Answers

Diploma in Financial Management Examination – Module A
Paper DA1, incorporating subject areas:
Interpretation of Financial Statements
Performance Management

December 2003 Answers and Marking Scheme

Section A

1 A

2 B

3 D

4 C

The impairment of the Factory is £100,000. As there is a balance on the revaluation reserve of £40,000 in respect of this property, part of the impairment may be written off against this surplus, and the balance of £60,000 will be charged to Profit and Loss.

Thus the correct balance on the revaluation reserve will be:

£000	Head office	Warehouse	Factory	Total
Balance b/f	186	68	40	294
Increase in year	40	5	–	45
W/off			(40)	(40)
Balance c/f	226	73	–	299

5 A

6 D

Project 175 is applied research as defined by SSAP 13, while Project 393 appears to be pure research. Therefore both of these must be written off.

Project 254 is development expenditure, and may be carried forward and amortised. If this treatment is adopted, amortisation must commence with production, not sale. Therefore the amount to be amortised is £1·6m ÷ 4 years x 3/12 = £100,000.

Thus the write off to P&L is:

Project 175	£2·5m	
Project 254	£0·1m	
Project 393	£4·8m	Total £7·4m

7 C

Finance cost:	Cost	£3,342,000		
Less	Payment	£943,000		
	Balance	£2,399,000	at 8·7% =	£208,713
Depreciation over four years (shorter of term/UEL)			=	£835,500
	Total charge		=	£1,044,213

8 B

Depreciation (36 + 296 + 64)	=	£396		
Add loss on disposal		£7		
Less profit on disposal		£(13)		= £390

9 A

Additions to fixed assets:	Buildings	£200,000	
	Machinery	£113,000	(excluding leased assets)
	Vehicles	£56,000	
	Total outflow	£369,000	
Net book value of disposals	(178 + 34)	£212,000	
Plus profit		£13,000	
Less loss on disposal		£(7,000)	
	Total inflow	£218,000	
	Thus net cash flow	£151,000	

10 C

Timing difference (£2,650,000 – £1,872,000) = £778,000
Deferred tax at 20% = £155,600

11 C

12 A

13 D

14 B

15 D

Increase in overheads = £3,440
Increase in hours = 80
Thus variable cost per hour: £3,440/80 = £43
Thus fixed cost = £442,500 – (7,500 x £43)
or £439,060 – (7,420 x £43) = £120,000
Thus 7,150 hours at £43 = £307,450 + £120,000 = £427,450

16 B

17 C

18 C

Fixed Cost per unit (£33) x volume (50,000) = Total fixed costs (£1·65m)
Contribution per unit = £80
Thus, breakeven volume = £1·65m ÷ £80 = 20,625 units

19 A

20 B

Margin of safety volume is not given, but is budgeted sales volume – break even volume
i.e. 256,000 – 167,000 = 89,000
Margin of safety ratio is calculated as:
= 89,000/256,000 x 100 = 34·77%

Section B

1 (a) To assistant.accountant@haywain.com
Ref Investment in Sunflower Ltd

(i) Treatment depends on nature of investment.
Basic consideration is the degree of influence which investor can exert.

Control	dominant influence over operating and financial policies	+
	control of board of directors	
	this can be assumed if holding is 50% or more	
	but *may* exist with a lesser holding	
	final decision depends on facts	
	if investor has control, investee is a subsidiary	
Treatment	consolidation, using acquisition accounting, which means:	
	assets of the investor and the investee are combined	
	total net assets represent the assets controlled by the investor	
	premium paid to acquire control gives rise to goodwill	
	only investor's share capital and share premium reported	
	share of retained profits of subsidiary since acquisition added to reserves	
	goodwill written off against the consolidated reserves	
	value of the net assets controlled by other shareholders reported as minority interest.	
Significant influence	if investor can exercise a degree of influence,	and
	is represented on board of directors,	but
	cannot control investee	
	investment is in an *associated undertaking*	
	will normally be the case when holding is 20% or more	
	again, decision will rest on the facts,	but
	significant influence is possible if holding is less than 20%.	
Treatment	equity method is used	
	i.e. single line item 'Investment in associated undertaking'	
	value will be investor's share of net assets of associate	plus
	goodwill yet to be amortised	
	i.e. total net assets are only increased by the investor's share of net assets	
	thus there is no requirement to report the value of assets controlled by other investors (i.e. there will be no minority interest).	
	again, only share capital and share premium of investor reported	
	reserves include investor's share of retained profits since acquisition	

(ii) *Investment in Sunflower Ltd*
As 40% of the ordinary share capital acquired, it is unlikely that Haywain Ltd can exercise control. More likely that significant influence will be exercised.
Thus, correct treatment would be as an associated undertaking.

Mark allocation:	**(i)**	1 mark for each valid point, subject to the following maximums:		
		Explanation of associate	4	
		Accounting treatment of associate	4	
		Explanation of subsidiary	4	
		Accounting treatment of subsidiary	4 overall max	8
	(ii)	Treatment of investment in Sunflower		2
				10

Examiner's note:
The question required an e-mail message, which by its nature will be succinct.
The following expanded comments are offered for tutorial and study purposes.

The manner in which an investment in the shares in another company should be treated will depend on the nature of the investment, and the extent to which the investor is actively involved in the management of the investee.

Control
The most important factor in deciding on the treatment of the investment is the degree of influence or control which the investor can exercise. A key consideration is whether or not Haywain Ltd has acquired control. Control means that Haywain exercises a *dominant influence* over the affairs of the investee, and controls the board of directors. It can normally be assumed that a holding of 50% or more of the ordinary share capital will allow the investor to exercise control, but it should be noted that it is possible to exercise control with a holding of less than 50%. Ultimately, the decision will rest on the actual nature of the investor's influence, rather than a simple percentage calculation. Where a dominant influence is exercised, the investee is a subsidiary of the investor.

Accounting treatment
The correct accounting treatment for a subsidiary is that it should be *consolidated*, using the *acquisition method* of accounting. Basically this means that the assets of the investor and the investee are combined, so that the total net assets represent the assets controlled by the investor. As there will normally have been a premium paid to acquire control, the combined assets will include goodwill, which represents the excess of the purchase consideration over the fair value of the net assets which were acquired.

Only the share capital and share premium of the investor will be reported on the consolidated balance sheet, while the investor's share of the retained profits of the subsidiary since acquisition will be added to reserves. As the goodwill will normally have a limited useful economic life, it will be amortised by being written off against the consolidated reserves. Finally, the fact that some of the shares of the investee are not held by the investor is reflected by the inclusion of the value of the net assets controlled by other shareholders under the heading of minority interest.

Significant influence
Where the investor can exercise a degree of influence over the affairs of the investee and is represented on the board of directors, but cannot control the investee, the investment is treated as an *associated undertaking*. This will normally be the case when the investor's holding is 20% or more of the ordinary share capital of the investee. As with dominant influence, the decision will rest on the facts, but it should be noted that it is possible to exercise a significant influence if the holding is less than 20%.

Accounting treatment
An associate is dealt with using the *equity method*. This means that in the total net assets, there will be a single item 'Investment in associated undertaking'. The value of this item will be the investor's share of the net assets of the associate, plus the amount of goodwill yet to be amortised. This means that the total net assets value will only be increased by the investor's share of the net assets of the investee. (In a subsidiary, the full value of the net assets will be included.) This will mean that there is no requirement to report the value of assets controlled by other investors (i.e. there will be no minority interest).

Once again, only the share capital and share premium of the investor will be reported on the consolidated balance sheet and the reserves will include the investor's share of retained profits since acquisition.

Investment in Sunflower Ltd
As 40% of the ordinary share capital has been acquired, it is unlikely that Haywain Ltd can exercise control. It would seem more likely that significant influence will be exercised. Thus, the correct treatment would be as an associated undertaking.

(b) Haywain Group Ltd
Consolidated Balance Sheet

	£000
Tangible fixed assets	2,135·0
Investment in associated undertaking	515·8
Net current assets	725·0
Long term liabilities	(430·0)
	2,945·8
Ordinary shares of £1 each	1,600·0
Share premium	500·0
Retained profits	845·8
	2,945·8

Allocation of marks:

Correct treatment of investment in associate	1	
Calculation of value of investment in associate (as detailed below)	7	
Calculation of value of reserves (as detailed below)	2	10
Total for question		**20**

Workings (all figures in £000)
Working 1 Goodwill on acquisition

Net assets of Sunflower at 30.11.03		£1,185		
This includes profit for year to 30.11.03 of £180				
Thus profit for three months (£180 x 3/12) =		£45		
Net assets of Sunflower at acquisition		£1,140		1
x % acquired	40%			
= Value of net assets acquired		£456	1/2	

Consideration:					
400,000 shares of £1 issued at a premium of 25p	=		£500	1/2	
Thus goodwill on acquisition			£44	1	2

Working 2 Amortisation of goodwill					
Goodwill amortised over 5 years	=		£8·8 p.a.		
Thus for 3 months			£2·2	1	
Thus unamortised at 30.11.03 (£44,000 – £2,200)			£41·8	1	2

Working 3 Interest in associate				
Net assets of Sunflower at 30.11.03		£1,185		
% acquired		40%		
Value of net assets at 30.11.03		£474		
Unamortised goodwill		£41·8		
		£515·8		2

Working 4 Reserves				
Reserves of Haywain Ltd		£830		
Post acquisition profit of Sunflower (£180 x 3/12)	£45			
Group share (40%)		£18		
		£848		
less Goodwill amortised to date (W2)		£2·2		
		£845·8		2

2 **To** **Board of Directors**
From **Chief Executive**
Ref **Draft accounts**
Date **1 December 2003**

(a) The generally accepted accounting practice regarding events which occur after the balance sheet date is set out in SSAP 17 – Accounting for post balance sheet events. The standard provides the following guidance:

Post balance sheet events are those which occur between the balance sheet date and the date on which the directors approve the financial statements. It almost goes without saying that as always in accounting, we need only be concerned with items which could be considered to be material.

The standard confirms that financial statements should be prepared on the basis of conditions which exist at the balance sheet date, and defines two types of post balance sheet events:

1 Adjusting events
which concern conditions which existed at the balance sheet date

2 Non-adjusting events
which concern conditions which did not exist at the balance sheet date

The two types of event are treated as follows:

Adjusting events	as the term implies, the financial statements should be adjusted to reflect the manner in which the post balance sheet event provides further information about the conditions which existed at the balance sheet date
Non-adjusting event	the situation here is perhaps not quite so obvious. Although, as implied, no adjustment is made in the financial statements, it is necessary to decide how the absence of any disclosure would affect the ability of the users of financial statements to reach a proper understanding of the financial position. In such circumstances, it is necessary to provide relevant information in a note to the financial statements (accountants use the term 'disclose by way of note').
Nature of costs	if an adjusting event gives rise to a significant cost, it may be that the cost should be defined as 'exceptional' under FRS 3 – Reporting financial performance. An exceptional item arises from within the ordinary activities of the company, but due to the significance of the cost, ought to be separately disclosed so that the user of the financial statements will obtain a true and fair view.

(b) Applying these criteria to the events which have recently come to light, we can conclude that:

Legal claim	the conditions existed at the balance sheet date, as the accident had occurred during the financial year consequently this is an adjusting event therefore, we should recognise the cost of the claim as an expense in the profit and loss account while the balance sheet should reflect the liability to pay the claim as the cost is material (the cost of £100,000 – see below – represents 7·3% of profit after tax) it should also be treated as exceptional, and the details of the cost, and the events giving rise to it should be separately disclosed

Stock loss	as the fire occurred after the balance sheet date, this is a non-adjusting event any loss of stock will be reflected in the financial statements of the current year (to 31 October 2004) as noted above it is necessary to consider whether the item is material (the cost of £50,000 – see below – represents 3·9% of profit after tax. On that basis it could be argued that the cost is not material. However, the loss is 12·5% of the value of stock, and based on that figure, it would be considered to be material). however the fact that the loss is significant and occurred before the financial statements were adopted, means that disclosure in a note is appropriate.

(c) The effect on the financial statements can therefore be summarised as follows:

Cost of legal claim (legal representative's estimate) £100,000

This amount will reduce profit and appear as a liability on the balance sheet.

As the cost is deemed to be exceptional, details will be given in a note.

Uninsured element of stock loss £50,000

This amount will be disclosed in a note to the financial statements, but no other adjustment will be required.

Thus:	Profit after tax	Total net assets
Per draft	£1,374,586	£11,818,471
Less claim	£100,000	£100,000
Revised	£1,274,586	£11,718,471

Mark allocation:

(a) a maximum of two marks for each of the following:
definition of:
post balance sheet period
adjusting event
non adjusting event
description of accounting treatment of:
adjusting event
non adjusting event
reference to materiality
reference to exceptional item
to a MAXIMUM of 10

(b) one mark for each valid point, subject to MAXIMUMS of:

legal claim	3	
stock loss	3	6

(c) one mark for the calculation of each of the following:
cost of legal claim
amount to be disclosed for stock loss
revised profit
revised net assets 4

Total for question 20

3 **(a)** SSAP 9 states:
stock should be valued at the lower of cost and net realisable value.
Cost = all expenditure (in normal course of business) to bring stock to its present location and condition.
NRV = expected selling price *less* any costs to bring stock to sale.
Reason for this treatment:
to ensure that profit is not anticipated and
any loss is recognised at the earliest point
based on accounting rule of prudence.
Approach also meets requirements of matching concept by matching cost (and ∴ profit) with revenue earned on the sale.
Important as reported profit is directly affected by stock value. If stock is overvalued by £1, profit is overstated by £1.
Long term contracts are not valued on this basis as:
Effect would be to report profit on contracts completed, rather than on work carried out in period.
This is contrary to rule of matching or accruals.
Also means financial statements will not show a true and fair view.

Mark allocation: 1 mark per valid point to a MAXIMUM of 8

(b) Contract WIP

Contract value	basic	£400,000			
	variation	£29,800	£429,800		
Costs	to date	£203,200			
	variation	£29,800			
	to complete	£98,300	£331,300		
Thus	Expected profit		£98,500	2	

On the basis of work certified, contract is 65% complete
Thus, profit to date is £98,500 x 65% = £64,025 1

Thus	Turnover to P&L	£260,000	1	
	Cost of sales (balancing figure)	£195,975	1	
	Profit	£64,025		
Thus	Costs to date: basic	£203,200		
	variation	£29,800		
		£233,000	1	
	less Cost of sales	£195,975		
=	Stock value	£37,025	1	7

(c) The effect of applying the provisions of SSAP 9 will be:
- reported profit will increase by £64,025
- stock will be reduced by the amount recognised in cost of sales (£195,975)
- debtors will increase by the amount recognised in turnover (£260,000)
- thus current assets, working capital and capital employed will increase by the amount now recognised in profit £64,025 (£260,000 – £195,975)

As a result of these changes, the following comments can be made regarding assessment of profitability and liquidity:

Profitability
- reported profit will improve by £64,025 in the current year as this amount is being recognised earlier than was previously reported
- the Net Profit/Sales ratio (net profit margin) will almost certainly improve as the increase in profit is almost 25% of the increase in turnover (as the company has been reporting 'modest' profits, it is highly unlikely that the draft accounts show a better net profit margin)
- return on capital employed is more difficult to assess without access to the figures reported in the accounts, but it would be expected that as both profit and net assets will have increased by the attributable profit of £64,025, the overall effect is positive

Liquidity
- as working capital has increased by £64,025, it follows that the current ratio will have improved
- as stock has been reduced, the stock turnover period will be improved
- as debtors have increased, the debtors turnover period will have deteriorated
- as the increase in debtors is greater than the decrease in stock, the quick assets ratio will have improved

From the above it can be seen that applying the correct treatment under SSAP 9 indicates that the short term objectives of the investors are being met.

Mark allocation: 1 mark per valid point to a MAXIMUM of 5

Total for question 20

4 (a)

Cost pool	**Cost driver**	**cost per unit of cost driver**	
Set up cost	Production runs	£2,041·09	(w1)
Order processing	Orders	£592·68	(w2)
Machine running	Machine hours	£97·55	(w3)

		S	**B**	**P**	**Total**	**Cost £**	**per unit of cost driver**
W1	Prodn. Runs	20	18	8	46	93,890	£93,890 ÷ 46
W2	Orders	24	37	11	72	42,673	£42,673 ÷ 72
W3	Mach hrs p.u.	0·5	0·6	0·4			
	Prodn. vol.	200	600	400			
	Mach hrs	100	360	160	620	60,480	£60,480 ÷ 620

Thus product costings using ABC:

	Sylvim	Bernam	Palio
	£	£	£
Direct material	127·00	83·00	95·00
Direct labour	74·00	62·00	83·00
Overheads: Set up	204·11	61·23	40·82
Order handling	71·12	36·55	16·30
Machine running	48·78	58·53	39·02
Total cost	525·01	301·31	274·14

Note to candidates:
The cost per unit for each overhead cost is calculated as follows:
Set up (£2,041·09 x production runs per product) ÷ production volume
Order handling (£592·68 x orders per product) ÷ production volume
Machine running £97·55 x machine hours per unit

The following information was not required to answer part (a), but assists in the analysis in part (b):

	£	£	£
Selling price	560·00	510·00	480·00
Thus Profit per unit	34·99	208·69	205·86
Profit per mach. hr.	69·98	347·82	514·65

Mark allocation:

Identification of cost pools/cost drivers		max	2	
Calculation of cost per unit of cost driver	set up	1/2		
	order cost	1/2		
	mach hrs =	1	2	
Calculation of cost per unit of output	3 x 1 =		3	7

(b) **To** **Operations Director**
From **Project Manager**
Ref **Product costings**

(i) The possibility that our profitability could be improved by stimulating a different pattern of sales demand has been considered. The current approach is to schedule production in line with previous sales demand. It is known that there is potential to increase the sales of all products, but the fact that cost calculations as currently carried out suggest that the profit/sales % for each product is around 35% means there has been little incentive to do so.

Product costings using the activity based costing (ABC) approach have been prepared (see appendix – part (a)). This approach assumes that activities, rather than the volume of production, influence the amount of overhead cost incurred in production.

As the attached calculations show, the profit per unit of Bernam and Palio is higher than has previously been believed to be the case, while Sylvim is in fact barely profitable.

Indeed if we consider the profit per machine hour, using activity based costing, it is evident that Palio is the most profitable product.

It is therefore recommended that we reduce our production of Bernam and cease production of Sylvim to create the capacity to increase production of Palio.

If production and sales were rescheduled as follows:
Sylvim – nil Bernam – 550 units Palio – 800 units

The resulting profit would be £279,467 (an increase of 30·2%) while we would be utilising 99% of production capacity.

(ii) Whilst this is appropriate for the reasons outlined below (iii), the following factors should be considered before committing to this decision:

- undertake market research to confirm that
  - market demand is sufficient to absorb increased production of Palio
  - reducing the availability of Bernam and Sylvim will not adversely affect relations with customers, thereby adversely affecting planned sales levels
- ensure that there are no unforeseen constraints (e.g. material or labour shortages) which would mean that production of Palio could not be expanded
- confirm that the cessation of Sylvim will not lead to any increase in costs (e.g. redundancy)
- consider whether the selling price of Sylvim can be increased, so that it becomes profitable
- review competitors' plans, and how these may affect the potential sales of Palio
- consider how competitors will react to the cessation of Sylvim and the significant increase in production of Palio – this may bring forth competition which does not currently exist
- consider whether there is sufficient long term demand for Palio to justify concentrating solely on that product

(iii) ABC is considered a more appropriate method of costing due to:

shorter production runs, due to increased flexibility of production methods

by linking activities and costs, more accurate costings are obtained (if an activity is not carried out, there will be no cost)

absorption costing was appropriate when overheads made up a lesser proportion of total cost.

For that reason a degree of inaccuracy was less important. As overheads are now a greater proportion of total cost (almost 50%), there is a need for greater accuracy

Mark allocation 1 mark per valid point, subject to maximums of:

Recommendation	3	
Other factors to be considered	7	
Explanation of superiority of ABC	3	
		13
Total for question		**20**

5 (a)

Variance	Possible reasons
Material price (favourable)	better planning leading to lower prices through: larger orders, leading to improved discounts fewer orders at short notice fewer suppliers, allowing better prices to be negotiated an unforeseen fall in prices budgeted rise in prices may not have taken place lower quality material may have been purchased
Material usage (adverse)	material may be defective, leading to increased waste inefficient production methods, leading to increased waste higher quality standards leading to more rejected work material may be stolen or incorrectly allocated
Labour rate (favourable)	lower grade of staff used in production actual wage increase less than budgeted
Labour efficiency (adverse)	labour lacking appropriate skills labour input has increased due to quality of material poorly motivated staff
Idle time (adverse)	machine breakdown lack of material unbalanced production flow, leading to bottlenecks absenteeism
Overhead expenditure (favourable)	cost savings better use of production facilities
Overhead volume (adverse)	budgeted level of activity not achieved

Mark allocation:

1 mark for each valid reason, to a maximum of 6 = 6 marks

(b)

Variance	Possible explanation
Material usage	The change in specification of materials may mean that staff are less familiar with the materials, which could cause an increase in wastage. If the training which was deferred related to materials handling, staff may be less skilled than required, leading to increased wastage.
Labour efficiency	As training has been deferred, staff are less skilled than planned. This will cause a reduction in productivity. As training has been deferred, and the company has introduced a number of initiatives, staff may be poorly motivated. This will be the case if the reasons for, and benefits of, the changes have not been fully explained to staff.
Idle time	The introduction of JIT may have led to a shortage of materials if the company had not scheduled the materials requirements accurately. The fact that the workforce has not been trained and may be poorly motivated has been noted above. Either of these factors may have caused disruption to the production flow, leading to increased idle time.

Overhead volume	As the idle time variance is adverse, it is reasonable to assume that actual output was less than budgeted output. The causes of this are likely to be the lack of training and consequent fall in motivation, resulting in lost production due to idle time.

Mark allocation:
1 mark for each valid point which links reasons to an action specified in the question or to another variance, to a maximum of 4 marks

(c) Before taking any action, the company should investigate which of the likely reasons considered in (b) above are borne out by the facts. It would also be prudent to reconsider the expected impact of the initiatives, as these may not have been thoroughly researched.

On the basis of the information which is currently available, the following action is likely to be required:

- Undertake the planned training as soon as possible (although this will be a substantial 'one-off' cost, it is likely to provide ongoing benefits and savings)
- Quantify the savings which will result from the completion of the training
- Plan to follow up on the training to maintain the benefits
- Discuss the upgrades and initiatives with staff
- Implement the budgeted wage rise following the completion of the training
- Consider the overall impact of the revision to the material specifications (it may be that the benefits of reduced price are outweighed by the costs – particularly in terms of labour efficiency)
- Ensure that materials are available at all stages of production (it may be appropriate to make JIT a medium term, rather than an immediate aim, pending an increase in familiarity with the new processes on the part of staff)
- Improve production planning to avoid bottlenecks leading to idle time

Mark allocation:
1 mark for each valid point, to a maximum of 6 marks

(d) In the following circumstances, it would not be appropriate to investigate an adverse variance:

Cost/benefit	the cost of investigating the variance may be greater than the benefits which would be obtained from any corrective action which may be taken.
Control	if the cause of the variance is outside management control, there will be no benefit from investigation. It would be more appropriate to consider how the company's practices and procedures need to be revised.
Materiality	an adverse variance may not be material.
Inter-related	there may be a related (favourable) variance which outweighs the adverse variance. For example, an adverse labour efficiency variance may be accepted if the reason for this is that the use of a lower quality of material requires greater labour input, but has also led to a reduction in the cost of materials.
Averaging	a variance is derived from comparison with a standard. As the standard will tend to be an average for the reporting period, the variance may be due to the (planned) actual cost being greater than the (average) standard. This is most likely to occur in the later stages of the reporting period, with the adverse variance averaging out with a favourable variance in the early stages of the reporting period.
Trend	if the variance is adverse, but reducing, it may be that corrective action has already been taken, and the cost is now under control – and the variance will shortly become favourable.
Objective	if management are attempting to achieve high standards through continuous improvement, ideal standards may be used as the benchmark. Whilst this will result in adverse variances, the resulting improvement is what is actually sought.

Mark allocation:
1 mark for each valid point, to a maximum of 4 marks

Total for question 20 marks

6 (a) (i)

Domestic	**Standard**	**Premium**	**Deluxe**			
Sales volume	1,200	700	500			
Contribution per unit (W)	£136	£301	£432			3
Thus total contribution	£163,200	£210,700	£216,000	=	£589,900	1
	Less:	Fixed costs			£120,000	
	=	Profit			£469,900	1
						5

(ii) Export Contribution

	Standard	Premium	Deluxe	Total	
	£	£	£	£	
High	176,800 (1,300 x £136)	240,800 (800 x £301)	259,200 (600 x £432)	676,800	1
Med	149,600 (1,100 x £136)	180,600 (600 x £301)	237,600 (550 x £432)	567,800	1
Low	122,400 (900 x £136)	150,500 (500 x £301)	172,800 (400 x £432)	445,700	1

Export Profit

	Contribution less Costs:	Fixed	Marketing =	Profit	prob.	Expected value	
	£	£	£	£		£	
High	676,800	120,000	60,000	496,800	·55	273,240	1
Med	567,800	120,000	40,000	407,800	·35	142,730	1
Low	445,700	120,000	20,000	305,700	·10	30,570	1
				Expected profit		446,540	1
							7

Working:
Contribution per unit

		Std		Prem		Del	
		£		£		£	
Direct costs	Material	102		165		180	
	Labour	90	(1·8 x £50)	130	(2·6 x £50)	160	(3·2 x £50)
	Variable overhead	72	(1·8 x £40)	104	(2·6 x £40)	128	(3·2 x £40)
	Total variable cost	264		399		468	
	Selling Price	400		700		900	
Thus	Contribution per unit	136		301		432	

(b) To Managing Director
From Project team
Re Sales market
Date 1 December 2003

Based on the available data, the profit which is likely to result from choosing to service our domestic market is £469,900. If we decide to enter the export market, the result is less certain.

Using the expected value technique, the likely result is £446,540.

At first sight this appears unattractive, representing a fall of almost 5%. However there are several factors which ought to be considered before a final decision is made.

Decision period
Although choosing to service the export market is likely to result in a 5% reduction in profit levels, it should be noted that this is before the longer term is considered. Given that we know that demand in the domestic market is stable, there appears to be little prospect of increasing profitability in this market. However there may be opportunities for growth in the export market. The prospects for the longer term ought to be researched.

Risk
The expected value technique is based on applying probabilities. Consequently the expected value is an approximation. For example, although the expected result using this technique is £446,540, there is a 55% chance that the result will be £496,800. This is a 5·7% increase on the anticipated result in the domestic market. On the other hand, there is a 10% chance that profit will fall by almost 35% to £305,700. The final decision will therefore be influenced by the overall attitude to risk. If we wish to avoid the risk of a reduction in profit, we would either continue to service the domestic market, or we would have to take action to ensure that the low level of market demand did not occur. One possibility is increasing the marketing expenditure to further stimulate demand.

Accuracy of data
The assessment of options is based on the assumption that the data provided by the research is accurate. For example if the probabilities of high and low demand were reversed, the expected profit would fall to £360,545. Any final decision will be influenced by the confidence we can place in the data.

Effect of additional marketing expenditure
The market research indicates that the level of demand can be influenced by marketing activity, and has provided an indication of the expenditure required to achieve various levels of demand. It may be the case that additional marketing activity could lead to either demand above the levels currently under consideration, or such expenditure could ensure that the low level of demand does not occur. An assessment of the effect of additional marketing activity should be undertaken.

Production capacity
In the event that demand is high, the sales of all products will be above the levels in the domestic market. We must be sure that we have the production capacity to meet such demand. If volumes are constrained by production capacity, the assessment of potential profit will be adversely affected.

Conclusion

Although the data available gives the impression of certainty, there are a number of factors to be considered before any decision is made.

Recommendation

Clarification of the position relating to the following factors should be sought:

- Period on which the decision is to be based
- Likely growth in the export market
- Attitude to risk
- Accuracy of the data, in particular:
  - Sales volumes
  - Marketing costs
  - Probabilities
- Potential to exert a stronger influence on demand through marketing activity
- Availability of production capacity to meet additional potential demand

Mark allocation:

1 mark for each relevant point, to a MAXIMUM of	5	
awarded for clarity of report, up to a MAXIMUM of	3	8
	Total for question	**20**