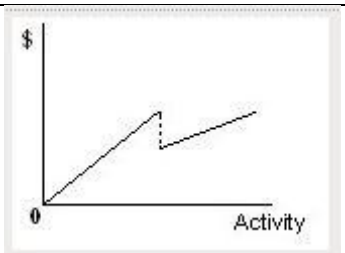
Section A

Question	Correct Answer	Marks
1	**Both not relevant** Depreciation is a non-cash item and is therefore not relevant, even if it relates to the purchase of new equipment required for the manufacture of the new product. The design costs have already been incurred and are therefore a sunk cost and not relevant.	2
2	**25%** Coefficient of variation = (standard deviation/mean) x 100 = (3/12) x 100 = 25% Note: the figure which should be inserted into the answer area is 25	2
3	**Process F – Abnormal loss** **Process G – Abnormal gain** **Process** **Expected output** **Actual output** F 92% x 65,000 = 59,800 58,900 G 95% x 37,500 = 35,625 35,700 Process F: abnormal loss of 900 litres (58,900 - 59,800) Process G: abnormal gain of 75 litres (35,700 - 35,625)	2
4	**$27,000** As production volume is greater than sales volume, there is an increase in closing inventory of 2,000 units (14,000 - 12,000). When inventory increases, profit under absorption costing is higher than profit under marginal costing. Difference in profit = change in inventory x overhead absorption rate (OAR) per unit = 2,000 units x ($63,000/14,000 units) = $9,000 Profit under marginal costing = $36,000 - $9,000 = $27,000 Note: the figure which should be inserted into the answer area is 27000	2

5	**The variable element of a semi-variable cost can be calculated from a line graph that shows the total cost on the y axis versus the level of production on the x axis – True** **On a line graph that shows the cost per unit on the y axis and the level of production on the x axis, fixed costs would be shown as a horizontal line – False** On a line graph which shows the total cost on the y axis and the level of production on the x axis, the variable element of a semi-variable cost is the gradient of the line and can be calculated as the change in total costs/the change in output over a specified range. Therefore, this statement is true. On a line graph that shows the **total** cost on the y axis and the level of production on the x axis, fixed costs would be shown as a horizontal line. Therefore, this statement is false.	2
6	**$400,000** In Quarter 3, overhead expenses were $1,200,000. In Quarter 4 they were $800,000. The reduction was therefore $1,200,000 - $800,000 = $400,000. Note: the figure which should be inserted into the answer area is 400	2
7	**147,000kg** Production budget = sales + closing inventory - opening inventory = 19,000 + 3,000 - 4,000 = 18,000 units Material usage budget = production units x material usage per unit = 18,000 x 8kg per unit = 144,000 kg Material purchases budget = usage + closing inventory – opening inventory = 144,000 + 53,000 - 50,000 = 147,000kg Note: the figure which should be inserted into the answer area is 147000	2

8	 Raw material costs are costs which change with activity, so the line has to start at the origin of the graph. As there is a fall in price per unit the line has to have a vertical drop part way through. The correct graph is Graph D as the line after the fall in price would have a shallower gradient, reflecting the lower price, and it would also go through the origin if it were extrapolated, which shows the cost is variable and will increase proportionately with activity.	2
9	**It helps coordinate the activities of different departments** **It establishes a system of control** Budgets help to co-ordinate the activities of different departments and are also used by organisations as a system of control. They are not a legal reporting requirement and are a way for strategic objectives to be translated into tactical and operational goals, rather than a starting point for strategic planning.	2
10	**$8,350 Adverse** The direct material budget is calculated as the actual – flexed budget costs. The flexed budget for the actual production level = $180,000 / 15,000 x 16,700 = $200,400. The direct material budget = $208,750 - $200,400 = $8,350 adverse.	2

<table>
<tr>
<td>11</td>
<td>$393,000

Monthly sales revenue, R = 30,000M + 44,000.

For the month December 20X0,
M = 11, so R = (30,000 x 11) + 44,000 = $374,000.

Applying the seasonal variation, the forecast sales revenue for December 20X0
= $374,000 x 1.05 = $392,700.
Rounded to the nearest $000, gives $393,000.</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>An increase in direct material prices
An increase in raw material usage per unit

An increase in the direct material price and an increase in the raw material usage per unit would be possible causes for the adverse direct material variance.

The flexed budget is used in the variance calculation which would have taken account of the change in the production level, so units produced being higher than budgeted could not have caused the variance.

The direct material variance is based on the production levels, so would not be affected by a higher sales volume.</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>6.7%

<table>
<tr><th>Units</th><th>Total cost</th><th>Excluding extra fixed costs</th></tr>
<tr><td>500</td><td>$125,000</td><td></td></tr>
<tr><td>1,000</td><td>$180,000</td><td>$175,000</td></tr>
</table>

Use the high low method to calculate the variable cost per unit:
($175,000 - $125,000)/(1,000 – 500) = $50,000/500 = $100.

Using 500 units, fixed costs = $125,000 – ($100 x 500) = $75,000

At 800 units, fixed costs = $75,000 + $5,000 = $80,000.

This is an increase of ($5,000/$75,000 x100) = 6.7%

Note: the figure which should be inserted into the answer area is 6.7</td>
<td>2</td>
</tr>
</table>

14	**$684,940** Cash receipts = (opening trade receivables less irrecoverable debts) + sales – closing trade receivables. (206,900 – 4,360 + 724,000 – 241,600) = $684,940	2
15	**Data selected from a population items may be inaccurate – Veracity** **Data collected includes texts, photographs, emojis and videos – Variety** Veracity relates to the accuracy and quality of the data and how much it can be trusted. Where data is collected from many sources, including social media, it may be inaccurate. Big data can be structured and unstructured. Unstructured data can include many forms, including texts, photographs, emojis and videos which demonstrates the variety of data available.	2
16	**Sales volume variance** The sales volume variance would change as under marginal costing it is valued at standard contribution, whereas under absorption costing it is valued at standard profit.	2
17	**$13,680** Using the high-low method; Variable cost per unit = ($15,120 - $11,280)/(10,000 - 6,000) = $0.96 Fixed costs at the highest output level = $15,120 - ($0.96 x 10,000 units) = $5,520 At 85% capacity, the budgeted total production cost will be = $5,520 + ($0.96 x 8,500 units) = $13,680 Note: the figure which should be inserted into the answer area is 13680	2
18	**12.5%** The IRR of a project is equal to the cost of capital which would give an NPV of $0. At 10% the NPV is $50; at 11% the NPV would fall to $30; at 12% the NPV would fall to $10, therefore at 12.5% the NPV would fall to $0. 12.5% is the IRR of the project.	2

19	**$2,600 Positive** NPV = PV of cash flows – initial investment. PV of cash flows = annual cash flow x annuity factor = $4,000 x 5.65 = $22,600 NPV = ($22,600 – $20,000) = $2,600 positive.	2
20	**$220** With a selling price of $672 and a profit mark-up of 20%, the total cost is ($672/1.2) = $560. The fixed overhead cost is $340, therefore, the variable cost = $560 - $340 = $220.	2
21	**It restricts the performance of an organisation for a given period** **It affects the order in which an organisation prepares its budgets** The principal budget factor is the factor which restricts the company from making maximum profits. In many cases this will be sales, but it could be another limiting factor. When preparing budgets, the principal budget factor is the starting point, and all budgets will flow from it.	2
22	**$39,200** To work back to the budgeted operating profit, start with the actual operating profit ($40,000). The adverse cost variances are due to costs being higher than budgeted which have resulted in a lower actual operating profit – these should be added back. The favourable cost variance is due to the cost being lower than budgeted which has resulted in a higher actual operating profit – this should be deducted. The favourable sales variances are due to selling more goods at higher prices than budgeted which have resulted in a higher actual operating profit – these should be deducted. $40,000 + $900 - $1,000 + $700 - $500 - $900 = $39,200	2

23

It helps to better understand customer behaviour and preferences – True

It helps to analyse the efficiency of business processes in real time – True

Big data analytics allow organisations to process large volumes of data from numerous internal and external sources. As the data is being collected and processed continuously, this will allow an organisation to gain detailed insights into its customer behaviour and preferences in real time and also allow it to analyse how efficient its internal processes are.

2

24

2.7 years

Yr	Cash flow	Disc factor	Disc cash flow	Cumulative
0	-100,000	1	-100,000	-100,000
1	35,000	0.909	31,815	-68,185
2	45,000	0.826	37,170	-31,015
3	60,000	0.751	45,060	14,045
4	75,000	0.683	51,225	65,270
5	80,000	0.621	49,680	114,950

Payback occurs between years 2 and 3.

The proportion of year 3 required is (31,015/45,060) = 0.68, so the discounted payback period is 2.7 years.

Note: the figure which should be inserted into the answer area is 2.7

2

25	**Absorption costing profit/(loss) Month 1: $200 Month 2: $3,200** **Marginal costing profit/(loss) Month 1: $(400) Month 2: $4,400** Month 1 (units) / Month 2 (units) Opening inventory 400 / 500 + Production 3,900 / 4,200 4,300 / 4,700 - Sales (3,800) / (4,400) Closing inventory 500 / 300 In Month 1 closing inventory is higher than opening inventory. When inventory levels increase absorption costing profit will be higher than marginal costing profit. In Month 2 closing inventory is lower than opening inventory. When inventory levels decrease marginal costing profit will be higher than absorption costing profit.	2
26	**1 and 2 only** The high-low method and linear regression can both be used to forecast future performance using past data. The advantages of linear regression analysis over the high-low method are that the reliability of the analysis can be statistically tested, and the high-low method only considers two past observations, while linear regression takes into account all of the data leading to more reliable results. Both methods assume linear cost behaviour.	2
27	**The research and development function of a pharmaceutical company – Cost centre** **A shop located within a factory building which sells directly to the public – Profit centre** The research and development function will not generate sales, but it will incur costs, it is therefore a cost centre. The factory shop will generate sales and incur costs, but as it is located within a factory building it is unlikely that it will be responsible for investment decisions. It is therefore a profit centre.	2

28	**Saving per machine hour by manufacturing rather than buying-in** As machine hours are the limiting factor, the company needs to ensure that they are making the best use of this limited resource. This means that when it is deciding whether to make a product internally or buy in from a supplier, it needs to consider how much it would save per machine hour if it produced the product internally rather than buying in.	2
29	**$180** Standard time for actual output of 200 units = 200 units x 3 minutes per unit = 600 minutes or 10 hours Gross pay = 10 hours x $18 = $180 Note: the figure which should be inserted into the answer area is 180	2
30	**Under absorbed by $3,875** Absorbed overhead (actual hours x OAR) = 30,000 x $3.50 — $105,000 Actual overhead — $108,875 Under absorption — $3,875	2
31	**Total fixed costs will remain constant during a period** **Variable cost per unit will remain constant during a period** In CVP analysis, it is assumed that the selling price and the variable costs per unit are constant, and that the fixed costs are fixed within the relevant range of activity. There is no assumption that the volume of units sold will remain constant.	2
32	**61 degrees** The angle of the section of the pie chart representing Market 3 = $51,000/$300,000 x 360 degrees = 61 degrees	2

33	**1 only** Strategic planning is concerned with quantitative and qualitative matters and is concerned with setting long term objectives. Tactical planning relates to medium term time horizons and operational planning relates to current, day to day planning.	2
34	**1,461** EOQ = $\sqrt{}$(2 x 20 x 80,000)/(25 x 0.06) = 1,461 Note: the figure which should be inserted into the answer area is 1461	2
35	**2.28%** Z-score = (x - μ)/σ Therefore: (80 – 56)/12 = 2 From the normal distribution table, 2 = 0.4772 To find the probability of scoring more than 80: 1 – (0.5+0.4772) = 0.0228 or 2.28% as a %. Note: the figure which should be inserted into the answer area is 2.28	2

Section B

<table>
<tr><th>Question</th><th>Correct Answer</th></tr>
<tr><td>36</td><td>Task 1 (5 marks)
<table>
<tr><td>Computerised tracking system investment of $2,100,000</td><td>Relevant

The tracking system investment is a future incremental cash flow arising as a result of the project, so it is relevant</td></tr>
<tr><td>Depreciation of $420,000 in each of the five years</td><td>Irrelevant

Depreciation is a non-cash item so is not relevant</td></tr>
<tr><td>Staff training costs of $425,000</td><td>Relevant

Staff training costs of $425,000 are a future incremental cash flow and so are relevant</td></tr>
<tr><td>New staff total salary of $120,000 per annum</td><td>Relevant

Staff salary costs of $120,000 are relevant as they are for new staff recruited specifically for the project</td></tr>
<tr><td>Staff training costs of $75,000</td><td>Irrelevant

Staff training costs of $75,000 have already been spent and so are a sunk cost. They are not relevant to whether the project goes ahead</td></tr>
<tr><td>Interest cost of $150,000 per annum</td><td>Irrelevant

Interest cost of $150,000 is a financing cost and is not relevant. The NPV is discounted at the company’s cost of capital which accounts for the return required by the company’s providers of capital</td></tr>
</table></td></tr>
</table>

Task 2 (3 marks)

Incremental sales in Year 1	**$800,000** With investment = $11 million Without investment = $10.2 million Incremental sales = $800,000 Note: the figure which should be inserted into the answer area is 800000
Savings in vehicle running costs in Year 1	**$110,000** $11 million x 1% = $110,000 Note: the figure which should be inserted into the answer area is 110000
Present value of the maintenance costs over the life of the contract	**$284,000 or $285,000** $75,000 x annuity factor at 10% for five years: $75,000 x 3.791 = $284,325. To the nearest $'000 is $284,000 Note: as the annuity factor could be rounded in different ways, an answer of $285,000 would also be acceptable. Note: the figure which should be inserted into the answer area can be either 284000 or 285000

Task 3 (2 marks)

The project is worthwhile because the IRR is greater than the cost of capital

As the project's IRR is 14%, which is greater than the company's cost of capital of 10%, then the project is worth investing in.

As the IRR represents a cost of capital which would give an NPV of zero on

	the project, then a cost of capital lower than the IRR would generate a positive NPV and increase shareholder wealth, showing that the project is worthwhile.

Question	Correct Answer
37	**Task 1 (2 marks)** **=(C10*B4)-(150,000*8)** Direct labour efficiency variance = (standard hours for actual production – actual hours) x standard rate = (26,000 hours x $48) – (150,000 x $8) = $48,000 F **Task 2 (6 marks)**

Standard cost operating statement – Month 1	**$**		**$**	
Budgeted contribution			700,000	
Sales volume variance			**16,800**	**Fav**
Standard contribution on actual sales			**716,800**	
Sales price variance			**5,120**	**Adv**
			711,680	
Cost variances				
Total direct materials variance	12,800	Adv		
Direct labour rate variance	21,000	Adv		
Direct labour efficiency variance	48,000	Fav		
Total variable production overhead variance	10,000	Fav		
			24,200	Fav
Actual contribution			735,880	

The difference between budgeted contribution and standard contribution on actual sales is the **sales volume variance**.

Sales volume variance = (budgeted sales – actual sales) x standard contribution
= (25,000 – 25, 600) x $28
= **$16,800**

Note: the figure which should be inserted into the answer area is 16800

The sales volume variance is **Favourable** as the actual sales are greater than the budgeted sales.

Standard contribution on actual sales = budgeted contribution + sales volume variance
= $700,000 + $16,800 F = **$716,800**

	Note: the figure which should be inserted into the answer area is 716800 Sales price variance = (actual sales x budgeted selling price) – actual revenue = (25,600 x $120) - $3,066,880 = **$5,120** The selling price variance is **Adverse** as the actual sales units should have generated revenue of $3,072,000 but actually sold for $3,066,880. Note: the figure which should be inserted into the answer area is 5120 **Task 3 (2 marks)** **Higher grade labour performed tasks more efficiently** **A productivity bonus was paid to direct labour** The direct labour rate variance was adverse which indicates that labour cost more than budgeted. This could have arisen due to the use of higher-grade labour or paying a productivity bonus. Both of these factors could explain why the labour efficiency variance was favourable.

Question 38

Correct Answer

Task 1 (2 marks)

$283,000 (to the nearest $'000)

Sales receipts in June will be made up of:

		$
June	Cash sales: $308,000 x 25% =	77,000
May	50% of credit sales: $295,200 x 0.75 x 0.50 =	110,700
April	45% of credit sales: $282,400 x 0.75 x 0.45 =	95,310
		283,010

Note: the figure which should be inserted into the answer area is 283000

Task 2 (2 marks)

3,754 units

	May	**June**
Sales ($)	295,200	308,000
Sales units (Sales $/$80 per unit)	3,690	3,850
Opening inventory (40% x 3,690)	1,476	
Sales (units)	3,690	
Closing inventory (40% x 3,850)	1,540	
Production (3,690 – 1,476 + 1,540)	**3,574**	

Task 3 (2 marks)

$109,112

Payments made in March:

Meteor – paid in the month with a 3% discount: $108,000 x 20% x 97% = $20,952

Other suppliers – paid the month following sale: $110,200 x 80% = $88,160

Total payment in March = $20,952 + $88,160 = $109,112

Note: the figure which should be inserted into the answer area is 109112

Task 4 (2 marks)

$8,000

	The cash element in relation to the van purchases is the amount paid for the three new vans less the amount received for the five old vans: (3 x $11,000) – (5 x $5,000) = $8,000 The profit and depreciation figures relate to accounting entries and will not affect the cash payment. **Task 5 (2 marks)** **The forecast trend may not be reliable if it is based on a small amount of data** **It uses past data which may not be reliable for forecasting the future** Linear regression uses past data to forecast the future; however, it cannot be guaranteed that what has happened in the past will continue into the future. The reliability of the forecasts obtained through linear regression is affected by the amount of data used. The larger the amount of data used, the better and more reliable the forecasts will be.