MARKS: 150

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Method</td>
</tr>
<tr>
<td>M/A</td>
<td>Method with accuracy</td>
</tr>
<tr>
<td>CA</td>
<td>Consistent accuracy</td>
</tr>
<tr>
<td>A</td>
<td>Accuracy</td>
</tr>
<tr>
<td>C</td>
<td>Conversion</td>
</tr>
<tr>
<td>S</td>
<td>Simplification</td>
</tr>
<tr>
<td>RT/RG</td>
<td>Reading from a table/Reading from a graph</td>
</tr>
<tr>
<td>SF</td>
<td>Correct substitution in a formula</td>
</tr>
<tr>
<td>O</td>
<td>Opinion/Example</td>
</tr>
<tr>
<td>P</td>
<td>Penalty, e.g. for no units, incorrect rounding off, etc.</td>
</tr>
<tr>
<td>R</td>
<td>Rounding off</td>
</tr>
<tr>
<td>J</td>
<td>Justification</td>
</tr>
</tbody>
</table>

PLEASE NOTE:
1. If a candidate deletes a solution to a question without providing another solution, then the deleted solution must be marked.
2. If a candidate provides more than one solution to a question, then only the first solution must be marked and a line drawn through any other solutions to the question.

This memorandum consists of 19 pages.
**QUESTION 1 [26 MARKS]**

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1</td>
<td>South-westerly ✓ ✓ A</td>
<td>2A correct direction</td>
<td>12.3.4 L3</td>
</tr>
<tr>
<td></td>
<td>(accept abbreviations for compass directions)</td>
<td>1A Southerly</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>1A Westerly</td>
<td>1A N12 and Beaufort West</td>
<td>(4)</td>
</tr>
<tr>
<td>1.1.2</td>
<td>N5 OR N17 ✓ ✓ A</td>
<td>2A correct national road</td>
<td>12.3.4 L3</td>
</tr>
<tr>
<td></td>
<td>N17 accepted due to unclear provincial boundaries</td>
<td>1A N1</td>
<td>(4)</td>
</tr>
<tr>
<td>1.1.3</td>
<td><strong>One possible route:</strong> ✓ A</td>
<td>1A N1</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>From Bloemfontein turn onto the N1 and travel south until Beaufort West. Then turn onto the N12 until George. ✓ A</td>
<td>1A N12 and Beaufort West</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td><strong>A second possible route:</strong> ✓ A</td>
<td>OR 1A N1</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>From Bloemfontein turn onto the N1 and travel south until the intersection with the N9. Then follow the N9 until George. ✓ A</td>
<td>1A N9</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td><strong>A third possible route:</strong> ✓ A</td>
<td>OR 1A N1</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>From Bloemfontein turn onto the N1 and travel south until the intersection with N10. Then follow the N10 in a south easterly direction until the N2. Then follow the N2 in a westerly direction until George. ✓ A</td>
<td>1A N10, N2</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td><strong>A fourth possible route:</strong> ✓ A</td>
<td>OR 1A (N1) N6 and East London, N1</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>From Bloemfontein turn onto the N1 and later turn onto the N6 to East London. Then follow the N2 in a westerly direction until George. ✓ A</td>
<td>1A N2</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td><strong>A fifth possible route:</strong> ✓ A</td>
<td>OR 1A N1; N5 and</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>From Bloemfontein turn north onto the N1, turn right unto N5, take a right unto N3 pass Pietermaritzburg to Durban. Then at Durban turn south unto the N2, pass East London, Port Elizabeth and continue until George. ✓ A</td>
<td>1A N3 Durban; N2</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**NOTE:** Follow the learners route. But leaners cannot go back to Kimberley (No N8 route).
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
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</tr>
</thead>
</table>
| 1.2.1 | Total amount for accommodation = R\,1\,050 \times 6 \,✓\,A  
         = R\,6\,300 \,✓\,CA  
         OR (due to language interpretation)  
         Total amount for accommodation = R\,1\,050 \times 7 \,✓\,A  
         = R\,7\,350 \,✓\,CA | 1A rate \times 6  
         1CA simplification | 12.1.3  
         L2 |
| 1.2.2 | (a) Total cost (in rand) = (60 \times 4 \times \text{number of breakfasts}) \,✓\,M  
         + (90 \times 4 \times \text{number of lunches}) \,✓\,M  
         + (120 \times 4 \times \text{number of suppers}) \,✓\,M | 1M adding  
         1M multiplying \times 4 \text{ or number of people}  
         1M costs in terms of meals  
         1M variables explained | 12.2.3  
         L3 |
|      | OR Total cost (in rand) = (60 \times x + 90 \times y + 120 \times z) \times 4  
         Where x = \text{number of breakfasts} \,✓\,M  
         y = \text{number of lunches} \,✓\,M  
         and z = \text{number of suppers} \,✓\,M | 1M adding  
         1M costs in terms of meals  
         1M variable explained | |
|      | OR Total cost (in rand) = (\text{number of days} \times n \times 60) \,✓\,M  
         + (\text{number of days} \times n \times 90) \,✓\,M  
         + (\text{number of days} \times n \times 120) \,✓\,M  
         Where n = \text{number of people} \,✓\,M | 1M adding  
         1M costs in terms of days  
         1M variable explained | |
|      | OR Total cost (in rand) = (Sat + Sun + Mon + Tues + Wed + Thurs + Fri) cost  
         = 120n + 270n + 180n + 210n + 270n + 150n + 60n)  
         = 1\,260\,n \,✓\,M  
         Where n = \text{number of people} \,✓\,M | 1M adding  
         1M costs in terms of days  
         1M variable explained | |
|      | OR Total cost (in rand) = (60 \times 4 \times \$) + (90 \times 4 \times 4) + (120 \times \$ \times 4 \times 5)  
         = 1\,200 + 1\,440 + 2\,400 \,✓\,CA  
         = 5\,040 \,✓\,CA | 1S correct substitution of number of people  
         1S correct substitution of number of meals  
         1CA simplification  
         1CA total | 12.2.3  
         L3 |
<table>
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<tr>
<th>Ques</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>OR</strong></td>
<td>Total cost (in rand)</td>
<td>$= (60 \times x + 90 \times y + 120 \times z) \times 4$</td>
<td>1S correct subst. no. of people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$= (60 \times 5 + 90 \times 4 + 120 \times 5) \times 4$</td>
<td>1S correct subst. no. of meals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$= 1260 \times 4 \checkmark CA$</td>
<td>1CA simplification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$= 5040 \checkmark CA$</td>
<td>1CA total</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>(using equation from 1.2.2 (a) working with daily cost)</td>
<td>Total cost (in rand) $= 1260 \times 4 \checkmark S \checkmark S$</td>
<td>2S substitution of no. of people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$= 5040 \checkmark CA \checkmark CA$</td>
<td>2CA total</td>
</tr>
<tr>
<td><strong>OR</strong> (calculating total daily costs)</td>
<td>Cost of meals:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saturday = R120 $\times 4$ = R480</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sunday = (R60 + R90 + R120) $\times 4$ = R1080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monday = (R60 + R120) $\times 4$ = R720</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tuesday = (R90 + R120) $\times 4$ = R840</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wednesday = (R60 + R90 + R120) $\times 4$ = R1080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thursday = (R60 + R90) $\times 4$ = R600</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friday = R60 $\times 4$ = R240</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Total cost (in rand) $= 480 + 1080 + 720 + 840 + 1080 + 600 + 240 \checkmark CA$</td>
<td>1CA simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$= 5040 \checkmark CA$</td>
<td>1CA total</td>
<td></td>
</tr>
<tr>
<td><strong>OR</strong> (calculating total cost of types of meals)</td>
<td>Total cost of breakfast $= R60 \times 5 \times 4 = R1200 \checkmark S$</td>
<td>2S correct subst. meal cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cost of lunches $= R90 \times 4 \times 4 = R1440 \checkmark S$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cost of suppers $= R120 \times 5 \times 4 = R2400$</td>
<td>1CA simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cost (in rand) $= 1200 + 1440 + 2400 \checkmark CA$</td>
<td>1CA total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$= 5040 \checkmark CA$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(4)
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 1.2.3 | Cost for nature walk = (R120 × 2) + (R100 × 2) \(\checkmark\) M/A  
= R440 \(\checkmark\) CA  
Cost for game park = R200 × 4  
= R800 \(\checkmark\) A  
Cost for boat cruise = (R200 × 2) + (R150 × 2) \(\checkmark\) M/A  
= R700 \(\checkmark\) CA  
Total entertainment cost = R440 + R800 + R700 + R2 000  
= R3 940 \(\checkmark\) CA  | 1M/A expression for cost  
1CA simplification  | 12.1.3 L4 |
| **Six day option:** |  |  |  |
|  | Total cost for the trip (accom. + meals + long dist. + local + ent)  
= R6 300 + R5 040 + R1 602,86 + R513,60 + R3 940  
= R17 396,46 \(\checkmark\) CA  | 1M/A adding all costs  
1CA total cost  |  |
| **OR** |  |  |  |
|  | **Seven day option:** |  |  |
|  | Total cost for the trip (accom. + meals + long dist. + local + ent)  
= R7 350 + R5 040 + R1 602,86 + R513,60 + R3 940  
= R18 446,46 \(\checkmark\) CA  | 1M/A adding all costs  
1CA total cost  |  |
|  | \(\therefore\) Mr Nel's estimate was **CORRECT** \(\checkmark\) J  | 1J verification  | (9) [26] |
## QUESTION 2 [34 MARKS]

<table>
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<th>Solution</th>
<th>Explanation</th>
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</thead>
</table>
| 2.1.1(a) | A – 15 = 37  ✓M  
A = 52 ✓A  
OR  
A = 37 + 15  ✓M  
= 52 ✓A | 1M concept of range  
1A simplification  
Correct answer only– full marks | 12.4.3  
L3 |
|  | | (2) | |
| 2.1.1(b) | The mean for 16 customers is 34 minutes  
∴ total waiting time = 16 × 34 = 544 ✓M  
Total of known waiting times  
= 30 + 15 + 45 + 36 + 40 + 34 + 42 + 26 + 32 + 38 + 35 + 41 + 28  
= 494 ✓M  
Difference is 544 – 494 = 50 ✓| 1M total waiting time  
1M total of known times  
1S difference of the totals  
1CA value of B  
OR | 12.4.3  
L3 |
|  |  
∴ B = \( \frac{50}{2} \) = 25 ✓CA  
OR  
Mean ✓M  
= \( \frac{30 + 15 + 45 + 36 + 52 + 40 + 34 + 42 + 26 + 32 + 38 + 35 + 41 + 28}{16} \) ✓M  
= 34  
\( \frac{494 + 2B}{16} \) = 34  
\( 2B = (34 \times 16) – 494 \) ✓S  
\( B = \frac{(34 \times 16) – 494}{2} \) ✓S  
∴ B = 25 ✓CA  
\( \frac{34 + 35}{2} \) ✓M  
= 34.5 ✓CA | 1S simplification  
1CA value of B  
Correct answer only - full marks | |
| | (Using A and B values calculated above)  
1M/A arranging 16 terms in ascending order  
1M median concept (even number of terms)  
1CA simplification | 12.4.3  
L3 | |
| 2.1.1(c) | Waiting times are: ✓M/A  
15, 25, 25, 26, 28; 30; 32; 34; 35; 36; 38; 40; 41; 42; 45; 52  
Median = \( \frac{34 + 35}{2} \) ✓M  
= 34.5 ✓CA | (Using A and B values calculated above)  
1M/A arranging 16 terms in ascending order  
1M median concept (even number of terms)  
1CA simplification | 12.4.3  
L3 |
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.2</td>
<td>4 ✓✓CA</td>
<td>2CA correct number</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note if B is greater than 27 answer can be 2</td>
<td>(2)</td>
</tr>
<tr>
<td>2.1.3</td>
<td>The mean, median and range for 7 February are less than those for 14 February. ✓O</td>
<td>2O comparing the measures</td>
<td>12.4.4</td>
</tr>
<tr>
<td></td>
<td>This means that his customers had to wait for a shorter time on 7 February than on 14 February. ✓O</td>
<td>Accept a comparison table of correct values</td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td><strong>Any two of the reasons below:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• It could be that more people came to eat at his eating place on 14 February, because of Valentine's Day. ✓J</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• He had less staff on the 14\textsuperscript{th}, ✓J</td>
<td></td>
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<tr>
<td></td>
<td>• He had the same number of staff but did not anticipate the increased number of customers. ✓J</td>
<td></td>
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<tr>
<td></td>
<td>• His equipment was faulty on the 14\textsuperscript{th} – people had to wait longer to be served ✓J</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• The electricity was off for a while ✓J</td>
<td></td>
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<tr>
<td></td>
<td><strong>OR</strong></td>
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<td></td>
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<tr>
<td></td>
<td>The mean, median and range for 14 February are more than those for 7 February. ✓O</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This means that his customers had to wait for a longer time on 14 February than on 7 February. ✓O</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Any two of the reasons below:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• It could be that less people came to eat at his eating place on 7 February, because of Valentine's Day. ✓J</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• He had more staff on the 7\textsuperscript{th}, ✓J</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• He had the same number of staff but did not anticipate the difference in number of customers. ✓J</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• His equipment was working well on the 7\textsuperscript{th} – people did not wait long to be served ✓J</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• No electricity problems on the 7\textsuperscript{th} ✓J</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>OR</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Any other valid, well thought out reason will be accepted</td>
<td></td>
<td>(4)</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
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<td>-----------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
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</tr>
<tr>
<td>2.2.1</td>
<td>Percentage ordering chicken = 15% ✓A</td>
<td>1A percentage ordering chicken</td>
<td>12.1.1</td>
</tr>
<tr>
<td></td>
<td>If 20% of the total = 40</td>
<td>1M finding 1%</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>∴ 1% of the total = (\frac{40}{20}) = 2 ✓M</td>
<td>1A multiplying by 15</td>
<td>L2</td>
</tr>
<tr>
<td></td>
<td>∴ 15% of the total = 15 × 2 ✓A</td>
<td>1CA simplification</td>
<td>L3</td>
</tr>
<tr>
<td></td>
<td>= 30 ✓CA</td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>OR</td>
<td>20% : 40 = 15% : x ✓A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(x = \frac{15%}{20%} \times 40) ✓S</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 30 ✓CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>20% of total = 40</td>
<td>1M using proportion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total = (\frac{40}{20%}) ✓M</td>
<td>1A percentage ordering chicken</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 200 ✓A</td>
<td>1S expression for x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>∴ 15% of 200 = 30</td>
<td>1CA simplification</td>
<td></td>
</tr>
<tr>
<td>2.2.2</td>
<td>(\sqrt{M} \quad \sqrt{A}) OR 0.75 OR (\frac{3}{4})</td>
<td>1M subtracting from 100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage not ordering lamb = 10 + 15 + 20 + 30 = 75✓M</td>
<td>1A simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(\sqrt{A}) OR 0.75 OR (\frac{3}{4})</td>
<td>1M adding percentages</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Number of people not ordering lamb ✓M</td>
<td>1A simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 20 + 30 + 40 + 60 = 150</td>
<td>1M adding actual numbers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P(\text{not lamb}) = \frac{150}{200} = \frac{3}{4}) OR 0.75 OR 75% ✓A</td>
<td>1A simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correct answer only - Full marks</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>(2)</td>
</tr>
</tbody>
</table>
2.3.1 Two of the following possible reasons:

- To protect the base of the drum from burning.
- To bring the fire closer to the grid.
- To spread the coals evenly. (Perfect the braaing)
- To use less coal.
- To stabilise the drum.
- To retain the heat of the burning coals.
- The sand can be used to put out the fire.

Accept any two valid reasons. ✓✓O ✓✓O

2O reason
2O reason

(4)

2.3.2 Volume of the braai drum = 108 ℓ

= \(108 \times 1000000 \text{ mm}^3\)

= \(108,000,000 \text{ mm}^3\) ✓C

Radius of the braai drum = \(\frac{572 \text{ mm}}{2}\) = 286 mm ✓A

✓M

Volume of the braai drum = \(\frac{1}{2} \times \pi \times (\text{radius})^2 \times (\text{height})\)

\(108,000,000 \text{ mm}^3 = \frac{1}{2} \times 3,14 \times (286 \text{ mm})^2 \times (\text{height})\)

\(\text{Height} = \frac{2 \times 108,000,000 \text{ mm}^3}{3,14 \times (286 \text{ mm})^2}\) ✓M

\(= 840,99 \text{ mm} \) CA (840,56... mm using \(\pi\))

\(\approx 841 \text{ mm}\)

But length of grid = 1% more than height of drum

1% of 840,99 mm = 8,4099 ✓M

\(\therefore \text{Length of grid} = 840,99 \text{ mm} + 8,4099 = 849,41 \text{ mm}\)

OR

\(\therefore \text{Length of grid} = 101\% \text{ of } 840,99 \text{ mm} = 849,40 \text{ mm} \) CA

No penalty if answer is rounded to 850 mm

12.3.1
L4

1C volume in mm\(^3\)

1A value of radius

1M using \(\frac{1}{2}\) cylinder

1SF substitution into formula

1M Finding expression for height

1CA for height only

1M calculation percentage

1M increasing by 1%

1CA length of grid

OR

1M increasing by 1%

1M calculation percentage

1CA length of grid

No penalty if answer is rounded to 850 mm

(9)
## QUESTION 3 [26 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 3.1.1 | Number of R2,00 tickets per seller = \( \frac{3500}{\text{number of sellers}} \) \( \checkmark \text{A} \)  
OR  
Number of R2,00 ticket per seller = \( \frac{7000}{2 \times \text{number of sellers}} \) \( \checkmark \text{A} \)  
OR  
Number of R2,00 tickets per seller = \( \frac{7000}{2n} = \frac{3500}{n} \)  
where \( n = \text{number of sellers} \) |  
1A using 3 500  
1A dividing by number of sellers  
OR  
1A using 7 000 \( \div 2 \)  
1A dividing by number of sellers  
(2) |
| 3.1.2 | (a) Indirect/Inverse proportion \( \checkmark \text{A} \)  
(b) \( P = \frac{3500}{250} \) \( \checkmark \text{A} \)  
\( = 14 \) \( \checkmark \text{CA} \)  
\( Q = \frac{3500}{125} = 28 \) \( \checkmark \text{CA} \)  
\( P : 70 = 50 : 250 \) \( \checkmark \text{A} \)  
\( = 50 \times \frac{70}{250} = 14 \) \( \checkmark \text{CA} \) |  
1A correct type of proportion  
two answers zero marks  
1A finding the number of tickets  
1M dividing by 250  
1CA correct value of \( P \)  
1CA correct value of \( Q \)  
Correct answer only - Full marks  
(4) |
### 3.1.2 (c)

**SALE OF RAFFLE TICKETS**

<table>
<thead>
<tr>
<th>Number of tickets sold by each seller</th>
<th>Number of ticket sellers</th>
</tr>
</thead>
<tbody>
<tr>
<td>280</td>
<td>0</td>
</tr>
<tr>
<td>240</td>
<td>40</td>
</tr>
<tr>
<td>200</td>
<td>80</td>
</tr>
<tr>
<td>160</td>
<td>120</td>
</tr>
<tr>
<td>120</td>
<td>160</td>
</tr>
<tr>
<td>80</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- A correct plotting of point (20;175)
- A correct plotting of point (140;25)
- One other point plotted correctly
- CA joining the plotted points by a "smooth" curve (section from 20 ticket sellers to 100 ticket sellers)

### 3.2.1

- Fewer tickets have to be sold. ✓ ✓ J
- OR To reduce the number of sellers. ✓ ✓ J
- OR To raise the money faster (in a shorter time) ✓ ✓ J
- OR To raise more money/to buy more computers ✓ ✓ J

### 3.2.2

- Fewer people can afford (too expensive) to buy the R5,00 tickets. ✓ ✓ J
- OR Some of the sellers might not be able to sell all their tickets

### 12.1.2

- Fewer tickets have to be sold.
- OR To reduce the number of sellers.
- OR To raise the money faster (in a shorter time)
- OR To raise more money/to buy more computers

### 12.2.2

- Less tickets have to be sold.
- OR To reduce the number of sellers.
- OR To raise the money faster (in a shorter time)
- OR To raise more money/to buy more computers

### 12.1.2

- Fewer tickets have to be sold.
- OR To reduce the number of sellers.
- OR To raise the money faster (in a shorter time)
- OR To raise more money/to buy more computers
3.2.3

Number of tickets to be sold = \( \frac{R\,7\,000,000}{R\,5} \) \( \checkmark \) M
= 1\,400 \( \checkmark \) A

Number of tickets per person = \( \frac{1\,400}{\text{number of sellers}} \) \( \checkmark \) CA

1M dividing by R5

1A number of tickets to be sold

1CA formula

OR

Showing values in a table/co-ordinates - 3 marks

The possible points learners can use: (other point values can be used)

<table>
<thead>
<tr>
<th>10</th>
<th>20</th>
<th>35</th>
<th>50</th>
<th>100</th>
<th>140</th>
</tr>
</thead>
<tbody>
<tr>
<td>140</td>
<td>70</td>
<td>40</td>
<td>28</td>
<td>14</td>
<td>10</td>
</tr>
</tbody>
</table>

SALE OF RAFFLE TICKETS

4CA any 4 points plotted correctly
1CA joining the plotted points by a smooth curve
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.4</td>
<td>At R2 per ticket 50 tickets must be sold</td>
<td>1RG reading from graph</td>
<td>12.1.1</td>
</tr>
<tr>
<td></td>
<td>At R5 per ticket 20 tickets must be sold</td>
<td>1RG reading from graph</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>Difference = 50 – 20</td>
<td>1 CA difference in number of tickets</td>
<td>12.2.3</td>
</tr>
<tr>
<td></td>
<td>= 30 tickets √CA</td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td><strong>OR</strong></td>
<td></td>
<td>L3</td>
</tr>
</tbody>
</table>
|       | Number of R2,00 tickets per person = \[
|       | \frac{3500}{70}
|       | = 50 √M                                                                  | 1M calculating the number of R2,00 tickets                                   |     |
|       | Number of R5,00 tickets per person = \[
|       | \frac{1400}{70}
|       | = 20 √M                                                                  | 1M calculating the number of R5,00 tickets                                   |     |
|       | Difference = 50 – 20                                                      | 1CA difference in number of tickets                                        |     |
|       | = 30 tickets √CA                                                        |                                                                            |     |
|       | **Answer only – Full marks**                                             | Accept values from 29 to 32. (refer to candidate's graph)                    | (3) |

[26]
### QUESTION 4 [27 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 4.1.1 | Avro ✓A  
It is the only one that can take MORE than 37 passengers (himself plus 37 others) | 1A correct aircraft  
2J justification | 12.4.4 L4 |
| 4.1.2 | Scale is 9,9 cm to 19,25 m ✓M ✓C  
or 9,9 cm to 1 925 cm OR 0,099 m : 19,25 m  
Scale = 1 : \( \frac{1925}{9,9} \) ✓CA  
OR 1 : \( \frac{19,25}{0,099} \) CA | 1M scale concept  
1C converting to the same unit  
1CA dividing to bring to a unit ratio  
1CA rounding off | 12.3.2 (1)  
12.3.3 (3) L3 |
| 4.1.3 | Maximum Operating Altitude = 25 000 feet ✓RT  
= \( \frac{25 000}{6 076} \) nautical miles  
= 4,1145… nautical miles  
≈ 4 nautical miles ✓CA | 1RT reading from the table  
1M dividing by 6076 ft  
1CA nearest nautical mile | 12.3.2 L3 |
| 4.1.4 | Distance = average cruising speed \( \times \) time  
510 km = average cruising speed \( \times \) 39 minutes ✓SF  
Average cruising speed = \( \frac{510 \text{ km}}{39 \text{ minutes}} \)  
= \( \frac{510 \text{ km}}{0,65 \text{ h}} \) ✓C  
= 784,62 km/h ✓CA  
Ms Bobe was travelling in the SUKHOI ✓J  
OR  
Distance (Jetstream) = (500 \( \times \) \( \frac{39}{60} \)) km = 325 km ✓SF  
Distance (Sukhoi) = (800 \( \times \) \( \frac{39}{60} \)) km = 520 km ✓CA  
Distance (Avro) = (780 \( \times \) \( \frac{39}{60} \)) km = 507 km ✓J  
Ms Bobe was travelling in the SUKHOI | 1SF substitution  
1C converting to hours  
1CA average speed  
1J identification of Aircraft  
1SF substitution  
1C converting to hours  
1CA distance travel  
1J identification of Aircraft | 12.2.1 L3 (2)  
12.2.1 L4 (2) |

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### Ques 4.1.4 (cont)

**OR**

Comparing time

Time = \( \frac{\text{distance}}{\text{speed}} \)

- Time (Jetstream) = \( \frac{510}{500} \) h = 1,02 hours = 61,2 minutes
- Time (Sukhoi) = \( \frac{510}{800} \) h = 0,6375 hours = 38,25 minutes
- Time (Avro) = \( \frac{510}{780} \) h = 0,6538... hours = 39,23 minutes

Ms Bobe was travelling in the **SUKHOI** ✓J

### Ques 4.1.5

**Solution**

**Fuel capacity (in litres)** = \( \frac{\text{fuel capacity (in kg)}}{820} \)

- Fuel capacity (in litres) = \( \frac{9362 \text{ kg}}{820} \) ✓SF
- Fuel capacity (in litres) = \( \frac{9362000 \text{ g}}{820} \) ✓C
- Fuel capacity (in litres) ≈ 11417

**OR**

Fuel capacity (in litres) = \( \frac{\text{fuel capacity (in kg)}}{820} \)

- Fuel capacity (in litres) = \( \frac{9362 \text{ kg}}{820} \) ✓SF
- Fuel capacity (in litres) = \( \frac{9362 \text{ kg}}{0,820 \text{ kg}} \) ✓C
- Fuel capacity (in litres) ≈ 11417

### Ques 4.2.1

<table>
<thead>
<tr>
<th>Route</th>
<th>Ques</th>
<th>Solution</th>
<th>AS</th>
<th>Ques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johannesburg to Polokwane: SA 8809</td>
<td>✅✅</td>
<td>✅A</td>
<td></td>
<td>12.4.4</td>
</tr>
<tr>
<td>Polokwane to Johannesburg: SA 8816</td>
<td>✅A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2.2(a)

**Solution**

1A drawing the horizontal line at 4
1A plotting (Saturday; 2 )
1A plotting (Sunday; 3)
1CA joining the plotted points

**AS**

12.4.2
L3

---

4.2.2 (b) Saturday ✓ A

Not many people travel on Saturday, as most business meetings are scheduled during the week. ✓✓ O

**OR**

If people go away for the weekend on holiday, they travel there on a Friday and travel back on Sunday. ✓✓ O

**OR**

Possible religious reason ✓✓ O

**OR**

Any other valid reason ✓✓ O

**AS**

12.4.4
L4

**O** own opinion based on candidates graph

---

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### QUESTION 5  [37 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 5.1.1 | For 30 items:  
\[ \text{Cost} = R5\,000 \,\checkmark\, \text{RG} \]  
\[ \text{Income} = R3\,600 \,\checkmark\, \text{RG} \]  
\[ \text{Loss} = R5\,000 - R3\,600 = R1\,400 \]  
\[ \therefore 30 \text{ items} \,\checkmark\, \text{A} \]  | 1RG cost  
1RG income  
1A number of items  
Correct answer only - full marks | 12.2.2 L3 |
| 5.1.2 | Cost of 40 items = R5\,500 \checkmark\, \text{RG} OR  \[ 40 \times R50,00 + R3\,500 \]  
Income from 40 items = R137,50 \times 40 \checkmark\, \text{M}  
\[ = R5\,500 \,\checkmark\, \text{A} \]  
At 40 items, Cost = Income  
\[ \therefore \text{Mr Stanford's statement is CORRECT}. \,\checkmark\, \text{CA} \]  | 1RG/A cost Or  
Cost = income  
1M finding total income  
1Asimplification  
1CA verification | 12.2.2 L4 |
| 5.2.1 | \( N \) is the total sales.  
16% of \( N = 800 \checkmark\, \text{M} \)  
\[ N = 800 \times \frac{100 \checkmark\, \text{M}}{16} \]  
\[ = 5\,000 \,\checkmark\, \text{A} \]  | 1M concept  
1M finding an  
expression for \( N \)  
1A total sales  
OR  
1M finding unit value  
1M finding 100%  
1A total sales  
OR  
1M concept  
1M finding an  
expression for \( N \)  
1A total sales  
\( K = \frac{750 \times 100 \checkmark\, \text{M}}{5\,000} \)  
\[ = 15 \,\checkmark\, \text{CA} \]  | 12.1.1 L2 (4)  
12.2.1 L3 (3) |
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L = 17% of total sales</td>
<td></td>
<td>1M finding 17%</td>
<td></td>
</tr>
</tbody>
</table>
| L = \[
\frac{17}{100} \times 5000
\] \(\check{M}\) | 1CA simplification | |
| = 850 \(\check{CA}\) | OR | |
| OR | 16% of the total is 800 | 1M finding unit value | |
| 1% of the total is \[
\frac{800}{16}
\] | 1CA simplification | |
| \(\therefore\) 17% of the total is \[
\frac{800 \times 17}{16}
\] \(\check{M}\) | Correct answer only full marks | |
<p>| (\therefore) L = 850 (\check{CA}) | The values need not be calculated in the same order as on the memo | |
| Please note | | (7) | |
| If L is found first: (\check{M}) (\check{CA}) | | | |
| N = 350 + 750 + 1 050 + 850 + 800 + 900 + 200 + 100 | | | |
| = 5 000 (\check{CA}) | | | |
| 5.2.2 | Vivesh's % ((\text{value of M})) | | 12.1.1 L4 |
| (\therefore) Vivesh's bonus = 18% of R300 000 (\check{M}) | 1M calculating percentage | |
| = R54 000 (\check{CA}) | 1CA simplification | |
| (\therefore) The objection is NOT VALID. (\check{CA}) | 1CA conclusion | |
| 5.2.3 | R50 000 (\check{CA}) (\check{A}) | 2A correct basic bonus | 12.1.1 L3 |</p>
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 5.2.3 (b) | Total bonus amount = 6.5% \( \times \) R5 500 000  
\[ = R357 500 \checkmark A \]  
Sales up to and including 10%: 3 persons  
Sales of more than 10% up to and including 20%: 4 persons  
Sales of more than 20%: 1 person  
Bonus amount remaining  
\[ = R357 500 \checkmark M \]  
\[ = R357 500 - (3 \times R10 000 + 4 \times R50 000 + R100 000) \]  
\[ = R357 500 - R330 000 \]  
\[ = R27 500 \checkmark CA \]  
\[ \text{Amount each will receive} = \frac{R27500}{8} \checkmark M \]  
\[ = R3 437,50 \checkmark CA \]  
Mabel's total bonus = R100 000 + R3 437,50  
\[ = R103 437,50 \checkmark CA \]  
\[ \therefore \text{Mabel's bonus is NOT MORE THAN} \text{ than R104 000.} \]  
1A total bonus  
1 M finding the total basic bonus  
1M finding the difference  
1CA simplification  
1M dividing by 8  
1CA simplification  
1CA Mabel's bonus (must include R100 000)  
1O verification (8) |
| 5.3.1 | Vivesh's sales in 2012 was more than double his sales in 2011. Vivesh was the top salesperson in 2012.  
\( \checkmark O \checkmark O \)  
\text{OR}  
There is an increase in percentage sales from 12% to 28%  
\( \checkmark O \checkmark O \)  
Any other numerical comparison (2)  
2O interpretation  
12.4.6 L4 |
| 5.3.2 | He read Mabel's and Henry's combined sales of 2011 and 2012 as the sales for 2012.  
\( \checkmark O \checkmark O \)  
Henry's sales for 2012 were only 25%, Mabel's sales were 21% and the person with the highest sales was Vivesh with 28%  
\( \checkmark J \checkmark J \)  
1J Henry & Mabel  
1J mention Vivesh as highest (4)  
2O errors  
12.4.6 L4 |
| 5.3.3 | Any \text{ TWO} of the following:  
\begin{itemize}  
\item Different type of Bar graphs  
\( \checkmark O \)  
\item Line graphs  
\( \checkmark O \)  
\item Pie charts  
\end{itemize}  
1O bar graphs  
1O line graphs  
\text{OR}  
1O pie charts (2)  
12.4.6 L2 |

TOTAL: 150

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