per unit	3 hours	4 hours	
	1,500 hours	2,000 hours	
Actual hours	1,600 hours	2,100 hours	
Idle time hours	150 hours	50 hours	
Actual productive hours	1,450 hours	2,050 hours	**(2)**
Standard - Actual prod hours	50 hours	(50 hours)	
Standard rate per hour	£10	£12	
Direct labour efficiency variance	**£500F**	**£600A**	**(2)**

(12 marks)

(b)

Direct Material Stock Account (M01)

Balance b/d	400	**(1)**	Work in progress	3,900	**(1of)**
Purchases	4,300		Price variance	300	**(1of)**
			Balance c/d	500	**(1)**
	4,700			4,700	

Direct Material Stock Account (M02)

Balance b/d	960	**(1)**	Work in progress	7,200	**(1of)**
Purchases	6,200		Balance c/d	160	**(1)**
Price variance	200	**(1of)**			
	7,360			7,360	

(8 marks)

(Total 20 marks)

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