Answers

1 (a) Number of cases produced and sold

	April		May
Sales (£350,000 ÷ £350)	1,000	(£280,000 ÷ £350)	800
Production (£200,000 ÷ £200)	1,000	(£400,000 ÷ £200)	2,000

(b) Marginal costing profit statements

Profit and loss accounts for the month ended

	30 April 2004		31 May 2004	
	£000	£000	£000	£000
Sales		350·0		280·0
Opening stock finished goods	6·0		6·0	
Variable production cost	200·0		400·0	
Closing stock finished goods	(6·0)		(246·0)	
Variable cost of sales		(200·0)		(160·0)
Variable selling and administration expenses		(35·0)		(28·0)
Contribution		115·0		92·0
Fixed production cost		(100·0)		(100·0)
Fixed selling and Administration expenses		(10·0)		(10·0)
Profit before bonus		5·0		(18·0)
Bonus		(0·5)		0·0
Net profit		4·5		(18·0)

Workings
April opening stock finished goods = £9,000 ÷ £300 x £200 = £6,000
April closing stock finished goods = £9,000 ÷ £300 x £200 = £6,000
May closing stock finished goods = £369,000 ÷ £300 x £200 = £246,000

(c) Report

Report
To: Board of directors Matthews Ltd
From: A Certified Accounting Technician
Subject: Profit measurement and bonus scheme
Date: Today

Differences in profit Figures
The difference in net profit figures for May 2004 is due to a change in costing principle. Absorption costing values finished goods closing stock at full production cost (fixed and variable cost). In a period where finished goods stocks increase some fixed overheads are carried forward to the next period in the finished goods closing stock valuation.

Marginal costing values finished goods closing stock at variable production cost only. Fixed production costs are written off against profit in the period they are incurred.

Thus in a period where production is greater than sales, as in May 2004, absorption costing will show a higher profit figure as a large proportion of May's fixed production cost is carried forward in the closing stock valuation.

The statement below reconciles the two profit figures.

	£000
Absorption costing profit	91·80
Less	
Stock increase in cases x £100 per case	
1,200 cases x £100	(120·00)
Plus	
Difference in bonus payments	10·20
Marginal costing profit	(18·00)

Problems with the performance of eastern division
Although the Eastern division has increased its reported profit (under absorption costing principles) two problems have occurred. Firstly its sales have fallen leading to less contribution, and secondly the 'profit' has been generated by building up large stocks of finished goods. The holding costs of these goods could be high, and given Eastern's static market there seems little reason to carry them.

Bonus systems based upon absorption costing principles

The danger of basing bonus schemes on absorption costing profit is that managers are effectively rewarded for increasing stocks. In May the manager of the Eastern division increased the reported profit figure (and her bonus) although her contribution to the financial well-being of the company is questionable. If managers are given autonomy over production levels there is a danger that they 'play the system' to manipulate profits and boost their earnings.

Improved Bonus Systems

Many alternative bonus schemes could be adopted, examples include

- Basing bonus upon contribution or marginal cost net profit. This would result in bonus varying with sales and costs, not production levels.
- Bonus payments based upon non financial indicators of performance such as a balanced scorecard approach. This would focus manager's attention on the long term success of their operations rather than short term financial performance.
- Bonus payments could be based upon measures such as return on investment or residual income. This would focus managers' attention upon capital invested as well as profit earned.

(d) Trend and seasonal variation

In the context of time series analysis of sales, trend refers to the general direction in which a graph of sales goes over a long interval of time.

Seasonal variations are the identical (or almost identical) patterns which sales follow during corresponding intervals of successive periods. For example many retail businesses each year experience an increase in sales before Christmas only to see them fall again after the Christmas period.

(e) Sales Forecast

Trend
$y = 1{,}500 + 60x$
$y = 1{,}500 + (60 * 20) = 2{,}700$

Seasonal variation
Last quarter of the year = + 50

Forecast = 2,700 + 50 = 2,750 cases

2 (a) Variances

Direct Material			
actual purchases at actual price	1,800m^3 at £150	= £270,000	
	(i) Raw material price variance		**£18,000 FAV**
actual purchases at standard price	1,800m^3 at £160	= £288,000	
actual usage at standard price	1,600m^3 at £160	= £256,000	
	(ii) Raw material usage variance		**£32,000 ADV**
standard usage at standard price	14,000 sets at 0·1m^3 at £160	= £224,000	
Direct Labour			
actual hours at actual rate	8,000 hours at £9·25	= £74,000	
	(iii) Direct labour rate variance		**£2,000 ADV**
actual hours at standard rate	8,000 hours at £9·00	= £72,000	
	(iv) Direct labour efficiency variance		**£9,000 ADV**
standard hours at standard rate	14,000 sets at 0·5 hours at £9·00	= £63,000	
Fixed Overhead			
Actual fixed overheads		= £23,000	
	(v) Fixed overhead expenditure variance		**£3,000 FAV**
Budgeted fixed overheads		= £26,000	
	(vii) Fixed overhead capacity variance		**£6,000 FAV**
Actual labour hours at standard absorption rate	8,000 hours at £4	= £32,000	
	(viii) Fixed overhead efficiency variance		**£4,000 ADV**
Standard labour hours at standard absorption rate	14,000 sets at 0·5 hours at £4	= £28,000	
capacity + efficiency = £6,000 FAV + £4,000 ADV =			
	(vi) Fixed overhead volume variance		**£2,000 FAV**

(b) Meaning and possible cause of variances

The raw material price variance shows that wood was purchased at a lower price than standard. This saved £18,000 on the material purchased.

This saving could have many potential causes including a change of supplier, a fall in market prices, better price negotiation or by buying a lower grade of material. The material usage variance is £32,000 adverse showing that more material was used than standard. Again there are many potential causes including careless use of material, pilferage, or problems resulting from the use of poorer quality material. The two variances could possibly be related, as the favourable price variance could have been achieved by buying material of an inferior quality leading to more wastage than usual. If this is the case then the decision to buy cheaper material was a poor one as the material cost variance is £14,000 adverse.

The fixed overhead expenditure variance is favourable, indicating that less has been spent on fixed overheads than budgeted. This could be caused by price reductions or seasonal effects.

The fixed overhead volume variance is favourable indicating an over absorption of overhead caused by producing more sets than budgeted. This can be considered good news as long as the extra production can be sold.

The capacity and efficiency variances indicate the cause of this over absorption. Because we worked more labour hours than budgeted we could have absorbed £6,000 more overhead than budgeted. However part of this over absorption was lost due to inefficient labour and at standard labour hours £4,000 of this over absorption is cancelled out leading to an overall volume variance of £2,000 favourable.

3 (a) Residual income

	£million		
	2001	2002	2003
Operating profit	15	16	17
Imputed interest charge			
£50m x 20%	(10)		
£70m x 20%		(14)	
£90m x 20%			(18)
Residual income	5	2	(1)

(b) Advantages and disadvantages of residual income

Advantages

- It makes divisional managers aware of the cost of financing their divisions.
- It is an absolute measure of performance and not subject to the problems of relative measures such as return on investment.
- In the long run it supports the net present value approach to investment appraisal (the present value of a project's residual income equals net present value of that project).

Disadvantages

- In common with most other divisional performance measures, problems exist in defining controllable and traceable income and investment.
- Residual income gives the symptoms not the causes of problems. If residual income falls the figures give little clue as to why.
- Problems exist in comparing the performance of different sized divisions (large divisions will earn larger residual incomes simply due to their size).
- Residual income when applied on a short term basis is a short term measure of performance and may lead managers to overlook projects whose payoffs are long term. This could well be the case for the hotel chain.

(c) Advantages of a balanced scorecard approach

The balanced scorecard approach seeks to measure performance under a variety of headings of financial success, customer satisfaction, process efficiency and organisational learning and growth.

- It measures performance in a variety of ways, rather than relying on one figure.
- Managers are unlikely to be able to distort the performance measure, bad performance is difficult to hide if multiple performance measures are used.
- It takes a long-term perspective of business performance.
- Success in the four key areas should lead to the long-term success of the organisation.
- It is flexible, what is measured can be changed over time to reflect changing priorities.
- 'What gets measured gets done', that is if managers know they are being appraised on various aspects of performance they will pay attention to these areas, rather than simply paying lip service to them.

(d) CSFs and KPIs

	Critical Success Factor	Key performance indicator
financial success		
	Investor wealth	residual income
	Cash flow	achievement of cash flow targets
customer satisfaction		
	Service levels	number of complaints
	Facilities	customer questionnaire results
	Catering	customer questionnaire results
process efficiency	Check-in	average check-in time
	Facility utilisation	% utilisation of pools and gym
organisational learning and growth		
	Penetration of business market	% growth in business usage
	Usage of new facilities	revenue from new facilities

4 **(a)** Break even point in good units

$$= \frac{\text{Monthly fixed costs}}{\text{contribution per good unit}} = \frac{£148{,}500}{£22{\cdot}5 \text{ per unit}} = 6{,}600 \text{ units}$$

(b) Break even point in good units for the automated process

Revised cost card	£ per good unit
Selling price	60·00
Direct materials	15·00
Direct labour	5·00
Variable overhead	5·00
Quality control rejects (5%) (w1)	1·32
Contribution per good unit	£33·68

$$\text{Revised break even point} = \frac{\text{New monthly fixed costs}}{\text{New contribution per unit}} = \frac{£148{,}500 + £120{,}000}{£33{\cdot}68} = 7{,}972 \text{ units}$$

Working 1: (£15 + £5 + £5) ÷ 0·95 x 0·05 = £1·32 per good unit

(c) Output level in good units per month at which the current process and proposal 1 have the same total monthly cost.

If q = output level in good units per month, then total costs for each alternative are

Current process Total Cost = £48,500 + £37·5 q

Proposal 1 Total Cost = £148,500 + £120,000 + £26·32 q

To find the point where total cost is equal, solve the following for q

£148,500 + £37·5 q = £148,500 + £120,000 + £26·32 q

= £11·18q = £120,000

$$q = \frac{£120{,}000}{£11{\cdot}18} = 10{,}733$$

(Or more directly $\frac{\text{Increase in fixed costs}}{\text{decrease in variable cost per unit}} = \frac{£120{,}000}{£11{\cdot}18} = 10{,}733$ units

Comment: This is in excess of Taylor's current monthly sales and appears non viable.

(d) Costs of quality

Internal failure costs

These are quality costs that are discovered before the product is delivered to the customer. Examples include rework costs, net cost of scrap, down time due to quality problems, etc.

External failure costs

These are discovered after the product has been delivered to customers.
Examples include complaint investigation, warranty claims, cost of lost sales, product recalls etc.

Appraisal costs

These are the costs of monitoring and inspecting products before they are released to customers. Examples include measurement equipment, inspection and tests, test equipment expense, etc.

Prevention costs

These include investment in machinery, technology and training to reduce the number of defective products. Examples include training programmes, supplier reviews, field trials, cost of research into customer needs, etc.

ACCA Certified Accounting Technician Examination – Paper T7
Planning, Control and Performance Management **June 2004 Marking Scheme**

			Marks
1	**(a)**	Sales	2
		Production	2
			4
	(b)	Sales	2
		Opening Stocks	2
		Closing Stock May	2
		Contribution	2
		Profit pre bonus	2
		Bonus	2
			12
	(c)	Report format	1
		Abs and marginal approaches	
		Explained	2
		Reconciliation	3
		(2 if bonus omitted)	
		Sales problem	1
		Stock problem	2
		Bonus problem	2
		2 per improved system max	4
			15
	(d)	Trend	2
		Seasonal	2
			4
	(e)	Trend	2
		Seasonal	1
		Forecast	2
			5
			40
2	**(a)**	Raw material price	2
		(1 if based on usage)	
		Raw material usage	1
		Labour rate	1
		Labour efficiency	1
		Fixed overhead expenditure	1
		Fixed overhead volume	1
		Fixed overhead capacity	1
		Fixed overhead efficiency	2
			10
	(b)	Meaning and possible cause of	
		Price variance	1
		Usage variance	1
		Possible interrelationship of material price and usage	2
		Expenditure variance	1
		Capacity variance	2
		Efficiency variance	2
		Volume variance	1
			10
			20

			Marks
3	**(a)**	1 mark for each year	3
	(b)	1 per advantage or disadvantage max	5
	(c)	1 per advantage max	4
	(d)	1 per each CSF + KPI, max 2 for each heading	8
			20

4	**(a)**	Method	1
		Break even point	1
			2
	(b)	New reject cost	2
		New contribution	1
		New fixed costs	1
		New break even point	1
			5
	(c)	Method	3
		Output level	2
			5
	(d)	Explanations 4 x 1	4
		Examples 4 x 1	4
			8
			20