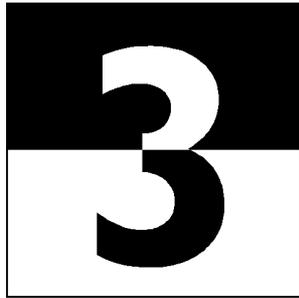


Examiner's Report and Model Answers for

Management Accounting



THIRD LEVEL

Series 2 (Code 3023) 2001



LCCI Examinations Board

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Management Accounting Third Level

Series 2 2001

How to use this booklet

Examiners' Reports and Model Answers have been developed by LCCIEB to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCIEB examinations. The contents of this booklet are divided into 5 elements:

- (1) General – assessment of overall candidate performance in this examination, providing general guidance where it applies across the examination as a whole
- (2) Questions – reproduced from the printed examination paper
- (3) Model Answers – summary of the main points that the Chief Examiner expected to see in the answers to each question in the examination paper
- (4) Examiner's Report – constructive analysis of candidate error, areas of weakness and other comments that apply to each question in the examination paper
- (5) 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.

The London Chamber of Commerce and Industry Examinations Board provides Model Answers to help candidates gain a general understanding of the standard required. The Board accepts that candidates may offer other answers that could be equally valid.

Note

LCCIEB reserves the right not to produce an Examiner's Report, either for an examination paper as a whole or for individual questions, if too few candidates were involved to make an Examiner's Report meaningful.

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Typeset, printed and bound by the London Chamber of Commerce and Industry Examinations Board.

Management Accounting Third Level Series 2 20001

GENERAL COMMENTS

The results achieved overall were in line with previous examinations with many candidates performing well. All questions produced good answers from a significant number of candidates, although the narrative question (Question 1) continues to be the least popular question in the examination.

Management Accounting Third Level

Series 2 2001

QUESTION 1

- (a) Sketch a total cost-volume graph, to demonstrate the general relationship between total cost and volume of activity for a period, for **each** of the following:
- (i) Telephone expenses comprising a fixed charge per period plus a cost per call.
 - (ii) Raw material cost where a trade discount is given by the supplier for additional purchases above a level representing 50% of normal volume.
- (6 marks)
- (b) Discuss the limitations of break-even analysis.
- (7 marks)
- (c) Define the following terms used in process costing and explain the implications for the establishment of product costs:
- (i) equivalent units
 - (ii) joint products.
- (7 marks)

(Total 20 marks)

Model Answer to Question 1

- (a) See graph on following page.
- (b) In break-even analysis, as normally applied, it is assumed that:
- (i) some costs are fixed, regardless of the level of activity, and can be identified
 - (ii) cost and revenue behaviour is linear
 - (iii) sales mix will not change
 - (iv) no return on capital is required.

The above assumptions limit the application of break-even analysis. It nevertheless remains a useful tool as long as the limitations are recognised.

For example, additional analysis can be carried out with changed assumptions regarding selling prices, sales mix, or fixed/variable cost split. Also, although the linear cost assumption is unlikely to remain valid over the whole activity range, it may well be sufficiently accurate within the relevant range. Greater sophistication regarding cost behaviour can be incorporated in the analysis if desired. Finally, a target profit (other than zero) can be included in the analysis to provide a desired return on capital.

- (c) (i) Equivalent units are notional whole units representing uncompleted work, used to apportion costs between work-in-progress and completed output and in performance assessment.

The equivalent whole units of production are divided into the costs incurred in order to establish a cost per unit of output which is then used to value the outputs from the process.

- (ii) Joint products are products (at least two) that are produced simultaneously in a process and that each have a significant relative sales value.

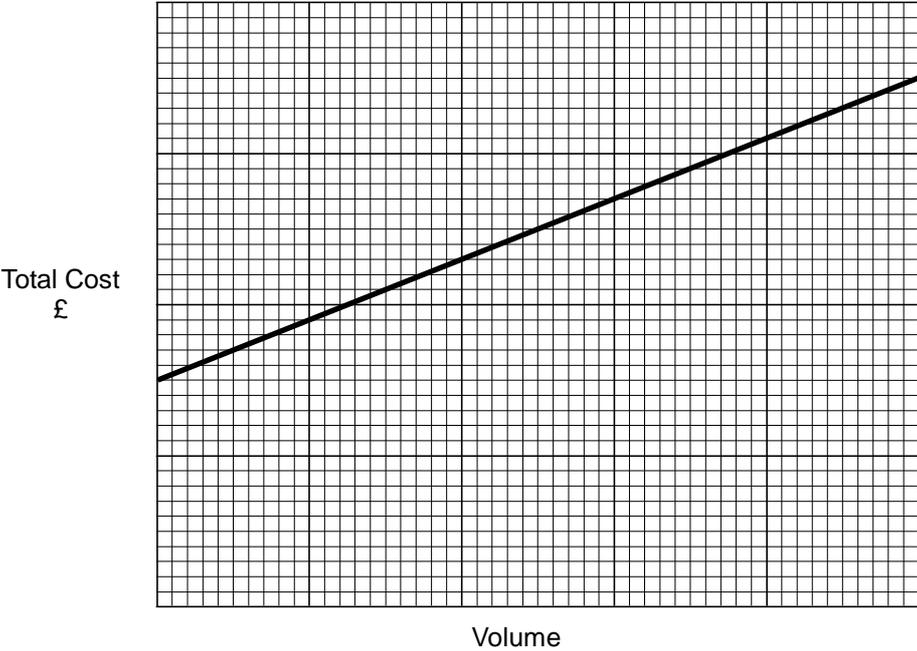
Joint costs incurred in a process (ie all costs incurred prior to product separation) have to be apportioned if product costs are to be established. A number of methods exist, the sole purpose of which is the valuation of unsold stock at the end of an accounting period.

Model Answer to Question 1 continued

For Question 1(a)

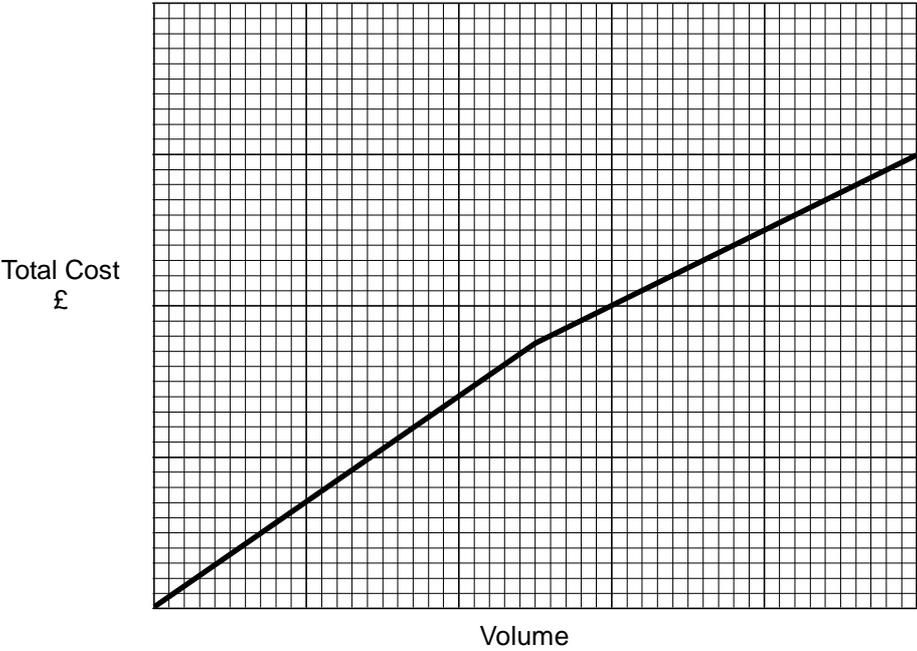
(i)

Telephone Expenses



(ii)

Raw Material Cost



Examiner's Report on Question 1

This question covered aspects of cost behaviour, cost volume profit analysis and process costing.

Very few candidates scored full marks in part (a). A common error in (i) was the assumption that free calls would be received before having to pay a cost per call. A common error in (ii) was the assumption that a discount would be received on all purchases rather than just on additional purchases.

In part (b) many candidates provided a list of the limitations of break-even analysis and scored good marks but discussion of the limitations was invariably lacking. Most candidates focused on cost assumptions with little reference to selling price or sales mix.

Part (c) was generally poorly answered. In (i) many candidates referred to a 'notional concept', but rarely explained it, or simply were aware that equivalent units had something to do with work-in-progress. Answers to (c) (ii) were usually limited to 'two or more products from a process' with no reference to 'significant relative sales value' or to the implications for the establishment of product costs.

QUESTION 2

Two divisions of a company have the following balance sheets at the end of a period:

	Division A £000	Division B £000
Long term capital at start of period	1,075	3,210
Profit before interest for period	<u>182</u>	<u>458</u>
Long term capital at end of period	<u>1,257</u>	<u>3,668</u>
Fixed assets (net book value)	832	2,689
Current assets:		
Stock	241	512
Debtors	276	582
Bank	<u>24</u>	<u>79</u>
	541	1,173
Current liabilities:		
Creditors	<u>116</u>	<u>194</u>
Net current assets	<u>425</u>	<u>979</u>
Net assets	<u>1,257</u>	<u>3,668</u>

Additional information for the period:

Sales (all on credit)	£2,685,000	£10,634,000
Gross profit margin	36%	28%

REQUIRED

- (a) Calculate the return on average capital employed and the residual income for each of the divisions. The cost of capital of each division is 12% per annum. (6 marks)
- (b) Calculate two other ratios to provide further analysis of the profitability of the two divisions. (6 marks)
- (c) Calculate two ratios to provide analysis of the divisions' management of working capital. (6 marks)
- (d) Using the ratios calculated in (c) above, contrast the two divisions' management of working capital. (2 marks)

(Total 20 marks)

Model Answer to Question 2

	Division A	Division B
(a) Return on av capital employed	$\frac{182}{1,166} \times 100\%$ $\frac{(1,075 + 1,257)}{2}$	$\frac{458}{3,439} \times 100\%$ $\frac{(3,210 + 3,668)}{2}$
	= <u>15.6%</u>	= <u>13.3%</u>
Residual income	182,000 $-139,900$ (0.12 x 1,166) <u>£42,100</u>	458,000 $-412,700$ (0.12 x 3,439) <u>£45,300</u>
(b) Net profit % of sales	$\frac{182}{2,685} \times 100\%$	$\frac{458}{10,634} \times 100\%$
	= <u>6.8%</u>	= <u>4.3%</u>
Sales/long term av capital	$\frac{2,685}{1,166}$	$\frac{10,634}{3,439}$
	= <u>2.3 times</u>	= <u>3.1 times</u>
(c) Stock turnover	$\frac{1,718}{241}$ (2,685 x 0.64)	$\frac{7,656}{512}$ (10,634 x 0.72)
	= <u>7.1 times</u>	= <u>15.0 times</u>
Debtor collection	$\frac{276}{2,685} \times 365$	$\frac{582}{10,634} \times 365$
	= <u>37.5 days</u>	= <u>20.0 days</u>

NB The current ratio and/or acid test ratio could have been calculated.

- (d) Division B has significantly better stock turnover than Division A and extends much less credit to its customers. On the face of it working capital management in Division B seems to be better than that in Division A.

Examiner's Report on Question 2

Most candidates achieved a pass mark on this question on the subject of ratios but this could have been better if there had been more careful reading of parts (a) and (b) of the question.

In part (a) most candidates failed to calculate the average capital employed for each division. Most candidates calculated the return on either the opening or closing capital and then were frequently inconsistent in the capital employed used for the calculation of residual income. A few candidates averaged the two divisions together.

In part (b) the word 'other' was frequently ignored. Many candidates repeated the gross profit margins given in the question. Some candidates provided a further calculation of the return on capital employed. Whilst a significant number of candidates calculated the net profit margin, the sales/capital employed ratio was rarely seen.

Part (c) was generally well answered with nearly all candidates calculating the current ratio and the acid test ratio. Stock turnover ratios and/or debtor collection were also acceptable as indicators of working capital management.

In parts (a), (b) and (c) ratios were occasionally expressed in rather unconventional ways. For example, the net profit margin of Division A as 0.068:1 (rather than 6.8%) or the current ratio of Division A as 466% (rather than 4.7:1).

In part (d) most candidates identified Division B as having better working capital management.

QUESTION 3

The standard direct material cost details per 1,000 litres input to a process are as follows:

Material A	700 litres at £1.20 per litre
Material B	150 litres at £5.00 per litre
Material C	150 litres at £6.00 per litre
	1,000 litres

Standard wastage 5%

Actual input to the process during a month:

Material A	29,400 litres cost £35,400
Material B	6,250 litres cost £35,000
Material C	6,350 litres cost £35,900

Output for the month was 40,000 litres.

REQUIRED

(a) Calculate the following variances for the month:

- | | |
|---|-----------|
| (i) total direct material cost | (2 marks) |
| (ii) direct material price for each material and in total | (4 marks) |
| (iii) total direct material usage | (2 marks) |
| (iv) total direct material mix | (4 marks) |
| (v) total direct material yield. | (4 marks) |

(b) Construct a diagram that demonstrates (in both words and £ value) relationships between **each** of the above total variances.

(4 marks)

(Total 20 marks)

Model Answer to Question 3

(a) (i) Standard cost per litre of output:

Material A	840	(700 x 1.20)
Material B	750	(150 x 5.00)
Material C	900	(150 x 6.00)
	<u>£2,490</u>	1,000 litres x 0.95 = 950 litres

Standard cost per litre = 2,490/950

= £2.62105 per litre

Total direct material cost variance = actual cost of materials input
- standard material cost of output:

= £106,300 - £104,842 (40,000 x 2.62105)

= £1,458A

(ii) Direct material price variance = actual cost of materials less actual material quantities at standard prices:

Material A	£35,400	- £35,280	(29,400 x 1.20) =	£120A
Material B	£35,000	- £31,250	(6,250 x 5.00) =	£3,750A
Material C	<u>£35,900</u>	- <u>£38,100</u>	(<u>6,350</u> x 6.00) =	<u>£2,200F</u>
	<u>£106,300</u>	<u>£104,630</u>	<u>42,000</u>	<u>£1,670A</u>

(iii) Total direct material usage variance = actual material quantities at standard prices - standard material cost of output:

= £104,630 - £104,842

= £212F

(iv) Total direct material mix variance = actual material quantities at standard prices - actual material quantity in standard proportions at standard prices:

Actual material quantity in standard proportions at standard prices:

Material A	£35,280	(42,000 x 0.7 x 1.20)
Material B	£31,500	(42,000 x 0.15 x 5.00)
Material C	<u>£37,800</u>	(42,000 x 0.15 x 6.00)
	<u>£104,580</u>	

Variance = £104,630 - £104,580

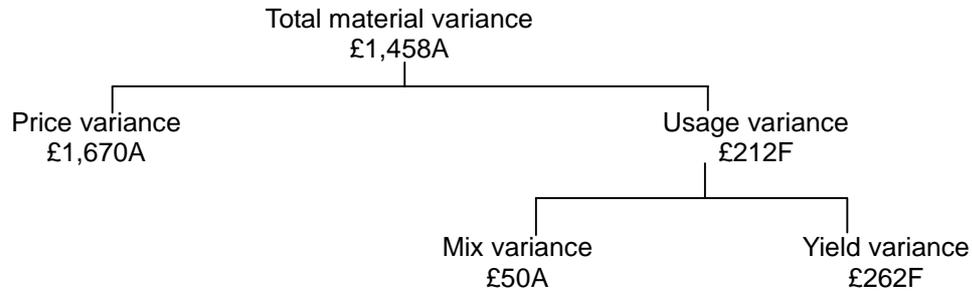
= £50A

Model Answer to Question 3 continued

(v) Total direct material yield variance = actual material quantity in standard proportions at standard prices - standard material cost of output:

$$= £104,580 - £104,842$$
$$= \underline{£262F}$$

(b)



Examiner's Report on Question 3

Good marks were gained on this question, on the subject of standard costing variances, by the reasonable number of candidates who were able to apply their understanding of standard costing to cope with the loss of material and the mix and yield aspects in the question. A significant number of less well-prepared candidates were often confined to gaining a few marks for the calculation of the material price variances.

In (a) (i) some candidates did not attempt to calculate the standard cost per litre of output and thus were unable to calculate the total material variance. It was not uncommon to find the price variance calculations repeated here. A number of candidates failed to incorporate the wastage into the calculation of the standard cost per litre of output. This then had implications for the calculation of usage and yield variances which were awarded full marks if consistent with the original error made in part (a) (i).

Nearly all candidates were able to calculate the price variances in (a) (ii). However, many rounding errors were encountered due to candidates calculating and rounding the actual price per litre rather than simply including the total cost incurred on each material in their variance calculations.

In (a) (iii) candidates frequently found difficulty with the calculation of the usage variance and often repeated the mix variance in answer to this part. Candidates should note the direct approach provided in the Examiner's answer.

The mix variance, in answer to (a) (iv), was frequently correct although a number of candidates only did the calculation in litres with no £ values. Signs (favourable/adverse) were at times reversed.

In (a) (v) the yield variance, calculated in litres, was frequently correct or at least consistent with the calculation in (a) (i). The valuation of the variance was sometimes incorrect with a number of candidates, for example, simply adding and using the standard cost per litre for each material to get a total of £12.20 per litre.

A reasonable number of candidates produced meaningful diagrams in part (b) to demonstrate the relationship between the variances.

QUESTION 4

A company manufactures a standard product which currently fully utilises the available production capacity of 6,000 machine hours per period.

The company has been approached by a potential customer with a view to the placement of an order for 3,000 units of the product at a price of £30 per unit. The product would need to be modified to the customer's own specification, resulting in additional operating costs being incurred. Details of operating costs, both for the standard product and for the modified version, are as follows:

	Standard product £/unit	Modified product £/unit
Direct materials	7.40	9.00
Direct labour	7.50	7.95
Production overheads	6.00 (0.4 machine hrs)	9.00 (0.6 machine hrs)

Other information:

- (1) Fixed production overheads are currently £67,500 per period
- (2) The selling price of the standard product is £23 per unit
- (3) Further to the costs set out above, investment of £4,500 would be required in specialised equipment in order to be able to manufacture the modified product

REQUIRED

- (a) Advise the company whether accepting the new order would be worthwhile. Support your advice with appropriate calculations based on the above figures. (16 marks)
- (b) State other factors that may influence the decision. (4 marks)

(Total 20 marks)

Model Answer to Question 4

(a)	Standard product £/unit	Modified product £/unit
Direct materials	7.40	9.00
Direct labour	7.50	7.95
Variable production overheads	<u>1.50</u>	<u>2.25</u>
	16.40	19.20
Selling price	23.00	30.00
Contribution	<u>6.60</u>	<u>10.80</u>
Contribution per machine hour	16.50 (6.60/0.4)	18.00 (10.80/0.6)
	Less	2.50 (4,500/1,800)

Workings

Fixed production overheads per machine hour = £67,500/6,000 hrs = £11.25

Total production overheads per machine hour = £6.00/0.4 = £15.00

Therefore, variable production overheads per machine hour = £3.75

Machine hours required for potential new order = 3,000 x 0.6 = 1,800

On the basis of the figures provided the new order would not be worthwhile accepting. The investment in specialised equipment is equivalent to £2.50 per machine hour required to complete the order. This reduces the contribution from the new order to £15.50 per machine hour, £1.00 per machine hour less than from the standard product.

(b) Other factors:

- Whether the order would be repeated and at what price
- Potential loss of existing customers
- Possibility of expanding production capacity

Examiner's Report on Question 4

This question tested candidates' ability to allocate production resources where these resources (in terms of machine hour capacity) were in limited supply. A number of approaches to the answer were possible and acceptable. The Examiner's answer is based upon a £/unit approach with subsequent conversion to £/machine hour in order to allocate the limited machine capacity.

Alternative approaches are based upon calculating the total profit that could be earned from the total machine capacity available. This could be by comparing the profit that could be generated from the utilisation of the total machine capacity of 6,000 hours on the standard product, with the profit that could be earned by using the same machine hours on a combination of standard and modified product. A further approach is to calculate the profit that would be earned by devoting 1,800 machine hours to the manufacture of 3,000 units of the modified product and then to incorporate the opportunity cost of not then utilising those same hours on the manufacture of the standard product.

There were many good attempts at part (a) of the question and a reasonable number of correct answers, many using the opportunity cost approach which resulted in the company being £1,800 worse off if the modified product was manufactured.

Major sources of error were miscalculation of the machine hours required for the modified product, double-counting of the fixed production overheads, simply comparing the profit from 3,000 units of the modified product with that obtained from 3,000 units (or even 15,000 units) of the standard product, or a simple comparison of profit/contribution per unit from the two products.

Answers to part (b) were invariably poor with a wide-ranging list of factors which generally were not related to the question. Rarely was any mention made of the possibility of repeat business or the effect on existing customers.

QUESTION 5

A company manufactures and sells a single product which has the following standard selling price and standard costs:

	£ per unit
Selling price	43.00
Costs:	
Direct materials	12.50
Direct labour	13.20
Variable production overheads	3.30
Fixed production overheads	10.00

Variable production overheads are absorbed at a rate of £1.50 per direct labour hour. Fixed production overheads are absorbed at a rate of £10.00 per unit. Budgeted production and sales is 9,800 units per period.

REQUIRED

- (a) Calculate the budgeted direct labour hours. (3 marks)
- (b) Calculate the sales volume profit variance in a period when actual sales are 9,200 units. (4 marks)
- (c) Prepare an absorption costing profit statement for the period when actual sales are 9,200 units, if selling price and costs in the period are as per flexible budget and production is 9,600 units. Administration and selling overheads in the period total £17,500. (9 marks)
- (d) Calculate the difference in profit for the same period if a marginal costing system was used instead. State whether the profit would be greater or less than that reported in (c) above. (4 marks)

(Total 20 marks)

Model Answer to Question 5

(a) Budgeted direct labour hours:

$$3.30/1.50 = 2.2 \text{ direct labour hours per unit}$$

$$\times 9,800 \text{ units}$$

$$= \underline{21,560} \text{ budgeted direct labour hours}$$

(b) Sales volume profit variance:

$$600 \text{ units } (9,200 - 9,800)$$

$$\times \text{£}4.00 \text{ per unit } [43 - (12.50 + 13.20 + 3.30 + 10.00)]$$

$$= \underline{\text{£}2,400\text{A}}$$

(c) Absorption costing profit statement:

	£
Sales (9,200 units x £43.00 per unit)	395,600
Cost of sales (9,200 units x £39.00 per unit)	<u>358,800</u>
Gross profit (9,200 units x £4.00 per unit)	36,800
Under-absorbed fixed production overheads (9,600 - 9,800 = 200 units x £10.00 per unit)	<u>2,000</u>
Adjusted gross profit	34,800
Administration and selling overheads	<u>17,500</u>
Net profit	<u>17,300</u>

(d) Difference in profit = change in stock units x fixed production overhead cost per unit

$$= 400 \text{ units} \times \text{£}10.00 \text{ per unit}$$

$$= \underline{\text{£}4,000 \text{ less profit}} \text{ (using marginal costing)}$$

Examiner's Report on Question 5

This question was principally on the subject of absorption and marginal costing but also included elements of budgeting and standard costing.

Parts (a) and (b) were frequently answered correctly. A common error in part (a) was the division of the variable production overhead hourly rate into the direct labour cost per unit (rather than into the variable production overhead cost per unit) to establish the direct labour hours required per unit of the product. In part (b), the most common error was the miscalculation of the profit per unit or basing the variance calculation on the selling price rather than the profit.

A common error in part (c) was the omission of the fixed production overhead under-absorption of £2,000. Some candidates calculated the figure correctly but then included it as an over-absorption by adding it to profit. In part (d) most candidates elected to prepare a detailed marginal costing statement with the majority including the amount of fixed production overhead absorbed (£96,000) rather than the amount of overhead incurred (£98,000). Candidates should refer to the Examiner's answer which shows how the differences in profit can be calculated without the preparation of a detailed profit statement.

QUESTION 6

Two investment projects, with the following cash flows, are being considered by a company:

Year	Project A £000	Project B £000
0	(650)	(700)
1	250	200
2	250	250
3	250	250
4	200	300

The company's long term funding requirements are satisfied as follows:

	% of value	cost per annum
Equity	80	14%
Loans	20	9%

Discount factors:

	10%	20%
Year 1	0.909	0.833
Year 2	0.826	0.694
Year 3	0.751	0.579
Year 4	0.683	0.482

REQUIRED

- (a) Without carrying out any project valuation calculations, state which project is the more profitable and explain why. (5 marks)
- (b) Calculate the discounted cash flow internal rate of return of Project A. (6 marks)
- (c) Calculate the weighted average cost of capital percentage per annum. (3 marks)
- (d) Determine whether **each** of the projects is worthwhile. (6 marks)

(Total 20 marks)

Model Answer to Question 6

(a) Project A is more profitable because, although it has the same net cash flow over the same investment life as Project B, the initial investment is £50,000 less and cash inflows occur earlier in the project life (Year 1 versus Year 4).

(b) Internal rate of return of Project A:

Year	Cash flow £000	Discount factor 10%	Net present value £000	Discount factor 20%	Net present value £000
0	(650)	1.0	(650)	1.0	(650)
1	250	0.909	227.3	0.833	208.3
2	250	0.826	206.5	0.694	173.5
3	250	0.751	187.7	0.579	144.7
4	<u>200</u>	0.683	<u>136.6</u>	0.482	<u>96.4</u>
	300		<u>108.1</u>		<u>(27.1)</u>

$$\text{Internal rate of return} = 10\% + \left[10 \times \frac{108.1}{108.1 + 27.1} \right]$$

$$= \underline{18\%}$$

(c) Weighted average cost of capital:

$$\begin{aligned} \text{Equity } 0.8 \times 14 &= 11.2 \\ \text{Loans } 0.2 \times 9 &= \underline{1.8} \\ &= \underline{13.0\%} \end{aligned}$$

(d) Project A is worthwhile because the internal rate of return (18%) > the weighted average cost of capital (13%).

Internal rate of return of Project B:

Year	Cash flow £000	Discount factor 10%	Net present value £000	Discount factor 20%	Net present value £000
0	(700)	1.0	(700)	1.0	(700)
1	200	0.909	181.8	0.833	166.6
2	250	0.826	206.5	0.694	173.5
3	250	0.751	187.8	0.579	144.8
4	<u>300</u>	0.683	<u>204.9</u>	0.482	<u>144.6</u>
	300		<u>81.0</u>		<u>(70.5)</u>

$$\text{Internal rate of return} = 10\% + \left[10 \times \frac{81.0}{81.0 + 70.5} \right]$$

$$= \underline{15\%}$$

Therefore, Project B is worthwhile because the internal rate of return (15%) > the weighted average cost of capital (13%).

Model Answer to Question 6 continued

Or

Net present value of Project B at the weighted average cost of capital:

Year	Cash flow £000	Discount factor 13%	Net present value £000
0	(700)	1.0	(700)
1	200	$1/1.13 = 0.885$	177.0
2	250	$1/1.13^2 = 0.783$	195.8
3	250	$1/1.13^3 = 0.693$	173.3
4	300	$1/1.13^4 = 0.613$	<u>183.9</u>
			<u>30.0</u>

The net present value of Project B (discounted at the weighted average cost of capital) is positive and, therefore, the investment project is worthwhile.

Examiner's Report on Question 6

This question was on the subject of long-term decision making and especially the application of discounted cash flow appraisal techniques. The calculations in parts (b) and (c) were frequently well done but answers to parts (a) and (d) were not as good.

In part (a), nearly all candidates identified Project A as being the more profitable of the two projects but this was rarely without recourse to calculations, for example, payback. Candidates should have been able to identify at a glance the lower initial investment, and the earlier cash flow returns, of Project A in comparison with Project B.

Calculations in (b) were frequently correct although there were a number of careless calculation errors and the usual difficulties evidenced in the application of the IRR formula. A number of candidates calculated the IRR% for Project A using the present value for Project A at 10% and the present value for Project B at 20%.

In part (c) the weighted average cost of capital was frequently correct, although some candidates needlessly calculated it for each project. Some others applied equal weighting of the sources of long-term capital to arrive at a cost of capital of 11.5%.

In part (d) most candidates sought to determine which of the two projects was to be preferred (repeating the answer to part (a)) rather than establishing whether each project, in isolation, was worthwhile. This required a comparison of the cash flows on each project with the requirement for a 13% return, either by a comparison of the IRR % on each project with 13%, or by discounting the cash flows on each project at 13% to arrive at a net present value for each.

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