MANAGEMENT ACCOUNTING

Certificate stage examination

June 2008

MARKING SCHEME

AT THE HEART OF
YOUR CAREER

Question 1

(a) The actual number of kilos used:

Let y = actual kilos used:

Materials Price variance:

(y x £9.45) – £1,357,400 = - 6,050

y x £9.45 = -6,050 + 1,357,400 = 1,351,350

$y = \frac{1{,}351{,}350}{£9.45}$

y = 143,000kg

The standard kilos per unit:

Let z = standard kilos per unit:

Materials usage variance:

((z x 1,400 units) – 143,000kg) x £9.45 = -81,270

((z x 1,400 units) – 143,000kg) = $\frac{-81{,}270}{£9.45}$

z x 1,400units = -8,600 + 143,000 = 134,400

$z = \frac{134{,}400}{1{,}400}$

z = 96kg

The standard labour rate per hour:

Let s = standard labour rate per hour:

Labour rate variance:

(7,700 hrs x s) - £48,440 = 70

7,700 x s = 70 + 48,440 = £48,510

$s = \frac{£48{,}510}{7{,}700}$

s = £6.30

The standard time in hours and minutes per unit:

Let t = standard time
Labour efficiency variance:

((t x 1,400 units) – 7,700hours) x £6.30 = -3,528

(t x 1,400 units) – 7,700hours) = $\frac{-3{,}528}{£6.30}$

t x 1,400 = -560 + 7,700 = 7,140

t = 5.1 hrs = **5 hrs 6 mins**

(b) Calculation of overhead absorption rate based on labour hours:

Budgeted labour hours 1,520 units x 5.1hrs = 7,752 hours

Budgeted overhead: £46,512/7,752 = £6 per labour hour.

Fixed overhead expenditure variance:

Budgeted overhead – Actual overhead
£46,512 – £53,500 = 6,988 A

Fixed overhead volume variance

(Budgeted hours – Standard hours) x standard overhead rate per hour

(7,752 – (1,400 x 5.1)) x £6 = £3,672A

Fixed overhead efficiency variance

(Actual hours – Standard hours) x standard overhead rate per hour

(7,700 – (1,400 x 5.1)) x £6 = £3,360A

Fixed overhead capacity variance

(Budgeted hours – Actual hours) x standard overhead rate per hour

(7,752 – 7,700) x £6 = £312A

XYZ NHS Trust – Pharmacy Unit
Cost reconciliation statement for period 2

	£	£
Standard total cost ((1400 units x 5.1 x £6) + 1,315,062)		1,357,902
Variances:		
Material price	6,050 A	
Material usage	81,270 A	
Labour rate	70 F	
Labour efficiency	3,528 A	
Actual direct cost		
Overhead expenditure variance	6,988 A	
Overhead efficiency variance	3,360 A	
Overhead capacity variance	312 A	101,438
Total cost		1,459,340

(c) Ideal standards:

- Set on the basis of ideal working conditions.
- No allowance for wastage or idle time.
- Not useful if used for planning as the standard does not reflect reality.
- Will probably result in adverse variances which can be de-motivational.

Attainable standards:

- Allow for small amounts of normal wastage and inefficiency.
- Achievable but can only be met if operations are carried out efficiently and cost effectively.
- Variances will be mixture of favourable and adverse.
- Can be viewed as motivational.

Standard hour:

- Sometimes used to measure output in a department that is producing several different products.
- The amount of time, working under efficient conditions, it should take to make a particular product.
- Standard hours are an output measure that can act as a common denominator for adding together the production of unlike items.

Question 2

(a) Workings:

Number of tickets forecast in Quarter 3:

72,000 x 0.8 = 57,600

Contribution per ticket:

		£	£
Selling price	1,008,000/57,600		17.50
Marginal costs:			
Direct labour	328,320/57,600	5.70	
Variable service o/h	299,520/57,600	5.20	
Variable fee	149,760/57,600	2.60	13.50
Contribution			4.00

Breakeven number of tickets:

Total fixed costs = 155,000 + 45,400 + 18,500 = 218,900/4 = 54,725 tickets.
Breakeven revenue = 54,725 x £17.50 = £957,687.50
Margin of safety = 57,600 - 54,725 = 2,875 tickets
% margin of safety = 2,875/54,725 = 5.25%

Proposal A

30% increase in ticket sales by volume 57,600 x 1.30 = 74,880.
Fixed costs would increase to £218,900 + £15,420 = £234,320.
Additional variable cost £1.50 per ticket
Reduction in variable cost as over 70,000 tickets sold = 0.70 per ticket
Revised contribution = £4.00 – £1.50 + £0.70 = £3.20

Breakeven volume £234,320/£3.20 = 73,225
Breakeven revenue 73,225 x £17.50 = £1,281,437.5

Margin of safety (tickets) 74,880 – 73,225 = 1,655
% margin of safety = 1,665/73,225 = 2.26%

Proposal B

Number of tickets sold 72,000 x 95% = 68,400
Revised fixed costs = £218,900 – £18,500 + £12,260 = £212,660

Variable cost £13.50 per ticket

Revised selling price = £17.50 x 0.96 = £16.80
Contribution per ticket £16.80 – £13.50 = £3.30

Breakeven volume £212,660/£3.30 = 64,443
Breakeven revenue 64,443 x £16.80 = £1,082,642.4

Margin of safety (tickets) 68,400 – 64,443 = 3,957
% margin of safety = 3,957/64,443 = 6.14%

	Forecast	Proposal A	Proposal B	
Number of tickets sold	57,600	74,880	68,400	*1*
	£	£	£	
Selling price	17.50	17.50	16.80	*1*
Less				
Direct labour	5.70	5.70	5.70	
Variable service o/h	5.20	5.20	5.20	
Variable fee	2.60	1.90	2.60	
Advertising commission		1.50		
Marginal cost	13.50	14.30	13.50	*1*
Contribution per ticket	4.00	3.20	3.30	*1*
Total contribution	230,400	239,616	225,720	
Fixed costs: - Service overheads - Admin and sales - Fees - Advertising	 155,000 18,500 45,400	 155,000 18,500 45,400 15,420	 155,000 12,260 45,400	
Total	218,900	234,320	212,660	*1*
Net profit	11,500	5,296	13,060	*1*
Change in profit	-	(6204)	1,560	*1*
Breakeven volume	54,725	73,225	64,443	*1*
Breakeven revenue	957,687.50	1,281,437.5	1,082,642.4	*1*
Margin of safety	2,875	1,655	3,957	*1*
% Margin of safety	5.25	2.26	6.14	*1*

(11)

(b) From the analysis above, Proposal B would be best option. This means that the increased volume, although resulting in a lower contribution per ticket, would result in a higher net profit because of the reduced administration fees. The net profit would be £1,560 higher than the forecast. Although the breakeven point is higher, the margin of safety is higher. *(3)*

(c) High-low method of separating fixed and variable costs:

$$\frac{\text{Change in cost}}{\text{Change in activity}} = \frac{£202{,}040 - £176{,}840}{80{,}000 - 68{,}000} = \frac{£25{,}200}{12{,}000} = £2.10 \text{ variable cost per ticket.}$$

Substituting in high value £2.10 x 80,000 = £168,000 - £202,040 = £34,040 fixed cost. *2*

Re-evaluation of Proposal B

Volume 68,400 tickets

Revised fixed cost = £212,660 – £155,000 + £34,040 = £91,700. *1*

Revised contribution per ticket £3.30 – £2.10 = £1.20

Revised breakeven point = $\frac{£91,700}{£1.20}$ = 76,417 tickets *1*

Revised breakeven revenue 76,417 x £16.80 = £1,283,805.60 *1*

This is in excess of the sales volume.

The financial position would be:

	£
Contribution £1.20 x 68,400 tickets	82,080
Fixed costs	(91,700)
Loss	(9,620)

This changes the recommendation to accept Proposal B. *1*

or if Proposal A is recommended in part (b):

Volume 74,880 tickets

Revised fixed cost = £234,320 - £155,000 + £34,040 = £113,360 *1*

Revised contribution per ticket £3.20 – £2.10 = £1.10

Revised breakeven point = $\frac{£113,360}{£1.10}$ = 103,055 tickets *1*

Revised breakeven revenue 103,055 x £17.50 = £1,803,462.50 *1*

This is in excess of the sales volume.

The financial position would be:

	£	
Contribution £1.10 x 74,880 tickets	82,368	
Fixed costs	(113,360)	
Loss	(30,992)	*1*

This changes the recommendation to accept Proposal A.

(6 max)

(20)

Question 3

(a)

The Couch Potato Sofa Company
Profit Statement for the Year ended 31/3/2008

		King Edward		Maris Piper		Total	
	£	£	£	£	£	£	
Sales		720,000		300,000		1,020,000	
Direct costs:							
Materials	96,000		24,000		120,000		
Labour	240,000		120,000		360,000		
Machine costs	144,000	480,000	36,000	180,000	180,000	660,000	
Contribution		240,000		120,000		360,000	
Fixed cost		124,800		62,400		187,200	*2*
		115,200		57,600		172,800	

C/S RATIO $\frac{240}{720} \times 100 = 33.3\%$ $\quad \frac{120}{300} \times 100 = 40\%$ $\quad \frac{360}{1020} \times 100 = 35.3\%$

1

(3)

(b) The number of machine hours is a limiting factor (maximum 12,000 available), so the production plan should be based on the contribution per machine hour.

$$\frac{9600 \text{ hrs}}{2400 \text{ sofas}} = 4 \text{ hrs per King Edward}$$

$$\frac{2400 \text{ hrs}}{1200 \text{ sofas}} = 2 \text{ hrs per Maris Piper}$$

To satisfy demand (4,800 x 4) + (4,320 x 2) = 27,840 hrs.

$\therefore$ this exceeds maximum of 12,000 hrs

	King Edward	Maris Piper
Total contribution (£)	240,000	120,000
Number of hours	9,600	2,400
Contribution per hour (£)	25	50

The maximum number of Maris Pipers should be made, as this has the highest contribution per unit of scarce resource. *2*

	King Edward Units	Hrs	Maris Piper Units	Hrs	
Minimum required	720 x 4 hrs	2,880	720 x 2 hrs	1,440	
Produce up to Maximum 4320 Maris Pipers		______	3,600 x 2 hrs 4,320	7,200	1
		2,880		8,640	
Still (12,000 – 8,640 - 2,880) = 480 hrs left					1
Produce King Edwards 480 /4 = 120 sofas	120 x 4 hrs 840	480 3,360			1

The most profitable mix is therefore to make:

King Edwards 840 units (720 + 120)
Maris Pipers 4,320 units (720 + 3,600) *1*

	King Edward	Maris Piper	Total £	
Sales	840 x £300 *[1]	4,320 x £250 *[1]		
	£252,000	£1,080,000	1,332,000	
Contributions (from a)	33.3%	40%		
	84,000	432,000	516,000	
Less:				
Rent and rates			(180,000)	
Insurance			(7,200)	
Profit			328,800	
				2

* Working 1:
£720,000 ÷ 2,400 units = £300 per unit
£300,000 ÷ 1,200 units = £250 per unit

(8)

(c) If the additional machine is hired: (other methods of calculation are acceptable)

As the maximum demand for The Maris Piper has all been satisfied, all new output will be of The King Edwards. The balance of demand for The King Edwards is 4,800 – 840 = 3,960.

	King Edward		Maris Piper	
	£	£	£	
Sales (from b)	252,000		1,080,000	
Extra 12,000/4 hrs x				
3,000 sofas x £300	900,000			
	1,152,000		1,080,000	
				1
Contributions: K.E 33.3% x 1,152,000		384,000		
M.P 40% x 1,080,000		432,000	816,000	
Less:				
Hire costs			(240,000)	
Rent and rates			(180,000)	
Insurance			(7,200)	
Profit			388,800	
				1

(2)

(d)

- Consideration should be given to the forecast demand figures and their sustainability.
- How flexible is the hire of the second machine? Could it be returned if the demand falls?
- Is there a possibility of negotiating a guaranteed number of minimum orders with the wholesaler?
- Is it possible to source other customers?
- Some sensitivity analysis should be performed to assess the impact of potential cost increases in 2008/2009.

1 mark per point, up to a maximum of (3)

(e) A fixed cost is a cost that does not change in relation to activity. This does not mean that the cost will never change, only that activity/production is not the driver of this cost. A fixed cost can be represented on a graph as a straight horizontal line. *1*

Fixed costs can be recovered through overhead allocation, apportionment and absorption. *1*

Those costs that can be, are directly allocated to a cost centre or product. Costs that are 'shared' are apportioned between cost centres/products on an equitable basis. *1*

The total overhead cost is divided by an activity measure to set an overhead absorption rate. Costs are absorbed into the product cost according to the consumption of the activity measure used (e.g. labour hours). *1*

Relevant alternative answers are acceptable (e.g. discussing activity based costing approaches).

(4)

(20)

Question 4

(a) Calculation of five point moving average and trend line

Week	Day	Number of Clients	5 point moving average	Seasonal Variation
1	Tuesday	124		
	Wednesday	112		
	Thursday	127	134	-7
	Friday	140	135.4	+4.6
	Saturday	167	135.2	+31.8
2	Tuesday	131	135.6	-4.6
	Wednesday	111	137.6	-26.6
	Thursday	129	138.2	-9.2
	Friday	150	138.8	11.2
	Saturday	170	140.2	29.8
3	Tuesday	134	140	-6
	Wednesday	118	141	-23
	Thursday	128	146	-18
	Friday	155	147.6	7.4
	Saturday	195	148.4	46.6
4	Tuesday	142	148.8	-6.8
	Wednesday	122	150.2	-28.2
	Thursday	130	151.4	-21.4
	Friday	162	151.8	10.2
	Saturday	201	153.4	47.6
5	Tuesday	144	154.2	-10.2
	Wednesday	130	157.2	-27.2
	Thursday	134	161.4	-27.4
	Friday	177		
	Saturday	222		
			2	*2*

Average daily trend = $\dfrac{161.4 - 134}{21 - 1}$ = 1.37 clients increase per day *1*

(5)

(b)

	Tuesday	Wednesday	Thursday	Friday	Saturday	Total	
			-7	4.6	31.8		
	-4.6	-26.6	-9.2	11.2	29.8		
	-6	-23	-18	7.4	46.6		
	-6.8	-28.2	-21.4	10.2	47.6		
	-10.2	-27.2	-27.4				
TOTAL	-27.6	-105	-83	33.4	155.8		*1*
Average s.v	-6.9	-26.25	-16.6	8.35	38.95	-2.45	*1*
Rounding	+0.49	+0.49	+0.49	+0.49	+0.49	+2.45	*½*
Rounded s.v	-6.41	-25.76	-16.11	+8.84	+39.44	0	*½*

Daily variations:
Tuesday -6.41 clients
Wednesday -25.76 clients
Thursday -16.11 clients
Friday+8.84 clients
Saturday +39.44 clients *1*

(4)

(c) The forecast for week 6 can now be calculated:

Trend values:

Tuesday (3 x 1.37) + 161.4 = 165.51
Wednesday (4 x 1.37) + 161.4 = 166.88
Thursday (5 x 1.37) + 161.4 = 168.25
Friday (6 x 1.37) + 161.4 = 169.62
Saturday (7 x 1.37) + 161.4 = 170.99 *1*

Forecast values:

Trend	Seasonal variation		Forecast clients
Tuesday	165.51	– 6.41 = 159.1	= 159 clients
Wednesday	166.88	– 25.76 = 141.12	= 141 clients
Thursday	168.25	– 16.11 = 152.14	= 152 clients
Friday	169.62	+ 8.84 = 178.46	= 178 clients
Saturday	170.99	+ 39.44 = 210.43	= 210 clients

2

(3)

(d) The conditions in which time series methods will be the most successful are:

- Conditions are stable: Where the factors that affected the past series data continue to affect the data into the future, time series forecasts are likely to be more accurate. If there are changes or fluctuations in the data, then it is not likely to be as accurate. *1*

- Short term forecasts: In the longer term, data is likely to be affected by internal and external policies and pressures causing them to fluctuate and hence the forecasts are not as accurate. *1*

- Where they are used as a ‘base forecast’: The time series can be used as a base upon which factors that need to be altered can be taken into account (for example changes brought about by market forces). *1*

- Screening data: Where time series methods identify trends in the past data, this information can be used to look at new data to establish a better understanding of current influences. *1*

(4)

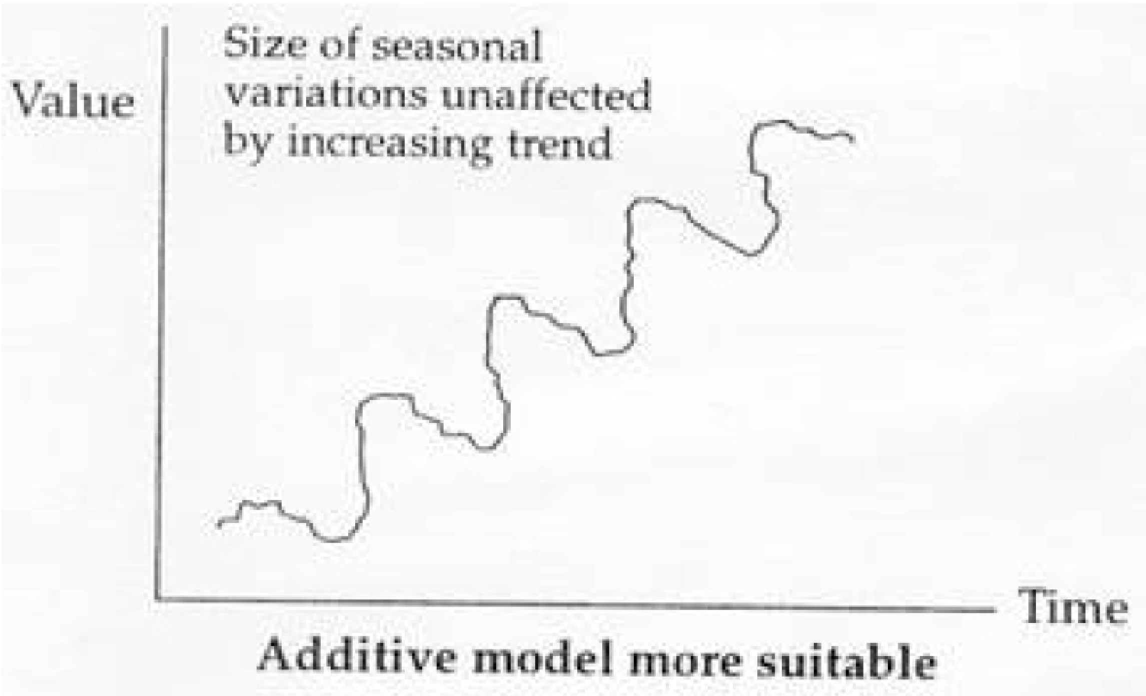
(e) Additive Model – Seasonal variations are not related to trend values. They are expressed as absolute amounts.

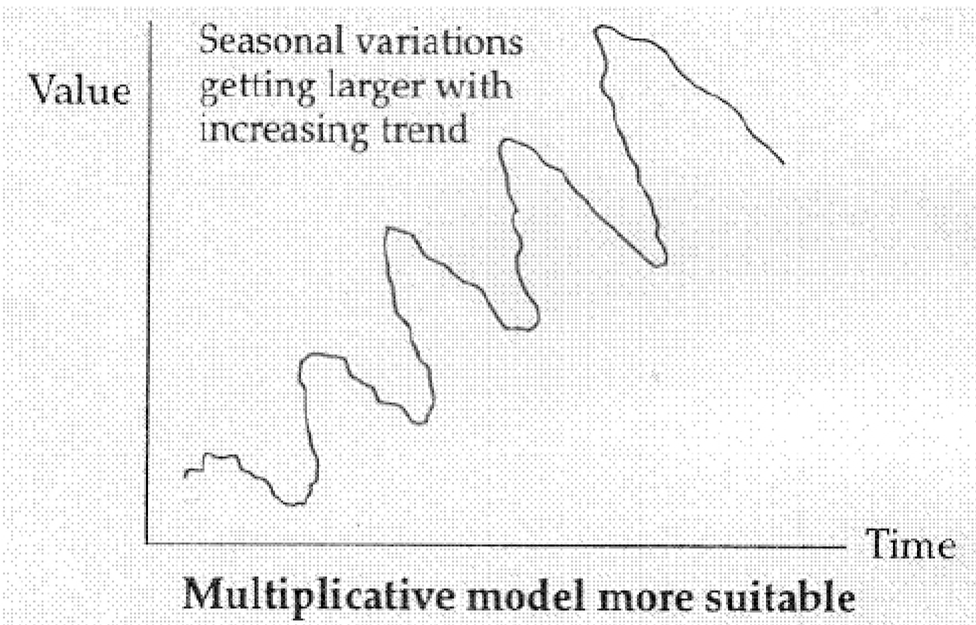
Multiplicative Model – The trend and the seasonal variation interact. A higher trend value will result in a higher seasonal variation.

1 mark for each explanation
1 mark for each example

(4)

(20)





Question 5

(a)

Fairside Patient Transport Service
Six months to 31 December
Performance Report

	Budget	Actual	Variance	
Number of patient miles	47,000	47,000	0	
	£	£	£	
Pay				
Depot Operations Manager	21,000	21,500	500 A	*½*
Depot Assistant Manager	15,000	15,220	220 A	*½*
Drivers	111,120	120,000	8,880 A	*1*
Administrative assistants	92,500	89,000	3,500 F	*1*
Domestic staff	37,500	37,500	0	*½*
Total pay	**277,120**	**283,220**	**6,100A**	
Non Pay				
Diesel and vehicle costs	25,460	26,400	940 A	*1½*
Medical consumables (disposable)	14,570	14,500	70 F	*1½*
Medical equipment (non disposable)	15,000	15,000	0	*1*
Repairs and maintenance	40,025	39,266	759 F	*1*
Telephone expenses	11,750	9,600	2,150 F	*1*
Stationery costs	15,040	11,900	3,140 F	*1*
Heating and lighting of depot	6,000	5,900	100 F	*½*
Capital charge on premises	7,000	7,000	0	*1*
Total non pay	**134,845**	**129,566**	**5,279 F**	
TOTAL EXPENDITURE	**411,965**	**412,786**	**821 A**	

Format = 1

Alternative formats are acceptable (eg fixed/variable)

Workings:

Drivers:

Basic: 12 WTE drivers x £16,500 = £198,000 x 6/12 = £99,000

Bonus:
$\frac{40,000}{1,000}$ x £20 = £800 per driver x 12 = £9,600

$\frac{7,000}{1,000}$ x £30 = £210 per driver x 12 = £2,520

Total £99,000+£9,600+£2,520 = £111,120

Admin assistants:

This is a stepped cost. 5 admin assistants will be required (one for each 10,000 patient miles).

£740 x 25 weeks x 5 = £92,500

Diesel and vehicle costs:

Licence costs in budget for 38,000 miles £170 x 12 = £2,040 x 6/12 = £1,020

£20,780 - £1,020 = £19,760/38,000 = variable cost £0.52 per patient mile.

Flexed budget (47,000 x £0.52) + £1,020 = £25,460

Medical consumables:

	Cost per 10 miles	% no of miles	% of 47,000	Cost / 10 £
Level A	2.30	45	21,150	4,864.5
Level B	2.70	20	9,400	2,538
Level C	3.10	15	7,050	2,185.5
Level D	5.30	20	9,400	4,982
Total		100	47,000	14,570

Repairs and Maintenance

Fixed costs in budget for 38,000 miles £14,250/2 = £7,125

£33,725 - £7,125 = £26,600/38,000 = variable cost £0.70 per patient mile.

Flexed budget (47,000 x £0.70) + £7,125 = £40,025

Telephone expenses

£9,500/38,000 = £0.25 per patient mile

Flexed mile £0.25 x 47,000 = £11,750

Stationery costs

£12,160/38,000 = £0.32 per patient mile

Flexed budget £0.32 x 47,000 = £15,040

Comments:

- The budget position, after it has been flexed to account for the fact that the number of patient miles was 9000 more than budgeted, shows that the service is only 821 Adverse. This is only 0.2% of the total budget and is not therefore a cause for concern.
- Adjustments have been put in for the two fixed cost items that are not showing in the budget, possibly due to journal entries not having been carried out or invoices not having been received.

- Although the budget in total is not a cause for concern, the budget for drivers and admin assistants is overspent. This should be investigated. Is there a pay award that was not budgeted for? Alternatively, maybe overtime is being worked (as the budget has been set on 38,000 miles) or additional staff have been recruited.
- Telephone and stationery expenses are under-spent. This may be because there are invoices that are due to be paid, or alternatively, the budget provision may be too generous and can be reduced in the future.

1 mark per relevant comment, up to a maximum of (3)

(16)

(b) Main points that should be considered:

- Avoid the overuse of jargon.
- Keep the report as simple as possible.
- Use narratives and explanations.
- Use graphs and visual aids where appropriate.
- Keep the content relevant – do not include non-controllable items or separate them if this is unavoidable.
- Provide non financial information where this will help understanding.
- Provide training where necessary.

1 mark per relevant point, up to a maximum of (4)

(20)

Question 6

(a) Calculation of cost driver rates:

Overhead	Working	Cost driver rate £	
Basic grade lecturers	£141,588/(828 x 6)	28.50 per hour	½
Senior grade lecturers	£109,296/(828 x 4)	33.00 per hour	½
Course development	£10,080/6	1,680 per course	½
Course administration	£49,580/740	67 per student	½
Student services	£22,940/740	31 per student	½

Evaluation of courses:
Course 1: 'Finance for the non financial professional'

Overhead	Working	£
Basic grade lecturers	2 x 24hrs x £28.50	1,368
Senior grade lecturers	1 x 24 hrs x £33.00	792
Course development	Existing course	0
Course administration	£67 x 80 students	5,360
Student services	£31 x 80 students	2,480
Utility overheads	£3.50 x 180 metres^2 x 12 wks	7,560
Total cost		17,560
Course income	£275 x 80 students	22,000
Surplus	£22,000 – £17,560	4,440
Net income per hour	£4,440/72hrs	61.66

This course is viable as it makes more than £53 per teaching hour. *3*

Course 2: 'Taxation for the small business manager'

Overhead	Working	£
Basic grade lecturers	2 x 12hrs x £28.50	684
Course development	New course	1,680
Course administration	£67 x 12 students	804
Student services	£31 x 12 students	372
Utility overheads	£3.50 x 60m^2 x 1wk	210
Total cost		3,750
Course income	£400 x 12 students	4,800
Surplus	£4,800 – £3,750	1,050
Net income per hour	£1,050/24hrs	43.75

This course is not viable as it makes less than £53 per teaching hour. *3*

Course 3: 'Football Finance'

Overhead	Working	£
Basic grade lecturers	1 x 6wks x 1.5hrs x £28.50	256.5
Course development	existing course	0
Course administration	£67 x 40 students	2,680
Student services	£31 x 40 students	1,240
Utility overheads	£3.50 x 90 metres² x 6wks	1,890
Total cost		6,066.5
Course income	£170 x 40 students	6,800
Surplus	£6,800 – £6066.50	733.5
Net income per hour	£733.50/9hrs	81.50

This course is viable as it makes more than £53 per teaching hour. *3*
Only course 2 does not appear to be viable. *½*

(12 max)

(b)

- ABC pools overheads by activities rather than cost centres.
- The volume of arbitrary apportionments between departments/cost centres is reduced.
- The activity based cost pools can be directly linked to the cost objectives by the way in which the cost drivers are established.
- Cost pools are likely to be more homogeneous than departmental cost centres due to their activity focus.
- ABC does not use volume related cost drivers unless the activity that drives the cost is proved to be volume driven.
- Greater accuracy is achieved by ABC.
- Overheads are allocated to products and services according to the cause of them.
- Allows better cost control as the cause of the overhead cost can be more easily identified.

1 mark per relevant point, up to a maximum of (8)

(20)