Examiner’s Answers

Note: Some of the answers that follow are fuller and more comprehensive than would be expected from a well-prepared candidate. They have been written in this way to aid teaching, study and revision for tutors and candidates alike.

These Examiner’s answers should be reviewed alongside the question paper for this examination which is now available on the CIMA website at www.cimaglobal.com/p1papers

The Post Exam Guide for this examination, which includes the marking guide for each question, will be published on the CIMA website by early August at www.cimaglobal.com/P1PEGs

SECTION A

Answer to Question One

Rationale

Question One consists of 8 objective test sub-questions. These are drawn from all sections of the syllabus. They are designed to examine breadth across the syllabus and thus cover many learning outcomes.

1.1

The correct answer is A.

1.2

The discount for 91 days = $1,000 - $985.04 = $14.96

The annual discount = $14.96 / 91 x 365 = $60

$60 / $1,000 = 6%

The correct answer is C.
1.3 \( (10,000 \text{ units} \times 3 \text{ kg}) \times ($4 - $5) = $30,000 \) A

The correct answer is B.

1.4 \( 32,000 \text{ kg} \times ($5 - $4.80) = $6,400 \) F

The correct answer is C.

1.5
If inflation is removed from the costs

\[
\begin{align*}
&\frac{$21,000}{1.05} = $20,000 \\
&\frac{$26,780}{1.03} = $26,000
\end{align*}
\]

The variable cost per unit = \( \frac{($26,000 - $20,000)}{(16,000 - 12,000)} = $1.50 \)

At an inflation index of 1.08 = \( $1.50 \times 1.08 = $1.62 \)

The correct answer is D.

1.6
Expected value of profit with marketing campaign

\((300,000 \times 0.90) + (-$80,000 \times 0.1) = $262,000 - $50,000 = $212,000\)

Expected value of profit without marketing campaign

\((300,000 \times 0.75) + (-$80,000 \times 0.25) = $205,000\)

It is therefore worthwhile for the company to undertake the marketing campaign as the increase in the expected value of profit is $7,000

1.7
\[
\begin{align*}
$60 - $20 &= $40 \text{ Joint probability is } 0.30 \times 0.25 = 0.0750 \\
$64 - $20 &= $44 \text{ Joint probability is } 0.25 \times 0.25 = 0.0625 \\
$64 - $24 &= $40 \text{ Joint probability is } 0.25 \times 0.40 = 0.1000 \\
$68 - $20 &= $48 \text{ Joint probability is } 0.45 \times 0.25 = 0.1125 \\
$68 - $24 &= $44 \text{ Joint probability is } 0.45 \times 0.40 = 0.1800 \\
$68 - $26 &= $42 \text{ Joint probability is } 0.45 \times 0.35 = 0.1575 \\
\end{align*}
\]

Alternatively:-
\[
\begin{align*}
$60 - $20 &= $40 \text{ Joint probability is } 0.30 \times 0.25 = 0.0750 \\
$64 - $20 &= $44 \text{ Joint probability is } 0.25 \times 0.25 = 0.0625 \\
$64 - $24 &= $40 \text{ Joint probability is } 0.25 \times 0.40 = 0.1000 \\
\end{align*}
\]

At a selling price of $68, the contribution per unit under all three alternatives is greater than $40 therefore probability is \( 0.4500 \)

\[
\begin{align*}
\text{Alternatively:-} \\
&\text{Joint probability is } 0.30 \times 0.25 = 0.0750 \\
&\text{Joint probability is } 0.25 \times 0.25 = 0.0625 \\
&\text{Joint probability is } 0.25 \times 0.40 = 0.1000 \\
\end{align*}
\]

Performance Operations 2 May 2014
1.8

Net cash flows per annum = $101,000 - $30,000 - $5,000 = $66,000

PV of net cash flows = $66,000 x 3.605 = $237,930
Net present value = $237,930 - $150,000 = $87,930

The PV of the sales revenue = $101,000 x 3.605 = $364,105

The percentage change in the selling price that will result in the project being rejected is:

$87,930 / $364,105 = 24.15%

End of Section A. Section B begins on page 4
 SECTION B

Answer to Question Two

(a)

Rationale

The question assesses learning outcome B3(b) apply alternative approaches to budgeting. It examines candidates' ability to explain the advantages and disadvantages of a top-down approach to budgeting.

Suggested Approach

Candidates should clearly explain one advantage and two disadvantages of a top-down approach to budgeting.

Examiner's note: the question asks for one advantage and two disadvantages. Examples that would be rewarded are given below:

Advantages

- Top-down budgeting avoids the problem of managers attempting to negotiate budgets that they feel are easy to achieve which gives rise to 'budget padding' or budgetary slack.
- It also avoids the problem of managers trying to 'empire build' because they believe that the size of their budget reflects their importance within the organisation. This can result in budgets that are unsuitable for control purposes.
- The involvement of managers in the budget setting process is time consuming. Top-down budgets can be produced much more quickly.
- Top-down budgeting avoids pseudo-participation which can be especially demotivating for managers.

Disadvantage

- Imposed targets are likely to make managers feel demotivated and alienated and result in poor performance. Managers are more likely to be motivated to achieve the target if they have participated in setting the target.
- Senior management are not involved in the day to day operation of the business. Participation by managers can reduce the information asymmetry gap that can arise when targets are imposed by senior management and should result in more realistic budgets.
- The use of a top-down budgeting approach will result in the absence of communication between managers at all levels throughout the organisation.
(b)

<table>
<thead>
<tr>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>The question assesses learning outcome D1(f) apply decision trees. It examines candidates' ability to use decision trees to evaluate a decision where there is uncertainty regarding expected cash flows.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggested Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidates should firstly draw the decision tree and then using the profit/loss and probabilities given for each branch of the tree work back to calculate the expected profit/loss at each node. They should then clearly indicate the most profitable decision.</td>
</tr>
</tbody>
</table>
The company should launch Product Y
(c)

Rationale

The question assesses learning outcome E1(g) *analyse the impacts of alternative policies for stock management*. It examines candidates’ ability to discuss the potential benefits for a company from using a JIT purchasing system.

Suggested Approach

Candidates should explain how a JIT purchasing system operates and the potential benefits that may arise from the use of the system. Candidates should also consider the pre-requisites for achieving the benefits from a JIT purchasing system.

The successful operation of a JIT purchasing system relies on having an arrangement with a small number of key suppliers where the supplier is able to provide raw materials or components on demand or with a very short lead time. This allows the company to hold zero or very little inventory thus reducing the costs involved with holding inventory including storage costs, insurance costs and obsolescence costs. The costs involved with ordering inventory may however increase.

The use of a small number of suppliers should also reduce administrative costs for the company and may result in greater quantity discounts.

A JIT purchasing system involves the company working together with their suppliers to ensure that they can rely on receiving supplies at the right time and at the required quality level. This should result in a reduction in quality control costs for the company. Quality standards should also improve resulting in lower wastage in the production process. However, close cooperation with suppliers is essential thus suppliers are not selected on the basis of price alone. Their performance in terms of quality and the ability to deliver as needed and their commitment to JIT purchasing are also of vital importance.
(d)

Rationale

The question assesses learning outcome B3(a) *prepare a budget for any account in the master budget, based on projections/forecasts and managerial targets*. It examines candidates’ ability to prepare a cash budget based on information given about the timing of cash flows.

Suggested Approach

Candidates should firstly prepare a format for the cash budget with months along the top and receipts and payments down the side. They should then work out the timing of the cash flows for each of the items. The cash receipts and cash payments should be totalled and the net cash flow for each month should be calculated. The opening cash balance and closing cash balance for each month can then be calculated.

<table>
<thead>
<tr>
<th></th>
<th>July</th>
<th>August</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receipts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/3 cash sales</td>
<td>30,000</td>
<td>60,000</td>
<td>75,000</td>
</tr>
<tr>
<td>2/3 credit sales</td>
<td>0</td>
<td>60,000</td>
<td>120,000</td>
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<tr>
<td><strong>Total receipts</strong></td>
<td>30,000</td>
<td>120,000</td>
<td>195,000</td>
</tr>
<tr>
<td><strong>Payments</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Purchases</td>
<td>0</td>
<td>60,000</td>
<td>120,000</td>
</tr>
<tr>
<td>Machinery</td>
<td>0</td>
<td>30,000</td>
<td>0</td>
</tr>
<tr>
<td>Expenses</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Advertising</td>
<td>0</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td><strong>Total payments</strong></td>
<td>20,000</td>
<td>115,000</td>
<td>145,000</td>
</tr>
<tr>
<td><strong>Opening balance</strong></td>
<td>0</td>
<td>10,000</td>
<td>15,000</td>
</tr>
<tr>
<td><strong>Net cash flow</strong></td>
<td>10,000</td>
<td>5,000</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>Closing balance</strong></td>
<td>10,000</td>
<td>15,000</td>
<td>65,000</td>
</tr>
</tbody>
</table>
(e)

Rationale

Part (i) of the question assesses learning outcomes E1(a) explain the importance of cash flow and working capital management. Part (ii) assesses learning outcome E1(d) discuss measures to improve a cash forecast situation. Part (i) examines candidates' ability to explain why it is important for a business to prepare a cash budget. Part (ii) requires candidates to state three ways of improving the cash flow position of a business.

Suggested Approach

In part (i) candidates should clearly explain the benefits to the company of cash budgeting. In part (ii) candidates should state three methods that could be used to improve the cash flow position of a business.

(i)

The objective of a cash budget is to ensure that sufficient cash is available to meet the level of operations in the various functional and capital budgets. Cash deficits can be identified in advance and steps taken to ensure that sources of finance will be available to cover any deficits. Cash budgets can also help a company to avoid cash surpluses by enabling management to take actions in advance to invest the surplus cash in short-term or long-term investments as appropriate. The overall aim should be to manage the cash of the company to ensure that cash is available when required and that the maximum benefit is gained from the use of any idle funds.

(ii)

Examiner’s note: the question asks for three methods. Examples that would be rewarded are given below:

- Using different forms of financing for capital expenditure e.g. leasing rather than purchasing outright.
- Selling short-term investments.
- Postponing non-essential capital expenditure.
- Disposing of non-current assets that are no longer required.
- Reducing inventory levels by using, for example, JIT purchasing.
- Reducing the time taken to collect receivables by e.g. offering early settlement discounts, reducing credit terms or factoring the debt.
- Delaying the payment of payables.
Rationale

Part (i) of the question assesses learning outcome E2(d) illustrate numerically the financial impact of short-term funding and investment methods. Part (ii) assesses learning outcome E2(a) identify sources of short-term funding. Part (i) examines candidates’ ability to calculate the cost of two alternative methods of funding a company’s short-term borrowing requirement. Part (ii) requires candidates to state two advantages of using an overdraft to fund short-term cash deficits.

Suggested Approach

In part (i) candidates should calculate the cost of the overdraft based on the balance outstanding each month. They should then calculate the annual interest cost of the loan net of the interest receivable on the unused portion. In part (ii) candidates should clearly state two advantages of using an overdraft to fund short-term cash deficits.

(i)

Interest on the overdraft

\[
\begin{align*}
$370,000 \times \frac{3}{12} \times 0.12 &= $11,100 \\
$280,000 \times \frac{3}{12} \times 0.12 &= $8,400 \\
$400,000 \times \frac{3}{12} \times 0.12 &= $12,000 \\
&= $31,500
\end{align*}
\]

Interest on loan

\[
\begin{align*}
$400,000 \times 0.10 &= $40,000 \\
\text{Less interest receivable} \\
$400,000 \times \frac{3}{12} \times 0.04 &= ($4,000) \\
$120,000 \times \frac{3}{12} \times 0.04 &= ($1,200) \\
$30,000 \times \frac{3}{12} \times 0.04 &= ($300) \\
&= $34,500
\end{align*}
\]

The overdraft is therefore the cheaper alternative.

(ii) Examiner’s note: the question asks for two advantages. Examples that would be rewarded are given below:

- Flexibility: the bank will agree an overdraft limit or facility. The borrower may not require the full facility immediately but may draw funds up to the limit as and when required. If the funds are no longer required they can be repaid without suffering any penalty.
- Minimal documentation: legal documentation is fairly minimal when arranging an overdraft. The documents will state the maximum overdraft limit, the interest payable and the security required.
- An overdraft is seen as a relatively cheap source of finance. Banks usually charge between 2% and 5% above base rate depending on the borrower’s creditworthiness and security offered by the borrower. Savings come from the fact that interest is only paid on the daily outstanding balance. Therefore a large cash inflow can offset the balance outstanding and temporarily lower the interest payable, whilst still retaining the ability to borrow up to the overdraft limit when required.
**Answer to Question Three**

**Rationale**

The question assesses a number of learning outcomes. Part (a) of the question assesses learning outcome A1(c) *discuss activity-based costing as compared with traditional marginal and absorption costing methods, including its relative advantages and disadvantages as a system of cost accounting.* It examines candidates’ ability to calculate the cost of a product using both traditional absorption costing and activity based costing. Part (b) assesses learning outcome A1(d) *apply standard costing methods, within costing systems, including the reconciliation of budgeted and actual profit margins.* It examines candidates’ ability to calculate a sales mix gross profit variance and a sales quantity gross profit variance. Part (c) assesses learning outcome A1(f) *interpret material, labour, variable overhead, fixed overhead and sales variances, distinguishing between planning and operational variances.* It examines candidates’ ability to explain the meaning of a sales mix gross profit variance and why it is useful to calculate the variance.

**Suggested Approach**

In part (a)(i) candidates should identify the direct material costs for each product and then calculate the overhead absorption rate. This rate can then be applied to each product and the total overhead cost calculated. In part (a)(ii) candidates need to calculate a cost driver rate for each of the activities and then apply this cost driver rate to calculate the overhead cost for each activity per product. The gross profit for each product can then be recalculated. In part (b)(i) candidates should calculate the sales mix gross profit variance by comparing the actual sales quantity at the budgeted mix with the actual sales quantity at the actual mix. The variance calculated in units for each of the products should then be multiplied by the standard gross profit per unit to calculate the variance for each product. These should then be added together to calculate the total mix variance. In part (b)(ii) the budgeted sales quantity should be compared to the actual sales quantity at the budgeted mix. The resultant variance in units should be multiplied by the standard gross profit per unit to calculate the sales quantity gross profit variance for each product. These should then be added together to calculate the total sales quantity gross profit variance. In part (c) candidates should clearly explain the meaning of the sales mix gross profit variance and why it is useful for a company to calculate this variance.

(a)

(i)

Fixed production overheads = $15,400,000  
Budgeted material cost = $22,000,000  
Fixed production overhead absorption rate = $15,400,000 / 22,000,000 = 70%

<table>
<thead>
<tr>
<th>Material</th>
<th>Anti-ageing cream</th>
<th>Facial masks</th>
<th>Collagen fillers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed production overhead</td>
<td>8,260</td>
<td>4,340</td>
<td>2,800</td>
<td>15,400</td>
</tr>
</tbody>
</table>
### Anti-ageing Cream

<table>
<thead>
<tr>
<th>Activity Cost $000</th>
<th>Cost driver</th>
<th>Cost driver rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine set up</td>
<td>3,600</td>
<td>Number of machine set ups $3,600,000 / 6,400</td>
</tr>
<tr>
<td>Quality inspection</td>
<td>1,200</td>
<td>Number of quality inspections $1,200,000 / 2,000</td>
</tr>
<tr>
<td>Processing</td>
<td>6,500</td>
<td>Processing time $6,500,000 / 8,000,000</td>
</tr>
<tr>
<td>Purchasing</td>
<td>1,800</td>
<td>Number of purchase orders $1,800,000 / 3,600</td>
</tr>
<tr>
<td>Packaging</td>
<td>2,300</td>
<td>Number of units $2,300,000 / 2,800,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total $15,400</td>
</tr>
</tbody>
</table>

### Sales

<table>
<thead>
<tr>
<th>Activity</th>
<th>Anti-ageing Cream</th>
<th>Facial Masks</th>
<th>Collagen Fillers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$000</td>
<td>$000</td>
<td>$000</td>
<td>$000</td>
<td>$000</td>
</tr>
<tr>
<td>Sales</td>
<td>60,000</td>
<td>38,000</td>
<td>22,000</td>
<td>120,000</td>
</tr>
<tr>
<td>Direct material</td>
<td>11,800</td>
<td>6,200</td>
<td>4,000</td>
<td>22,000</td>
</tr>
<tr>
<td>Direct labour</td>
<td>3,700</td>
<td>2,400</td>
<td>1,900</td>
<td>8,000</td>
</tr>
<tr>
<td>Machine set ups</td>
<td>(3,000 x $562.50)</td>
<td>(1,800 x $562.50)</td>
<td>(1,600 x $562.50)</td>
<td>3,600</td>
</tr>
<tr>
<td>Quality inspections</td>
<td>(1,000 x $600)</td>
<td>(600 x $600)</td>
<td>(400 x $600)</td>
<td>1,200</td>
</tr>
<tr>
<td>Processing</td>
<td>(2,000,000 x $0.8125)</td>
<td>(3,600,000 x $0.8125)</td>
<td>(2,400,000 x $0.8125)</td>
<td>6,500</td>
</tr>
<tr>
<td>Purchasing</td>
<td>(2,000 x $500)</td>
<td>(1,200,000 x $0.821)</td>
<td>(600,000 x $0.821)</td>
<td>2,300</td>
</tr>
<tr>
<td>Packaging</td>
<td>(1,000,000 x $0.821)</td>
<td>(1,200,000 x $0.821)</td>
<td>(600,000 x $0.821)</td>
<td>2,300</td>
</tr>
<tr>
<td>Gross profit</td>
<td>38,766</td>
<td>23,517</td>
<td>12,317</td>
<td>74,600</td>
</tr>
</tbody>
</table>
(b)

(i) Sales Mix Gross Profit Variance:

<table>
<thead>
<tr>
<th></th>
<th>Actual Sales quantity (units)</th>
<th>Actual Sales at budget mix (units)</th>
<th>Difference (units)</th>
<th>Standard gross profit $</th>
<th>Variance $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-ageing cream</td>
<td>250,000</td>
<td>243,750</td>
<td>6,250 F</td>
<td>34.00</td>
<td>212,500 F</td>
</tr>
<tr>
<td>Facial masks</td>
<td>260,000</td>
<td>284,375</td>
<td>24,375 A</td>
<td>20.00</td>
<td>487,500 A</td>
</tr>
<tr>
<td>Collagen fillers</td>
<td>140,000</td>
<td>121,875</td>
<td>18,125 F</td>
<td>22.00</td>
<td>398,750 F</td>
</tr>
<tr>
<td></td>
<td>650,000</td>
<td>650,000</td>
<td></td>
<td></td>
<td>123,750 F</td>
</tr>
</tbody>
</table>

Or alternatively:

<table>
<thead>
<tr>
<th></th>
<th>Budget sales Quantity (units)</th>
<th>Standard gross profit $</th>
<th>Total profit $000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-ageing cream</td>
<td>240,000</td>
<td>34</td>
<td>8,160</td>
</tr>
<tr>
<td>Facial masks</td>
<td>280,000</td>
<td>20</td>
<td>5,600</td>
</tr>
<tr>
<td>Collagen fillers</td>
<td>120,000</td>
<td>22</td>
<td>2,640</td>
</tr>
<tr>
<td></td>
<td>640,000</td>
<td></td>
<td>16,400</td>
</tr>
</tbody>
</table>

Weighted average gross profit = $16,400k / 640,000 = $25.625

(ii) Sales Quantity Gross Profit Variance

<table>
<thead>
<tr>
<th></th>
<th>Actual sales quantity (units)</th>
<th>Actual sales at budget mix (units)</th>
<th>Difference (units)</th>
<th>Standard gross profit $</th>
<th>Variance from weighted average gross profit per unit</th>
<th>Variance $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-ageing cream</td>
<td>250,000</td>
<td>243,750</td>
<td>6,250 F</td>
<td>($34 - $25.625)</td>
<td>52,344 F</td>
<td></td>
</tr>
<tr>
<td>Facial masks</td>
<td>260,000</td>
<td>284,375</td>
<td>24,375 A</td>
<td>($20 - $25.625)</td>
<td>137,109 F</td>
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</tr>
<tr>
<td>Collagen fillers</td>
<td>140,000</td>
<td>121,875</td>
<td>18,125 F</td>
<td>($22 - $25.625)</td>
<td>65,703 A</td>
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<td></td>
<td>650,000</td>
<td>650,000</td>
<td></td>
<td></td>
<td>123,750 F</td>
<td></td>
</tr>
</tbody>
</table>

Or alternatively:

Sales quantity gross profit variance = (650,000 – 640,000) x $25.625 = $256,250 F
(c)

The sales mix gross profit variance identifies the effect on profit of a change in the mix of product sales. It compares the actual quantity of products sold at the budgeted mix with the actual mix of products sold. From the figures calculated in part (b) we can see that the change in the sales mix has resulted in an increase in profit of $123,750. The change in the sales mix has resulted in a relatively higher proportion of sales of the anti-ageing cream and collagen fillers which are the products that earn the highest profit per unit and a lower proportion of sales of facial masks which have a relatively lower profit per unit. This is important information for future planning and pricing purposes. An overall increase in quantity of products sold may not result in an increase in profits if the increased sales are from a lower margin product at the expense of products with a higher profit margin.
Answer to Question Four

Rationale

Part (a) assesses learning outcomes C1(b) apply the principles of relevant cash flow analysis to long-run projects that continue for several years and C2(a) evaluate project proposals using the techniques of investment appraisal. It examines candidates’ ability to identify the relevant costs of a project and then apply discounted cash flow analysis to calculate the net present value of the project. Part (b) assesses learning outcome C1(e) explain the financial consequences of dealing with long-run projects, in particular the importance of accounting for the ‘time value of money’. It examines candidates’ ability to explain why discounted cash flow techniques should be used when evaluating a long-term investment project. Part (c) assesses learning outcome C1(a) explain the processes involved in making long-term decisions. It examines candidates’ ability to explain the benefits of carrying out a post-completion audit of a long-term investment project.

Suggested Approach

In part (a) candidates should firstly calculate the number of units sold and the contribution that would be earned from the product in each year. They should then deduct the fixed costs after adjusting for depreciation. The tax depreciation and tax payments should then be calculated. The total cost of the investment and the residual value should then be added to the net cash flows. The net cash flows after tax should then be discounted at the discount rate of 12% to calculate the net present value of the project. In part (b) candidates should clearly explain why it is necessary to adjust cash flows to account for the time value of money. In part (c) candidates should clearly explain the potential benefits to a company of carrying out a post-completion audit of a long-term investment project.

(a)

Contribution Years 1 – 5
Year 1: 50 million x 20% x $20 = $200 million
Year 2: 50 million x 1.1 = 55 million x 25% x $20 = $275 million
Year 3: 55 million x 1.1 = 60.5 million x 30% x $20 = $363 million
Year 4: 60.5 million x 1.1 = 66.55 million x 30% x $20 = $399 million
Year 5: 66.55 million x 1.1 = 73.21 million x 35% x $20 = $512 million

Fixed Costs
Depreciation per annum = ($500m - $120m) / 5 = $76m

Fixed costs (excluding depreciation) per annum
= $200m - $76m = $124m

Taxation

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
</tr>
<tr>
<td>Contribution</td>
<td>200</td>
<td>275</td>
<td>363</td>
<td>399</td>
<td>512</td>
</tr>
<tr>
<td>Fixed operating costs</td>
<td>(124)</td>
<td>(124)</td>
<td>(124)</td>
<td>(124)</td>
<td>(124)</td>
</tr>
<tr>
<td>Advertising</td>
<td>(50)</td>
<td>(50)</td>
<td>(80)</td>
<td>(80)</td>
<td>(80)</td>
</tr>
<tr>
<td>Net cash flows</td>
<td>26</td>
<td>101</td>
<td>159</td>
<td>195</td>
<td>308</td>
</tr>
<tr>
<td>Tax depreciation</td>
<td>(125)</td>
<td>(94)</td>
<td>(70)</td>
<td>(53)</td>
<td>(38)</td>
</tr>
<tr>
<td>Taxable profit</td>
<td>(99)</td>
<td>7</td>
<td>89</td>
<td>142</td>
<td>270</td>
</tr>
<tr>
<td>Taxation @ 30%</td>
<td>30</td>
<td>(2)</td>
<td>(27)</td>
<td>(43)</td>
<td>(81)</td>
</tr>
</tbody>
</table>
### Net present value

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
</tr>
<tr>
<td><strong>Investment / residual value</strong></td>
<td>(500)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td></td>
</tr>
<tr>
<td><strong>Working capital</strong></td>
<td>(30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td><strong>Net cash flows</strong></td>
<td>26</td>
<td>101</td>
<td>159</td>
<td>195</td>
<td>308</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tax payment</strong></td>
<td>15</td>
<td>(1)</td>
<td>(13)</td>
<td>(21)</td>
<td>(40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net cash flow after tax</strong></td>
<td>(530)</td>
<td>41</td>
<td>115</td>
<td>145</td>
<td>160</td>
<td>396</td>
<td>(41)</td>
</tr>
<tr>
<td><strong>Discount factors @ 12%</strong></td>
<td>1.000</td>
<td>0.893</td>
<td>0.797</td>
<td>0.712</td>
<td>0.636</td>
<td>0.567</td>
<td>0.507</td>
</tr>
<tr>
<td><strong>Present value</strong></td>
<td>(530)</td>
<td>37</td>
<td>92</td>
<td>103</td>
<td>102</td>
<td>225</td>
<td>(21)</td>
</tr>
</tbody>
</table>

**Net present value = $8m**

The net present value is positive therefore the project should go ahead.

(b) Discounted cash flow techniques are used in investment appraisal in recognition of the fact that money has a time value. It reflects the fact that the value of $1.00 now is greater than the value of $1.00 in one year’s time. This is because if there is inflation then more can be purchased now than at some time in the future. Alternatively the money can be invested to gain interest or borrowings can be reduced. The rate of interest on the investment reflects both inflation and the risk involved in the investment.

The use of net present value in investment appraisal recognises the time value of money and discounts cash flows at the investors’ required rate of return. This means that future cash flows are reduced in value in order to reflect their value if they were received today i.e. to express them in present value terms.

(c) Post completion audit has benefits in terms of the current project and future projects. In terms of the current project, it enables changes to be made to over or under performing projects at an early stage. This also makes it more likely that unsuccessful projects will be terminated.

In terms of future projects, it improves the quality of decision making as past experience is made available to future decision makers. It encourages greater realism in predicting future outcomes as past inaccuracies are made public. It highlights reasons for successful projects which may be important in achieving greater benefits from future projects and in future project selection.