### SYMBOLS AND EXPLANATIONS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>EXPLANATION</th>
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<tbody>
<tr>
<td>A</td>
<td>Accuracy</td>
</tr>
<tr>
<td>CA</td>
<td>Consistent accuracy</td>
</tr>
<tr>
<td>C</td>
<td>Conversion</td>
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<td>J</td>
<td>Justification (Reason/Opinion)</td>
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<tr>
<td>M</td>
<td>Method</td>
</tr>
<tr>
<td>MA</td>
<td>Method with accuracy</td>
</tr>
<tr>
<td>P</td>
<td>Penalty, e.g. for no units, incorrect rounding off, etc.</td>
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<tr>
<td>R</td>
<td>Rounding off</td>
</tr>
<tr>
<td>RT/RG</td>
<td>Reading from a table/Reading from a graph</td>
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<tr>
<td>S</td>
<td>Simplification</td>
</tr>
<tr>
<td>SF</td>
<td>Correct substitution in a formula</td>
</tr>
<tr>
<td>O</td>
<td>Own opinion/Example</td>
</tr>
<tr>
<td>NPR</td>
<td>No penalty for rounding</td>
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This memorandum consists of 22 pages.
## QUESTION 1 [24 MARKS]

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<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
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</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Amount of juice (in litres)</td>
<td>2,5 kg makes 1 ℓ (\frac{400 \text{ kg}}{2,5 \text{ kg}}) = 160 ℓ</td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>(\frac{400 \text{ kg}}{2,5 \text{ kg}}) = 160 ℓ</td>
<td>1M dividing by 2,5</td>
<td>12.1.2 L2</td>
</tr>
<tr>
<td></td>
<td>Number of 5 ℓ bottles = (\frac{160 \ell}{5 \ell}) = 32 ℓ</td>
<td>1A simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 : 2,5 = (x : 400) (\frac{2,5x}{400} = \frac{160}{5} \Rightarrow x = 160)</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 ℓ juice is made from 5 (\times) 2,5 kg = 12,5 kg fruit</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of 5 ℓ bottles = (\frac{400 \text{ kg}}{12,5 \text{ kg}}) = 32 ℓ</td>
<td>1A mass of fruit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(\frac{400 \text{ kg}}{5 \ell} = 80 \text{ kg/ℓ})</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of 5 ℓ bottles = (\frac{80 \text{ kg/ℓ}}{2,5 \text{ kg/ℓ}}) = 32 ℓ</td>
<td>1A using proportion</td>
<td></td>
</tr>
</tbody>
</table>

Correct answer only: full marks (3)
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
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<th>AS</th>
</tr>
</thead>
</table>
| 1.2.1 | **Radius (in mm) = \( \frac{90}{2} = 45 \)** ✓A  
Surface area (in mm²) = \( 4 \times 3.14 \times 45^2 \) ✓SF  
\[= 25\,434 \] ✓CA | 1A value of radius  
1SF substitution  
1CA simplification  
Accept 25 446,90 using \( \pi \) Using diameter max 2 marks  
NPR Correct answer only: full marks | 12.3.1 L2 |
| 1.2.2 | **Volume (in mm³) = \( \frac{4}{3} \times 3.14 \times 45^3 \)** ✓SF  
\[= 381\,510 \] ✓CA | CA from 1.2.1  
1SF substitution  
1CA simplification  
Accept 381 703,51 using \( \pi \)  
NPR Correct answer only: full marks | 12.3.1 L2 |
| 1.3 | **Radius of basket = \( \frac{30}{2} = 15 \text{ cm} \)** ✓A  
Volume of basket = \( 3.14 \times (15 \text{ cm})^2 \times 25 \text{ cm} \) ✓SF  
\[= 3.14 \times (150 \text{ mm})^2 \times 250 \text{ mm} \] ✓C  
\[= 17\,662\,500 \text{ mm}^3 \] ✓CA  
The number of oranges = \( \frac{17\,662\,500 \text{ mm}^3 - 113\,040 \text{ mm}^3}{38\,1510 \text{ mm}^3} \) ✓M/CA  
\[= 46 \] | 1A radius of basket  
1SF substitution  
1C converting to mm  
1CA volume of basket  
Accept 17 671 458,68 using \( \pi \)  
1M/A subtracting space  
1 M dividing by volume of an orange  
CA from 1.2.2  
1CA conclusion | 12.3.1  
12.1.2  
L3(6)  
L4(1) |

\[\therefore \text{Franz’s statement is not correct} \] ✓CA  

**OR**
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>Radius of basket = ( \frac{30}{2} = 15 \text{ cm} ) ✓ A</td>
<td>1A value of radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume of basket = ( 3,14 \times (15 \text{ cm})^2 \times 25 \text{ cm} ) ✓ SF</td>
<td>1SF substitution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = 17 662,5 \text{ cm}^3 ) ✓ CA</td>
<td>1CA volume of basket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The number of oranges = ( \frac{17 662,5 \text{ cm}^3 - 113 040 \text{ mm}^3}{381 510 \text{ mm}^3} ) ✓ M</td>
<td>1M dividing by volume of an orange</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = \frac{17 662,5 \text{ cm}^3 - 113 040 \text{ cm}^3}{381,51 \text{ cm}^3} ) ✓ M</td>
<td>1M subtracting space</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = 46 ) ✓ C</td>
<td>1C converting to cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(( 46 &gt; 44 ))</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>➥: Franz’s statement is not correct ✓ CA</td>
<td>1CA conclusion</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Radius of basket = ( \frac{30}{2} = 15 \text{ cm} ) ✓ A</td>
<td>1A radius of basket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume of basket = ( 3,14 \times (15 \text{ cm})^2 \times 25 \text{ cm} ) ✓ SF</td>
<td>1SF substitution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = 3,14 \times (150 \text{ mm})^2 \times 250 \text{ mm} ) ✓ C</td>
<td>1C converting to mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = 17 662 \ 500 \text{ mm}^3 ) ✓ CA</td>
<td>1CA volume of basket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Space in the basket for oranges (in mm(^3)) ( = 17 662 \ 500 - 113 \ 040 = 17 \ 549 \ 460 ) ✓ M</td>
<td>1M subtracting space</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Space occupied by oranges (in mm(^3)) ( = 381 \ 510 \text{ mm}^2 \times 44 = 16 \ 786 \ 440 \text{ mm}^2 ) ✓ A</td>
<td>1A calculating the space occupied by the oranges</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(( \therefore ) there is space for more oranges) ➥: Franz’s statement is not correct ✓ CA</td>
<td>1CA conclusion</td>
<td></td>
</tr>
</tbody>
</table>

**Correct conclusion only: 1 mark**

(7)
1.4

Trailer length

\[ 394 \times 2.54 \text{ cm} = 1 000.76 \text{ cm} \quad \text{OR} \quad 10.0076 \text{ m} \]

Trailer breadth

\[ 119 \times 2.54 \text{ cm} = 302.26 \text{ cm} \quad \text{OR} \quad 3.0226 \text{ m} \]

**Option 1:**

Maximum number of boxes packed **lengthwise** along the breadth of the trailer:

\[ \frac{302.26}{30} \quad \text{OR} \quad \frac{3.026}{0.3} \]

\[ = 10.075 \ldots \quad = 10.075 \ldots \]

\[ \approx 10 \quad \approx 10 \]

Maximum number of boxes packed **breadthwise** along the length of the trailer:

\[ \frac{1000.76}{21.5} \quad \text{OR} \quad \frac{10.0076}{0.215} \]

\[ = 46.54 \ldots \quad = 46.54 \ldots \]

\[ \approx 46 \quad \approx 46 \]

Maximum number of boxes of oranges = \( 10 \times 46 \)

\[ = 460 \quad \text{CA} \]

**Option 2:**

Maximum number of boxes packed **breadthwise** along the breadth of the trailer:

\[ \frac{302.26}{21.5} \quad \text{OR} \quad \frac{3.026}{0.215} \]

\[ = 14.05 \ldots \quad = 14.05 \ldots \]

\[ \approx 14 \quad \approx 14 \]

Maximum number of boxes packed lengthwise along the length of the trailer:

\[ \frac{1000.76}{30} \quad \text{OR} \quad \frac{10.0076}{0.3} \]

\[ = 33.35 \ldots \quad = 33.35 \ldots \]

\[ \approx 33 \quad \approx 33 \]

Maximum number of boxes = \( 33 \times 14 \)

\[ = 462 \quad \text{CA} \]

\[ \therefore \text{OPTION 2 is the best} \quad \text{CA} \]

OR
### Question

**OR**

**Trailer length**

\[ 394 \times 2.54 \text{ cm} = 1000.76 \text{ cm} \quad \text{OR} \quad 10.0076 \text{ m} \]

**Trailer breadth**

\[ 119 \times 2.54 \text{ cm} = 302.26 \text{ cm} \quad \text{OR} \quad 3.0226 \text{ m} \]

**Height**

\[ 94.6 \times 2.54 \text{ cm} = 24003 \text{ cm} \quad \text{OR} \quad 240.03 \text{ m} \]

Number of layers of boxes = \[ \frac{240.03}{0.235} = 10.214... \approx 10 \]

**Option 1:**

Maximum number of boxes packed **lengthwise** along the breadth of the trailer:

\[ \frac{30226}{0.3} = 10.075... \approx 10 \]

Maximum number of boxes packed **breadthwise** along the length of the trailer:

\[ \frac{10.0076}{0.215} = 46.54... \approx 46 \]

Number of boxes to be packed in this option

\[ 10 \times 10 \times 46 = 4600 \quad \checkmark \text{CA} \]

**Option 2:**

Maximum number of boxes packed **breadthwise** along the breadth of the trailer:

\[ \frac{30226}{0.215} = 14.05... \approx 14 \]

Maximum number of boxes packed **lengthwise** along the length of the trailer:

\[ \frac{10.0076}{0.3} = 33.35... \approx 33 \]

Number of boxes to be packed in this option

\[ 14 \times 33 \times 10 = 4620 \quad \checkmark \text{CA} \]

\[ \therefore \text{OPTION 2 is the best.} \quad \checkmark \text{CA} \]

### Correct conclusion

- Option 1
- Option 2

**Marking Scheme**

- **1M dividing**
- **1R rounding down**
- **1CA total number of boxes**
- **1CA conclusion**

**Correct conclusion only: 1 mark**

(9)

[24]
## QUESTION 2 [26 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 2.1.1 | Amount claimed (in rand)  
\[= 4.67 \times \text{number of kilometres travelled}\]  
\[\text{OR}\]  
\[= 467 \text{ cents} \times \text{number of kilometres travelled}\]  
\[\text{OR}\]  
\[= 467 \times \text{number of kilometres travelled} \div 100\]  
\[\text{Amount claimed (in rand)} = 4.67 \times n\]  
where \(n = \text{number of kilometres travelled}\]  
\[\text{OR}\]  
\[\text{Amount claimed (in rand)} = 467 \text{ cents} \times n\]  
where \(n = \text{number of kilometres travelled}\]  
\[\text{NOTE: No variable (symbol or words), NO marks}\]  
| 1A correct fuel tariff  
1A multiplying tariff in rand by number of kilometres travelled |
| 12.2.1 | L3(2) |
| 2.1.2 | Amount claimed (in rand)  
\[= 4.67 \times 1 960\]  
\[= 9 153,20\]  
\[\therefore \text{The amount claimed by Rodney was incorrect.}\]  
\[\text{OR}\]  
\[\text{The rate of claim used} = \frac{9430}{1960} = 4.8112...\]  
\[\text{(4,8112... is more than the correct rate of 4,67)}\]  
\[\therefore \text{The amount claimed by Rodney was incorrect.}\]  
\[\text{OR}\]  
\[\text{Number of kilometres claimed} = \frac{9430}{4.67} = 2019.27...\]  
\[\text{(2019.27... is more than the 1960 km travelled.)}\]  
\[\therefore \text{The amount claimed by Rodney was incorrect.}\]  
| 1SF substitution in formula from Q 2.1.1  
1CA simplification  
1CA conclusion  
1M concept  
1A calculated rate  
1CA conclusion  
1M concept  
1A number of km  
1CA conclusion  
Correct conclusion only: 1 mark | 12.2.1  
L4(3) |
### Question 2.2.1

**Petrol cost (in rand)**
\[ 1960 \times 1,013 = 1985.48 \]  
**Maintenance cost (in rand)**
\[ 450 + 125 + 500 + 200 = 1275 \]  
**Monthly cost (in rand)**
\[ 1985.48 + 1275 = 3260.48 \]

**OR**
\[ (450 + 125 + 500 + 200) + 1960 \times 1.013 = 3260.48 \]

**Correct answer only:** full marks

### Question 2.2.2

#### Finding remaining amount using the 1.5\$/vehicle: October

**Claim amount**
\[ 2994 \text{ cents} \times 1960 = 586824 \text{ cent} \]
\[ = R5 868.24 \]

**Remaining amount**
\[ = R5 868.24 - R3 260.48 \]
\[ = R2 607.76 \]

#### Finding remaining amount using the 2.3\$/vehicle: November

**Petrol cost (in rand)**
\[ 1960 \times 1,317 = 2581.31 \]

**Maintenance cost (in rand)**
\[ 700 + 210 + 800 + 450 = 2160 \]

**Monthly cost (in rand)**
\[ 2581.31 + 2160 = 4741.32 \]

**Using CORRECT claim amount:**
\[ = R9 413.20 - R4 741.32 \]
\[ = R4 681.88 \]

**Using RODNEY's claim amount:**
\[ = R9 430 - R4 741.32 \]
\[ = R4 688.68 \]

**Difference in remaining amounts**
\[ = R4 111.88 \]
\[ = R1 804.12 \]

**Difference in remaining amounts**
\[ = R4 688.68 - R2 607.76 \]
\[ = R2 080.92 \]

**Correct answer only:** full marks

### Table

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 2.2.1 | Petrol cost (in rand) = 1960 × 1,013 = 1985.48  
Maintenance cost (in rand) = 450 + 125 + 500 + 200 = 1275  
Monthly cost (in rand) = 1985.48 + 1275 = 3260.48  
OR  
Monthly cost (in rand) = (450 + 125 + 500 + 200) + 1960 × 1.013 = 3260.48 | 1M/A petrol cost  
1M/A maintenance  
1CA monthly cost  
OR  
1M/A maintenance  
1M/A petrol cost  
1CA monthly cost | 12.1.1 L2 |
| 2.2.2 | Finding remaining amount using the 1.5\$/vehicle: October  
Claim amount = 2994 cents × 1960 km OR = R2,994 × 1960 km  
= 586 824 cent = R5 868,24 CA  
Remaining amount = R5 868.24 – R3 260.48 CA | 1M multiplying the tariff with distance  
1CA claim amount | 12.2.1 L2(3) L3(3) L4(3) |
| Finding remaining amount using the 2.3\$/vehicle: November  
Petrol cost (in rand) = 1960 × 1,317 = 2581.31  
Maintenance cost (in rand) = 700 + 210 + 800 + 450 = 2160  
Monthly cost (in rand) = 2581.31 + 2160 = 4741.32 | 1M/A Petrol cost  
1M/A maintenance  
1CA monthly cost | 12.1.1 L2(3) L3(3) L4(3) |
| Using CORRECT claim amount: Remaining amount = R9 153,20 – R4 741,32 OR = R4 411,88 CA  
.: Difference in remaining amounts = R4 111,88 – R2 607,76 = R1 804,12 CA | 1CA remaining amount (Q2.1.2)  
1CA difference NPR except if R2,99 is used then max 8 marks | 12.2.2 |

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<table>
<thead>
<tr>
<th>Ques</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td>$i = 9% \text{ pa} \quad n = 24 \text{ months} \quad A = \text{R104 753,89}$&lt;br&gt;$x = \frac{\text{R104 753,89} \times 9%}{12} \quad \text{A}$&lt;br&gt;$\left[1 + \frac{9%}{12}\right]^{24} - 1 \quad \text{A}$&lt;br&gt;$x = \text{R4 000} \quad \text{CA}$&lt;br&gt;<strong>OR</strong>&lt;br&gt;$x = \frac{\text{R104 753,89} \times 0.09}{12} \quad \text{A}$&lt;br&gt;$\left[1 + \frac{0.09}{12}\right]^{24} - 1 \quad \text{A}$&lt;br&gt;$x = \text{R4 000} \quad \text{CA}$&lt;br&gt;<strong>OR</strong>&lt;br&gt;$x = \frac{\text{R104 753,89} \times 0.0075}{12} \quad \text{SF}$&lt;br&gt;$\left[1 + \frac{0.09}{12}\right]^{24} - 1 \quad \text{A}$&lt;br&gt;$x = \text{R4 000} \quad \text{CA}$&lt;br&gt;<strong>OR</strong>&lt;br&gt;$x = \frac{\text{R104 753,89} \times 0.01}{(1 + 0.01)^{24} - 1} \quad \text{SF} \quad \text{A}$&lt;br&gt;$x = \text{R3 883,59} \quad \text{CA}$&lt;br&gt;</td>
<td>1A interest rate per month&lt;br&gt;1SF substitution&lt;br&gt;1CA simplification&lt;br&gt;Correct answer only: full marks (4)</td>
<td>12.1.3&lt;br&gt;L3</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
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</tr>
</tbody>
</table>
| 2.4  | Tax(before rebate)  
✓ A  
✓ M/A  
= R51 300 + 30% × (R315 054 – R250 000)  
= R51 300 + \frac{30}{100} × R65 054  
= R51 300 + R19 516,20  
= R70 816,20 ✓ CA  
Tax payable (after rebate)  
= R70 816,20 – R11 440,00 – R6 390 ✓ M  
= R52 986,20 ✓ CA | 1A identifying correct tax interval  
1M/A finding amount above R250 000  
1CA tax amount  
1M subtracting both rebates from the tax amount.  
1CA simplification  
If rebates are subtracted before calculating the tax max 3 marks  
[If incorrect tax bracket used max 3 marks]  
Correct answer only: full marks | 12.1.3 L2(3) L3(2) |

[26]
### QUESTION 3 [38 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 3.1.1 | Total number of persons 20 years and older in 1996 is 21 251 533 ✓ A ✓ M  
Total number of persons 20 years and older in 2001 is 25 472 770 ✓ A  
∴ The increase in the total population from 1996 to 2001 is greater than the increase in the number of persons with no schooling. ✓ ✓ O  
OR explanation with calculation  
Total number of persons 20 years and older in 1996 is 21 251 533 ✓ A ✓ M  
Total number of persons 20 years and older in 2001 is 25 472 770 ✓ A  
Percentage growth of persons with no schooling in 2001  
\[
\frac{4 567 498 - 4 055 646}{4 055 646} \times 100\% = 12.6207\ldots\%
\] ✓ CA  
Percentage growth of persons 20 years and older in 2001  
\[
\frac{25 472 770 - 21 251 533}{21 251 533} \times 100\% = 19.8632\ldots\%
\]  
Percentage growth of persons 20 years and older was more than the percentage growth of people with no schooling. ✓ O  
| 3.1.2 | Total number 20 years and older in 2011 = 30 915 706 ✓ A  
59,7% of population = 30 915 706  
Total population = \( \frac{30915706}{59,7\%} \) ✓ M  
= \( \frac{30915706}{0.597} \)  
= 51 785 102,18  
≈ 51 785 102 ✓ CA  
Total younger than 20 years  
\[
= 51 785 102 - 30 915 706 \quad \text{OR} ~ \frac{40.3\%}{51 785 102} = 20 869 396 \quad \text{CA} 
\approx 20 869 396 \quad \text{CA}
\] OR  
|  |  |  | 12.4.4  
L4  
|  |  |  | 12.4.1  
12.1.1  
L3  
|  |  |  | 1M total  
|  |  |  | 1A population in 1996  
|  |  |  | 1A total number in 2001  
|  |  |  | 2O explanation  
|  |  |  | 1M total  
|  |  |  | 1A population in 1996  
|  |  |  | 1A total number in 2001  
|  |  |  | 1CA percentage growth  
|  |  |  | 1O explanation  
|  |  |  | 1M dividing by 59,7%  
|  |  |  | 1CA population  
|  |  |  | 1CA solution  
<p>| | | |
|  |  |  |</p>
<table>
<thead>
<tr>
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<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OR</strong></td>
<td>Total number 20 years and older in 2011 = 30 915 706 ✓A</td>
<td><strong>OR</strong></td>
<td>(4)</td>
</tr>
<tr>
<td>Total <strong>younger</strong> than 20 years</td>
<td>30 915 706 \times 40,3% ✓M</td>
<td>1A total 20 years and older</td>
<td>1M dividing by 59,7%</td>
</tr>
<tr>
<td>= 20 869 396 ✓CA</td>
<td>1M multiplying by 40,3%</td>
<td>1CA solution</td>
<td></td>
</tr>
<tr>
<td><strong>3.1.3</strong></td>
<td>Number of persons with Gr 12 in 2001 = 5 200 602</td>
<td><strong>12.4.4</strong></td>
<td>L3</td>
</tr>
<tr>
<td>(P(\text{Grade 12}))</td>
<td>5 200 602 ✓A</td>
<td>1A number with Gr 12</td>
<td></td>
</tr>
<tr>
<td>= \frac{5 200 602}{44819778} ✓A</td>
<td>1A denominator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= \frac{2 600 301}{22 409 889} OR \frac{866 767}{7 469 963} OR</td>
<td>1CA simplifying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11,6% OR \approx 0,12 OR \frac{1}{8,6} ✓CA</td>
<td>Correct answer only: full marks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2.1

**PERCENTAGE HIGHEST EDUCATION LEVEL**

1 or 2 points plotted incorrectly max 5 marks
3 points plotted incorrectly max 4 marks
4 points plotted incorrectly max 3 marks
5 points plotted incorrectly max 2 marks
ICA joining all the points by means of a line
Penalty of one mark if graph is moved either left or right

(6)
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 3.2.2 | ANY TWO possible trends:  
* From 1996 to 2011 there was an increase in the number of persons with Grade 12. ✓✓CA  
* From 1996 to 2011 there was an increase in the number of persons with Tertiary education. ✓✓CA  
* The percentage increase of persons with Grade 12 is higher than that of persons with Tertiary education. ✓✓CA  
* There are always more persons in Grade 12 than persons with Tertiary education. ✓✓CA | 2CA per trend  
2CA per trend  
(4) |
| 3.3.1 | The percentages given represent the number of people with Grade 12 as a percentage of the number of people 20 years and older in each province and not nationally. ✓✓O  
OR  
Data is per province ✓✓O | 2O acceptable explanation  
(2) |
| 3.3.2 | The ascending order is ✓M/A  
19,8 ; 22,4 ; 22,7 ; 25,2 ; 26,8 ; 28,2 ; 29,0 ; 30,9 ; 34,4  
∴ Free State has the median percentage ✓CA  
OR  
The ascending order is ✓M/A  
EC; LP; NC; NW; FS; WC; MP; KZN; GP  
∴ Free State has the median percentage ✓CA | 1M/A arranging in ascending order  
1CA province  
OR  
1M/A ascending order  
1CA province  
Correct answer only: full marks  
(2) |
| 3.3.3 | ✓A Eastern Cape and Limpopo ✓A | 1A EC  
1A LP  
(2) |
| 3.3.4(a) | The percentages do not add up to 100% ✓✓J  
OR  
The degrees to not add up to 360° ✓✓J  
OR  
There are too many sectors ✓✓J | 2J explanation  
(2) |
<table>
<thead>
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<tbody>
<tr>
<td>3.3.4(b)</td>
<td>The histogram cannot be used since the data is qualitative. OR The data is not continuous OR Data is not given in class intervals</td>
<td>2J explanation</td>
<td>12.4.2 L4</td>
</tr>
<tr>
<td>3.4.1</td>
<td>√ A Northern Cape; √ A Gauteng</td>
<td>1A Northern Cape 1A Gauteng Limpopo can also be included</td>
<td>12.3.3 L4</td>
</tr>
<tr>
<td>3.4.2</td>
<td>TS ≈ 7 mm √ A</td>
<td>1A measurement [accept answers from 5 mm to 8 mm] 1M using scale 1CA simplifying 1C converting to km [accept answers from 50 km to 80 km] OR 1C converting scale to km</td>
<td>12.3.3 L4</td>
</tr>
</tbody>
</table>

Actual distance ≈ 7 mm × 10 000 000 √ M
= 70 000 000 mm √ CA
= 70 km √ C

OR
Scale is 1 mm : 10 000 000 mm
∴ 1 mm : 10 km √ C

TS ≈ 7 mm √ A

Actual distance ≈ 7 mm × 10 km/mm √ M
= 70 km √ CA

Correct answer only: full marks

(4) [38]
### QUESTION 4 [34 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 4.1.1 | Perimeter = \(5 \times 270\) mm \(\checkmark\) M/A  
\[= 1350\] mm \(\checkmark\) A  
**OR**  
Perimeter = \((270 + 270 + 270 + 270 + 270)\) mm \(\checkmark\) M/A  
\[= 1350\] mm \(\checkmark\) A  | 1M/A multiplying side by 5 only  
1A simplification  
**OR**  
1M/A adding 5 sides  
1A simplification  | 12.3.1 L2 |
| 4.1.2 | Area of rectangle = length \(\times\) breadth  
\[= 360\ mm \times 270\ mm\] \(\checkmark\) SF  
\[= 0,36\ m \times 0,27\ m\] \(\checkmark\) C  
\[= 0,0972\ m^2\] \(\checkmark\) M  
Surface area of front pentagon (in m\(^2\)) = 0,13 – 0,017 – 0,013  
\[= 0,1\] \(\checkmark\) M  
Surface area of rear pentagon (in m\(^2\)) = 0,13 – 0,013  
\[= 0,117\] \(\checkmark\) M  
Total surface area (in m\(^2\)) = 5 \(\times\) 0,0972 + 0,1 + 0,117  
\[= 0,703\] \(\checkmark\) CA  | 1SF substituting into area formula  
1C converting  | 12.3.1 L3 |
| **OR** | Total surface area  
\[= 2 \times \text{pentagons} + 5 \times \text{rectangles} \text{ – (letter opening + \(\checkmark\) M  
\[2 \times \text{newspaper openings})\] \(\checkmark\) SF  
\[= 2 \times 0,13\ m^2 + 5 \times 360\ mm \times 270\ mm \text{ – (0,017 m}^2 + \]  
\[2 \times 0,013\ m^2)\] \(\checkmark\) C  
\[= 0,26\ m^2 + 5 \times 0,36\ m \times 0,27\ m \text{ – 0,043 m}^2\]  
\[= 0,26\ m^2 + 0,486\ m^2 \text{ – 0,043 m}^2\]  
\[= 0,703\ m^2\] \(\checkmark\) CA  | 1M five rectangles  
1SF substituting area  
1M subtracting area  
1C converting  
1CA simplification using all the faces  | 12.3.1 L3 |
<table>
<thead>
<tr>
<th>Ques</th>
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</tr>
</thead>
</table>
| 4.1.3 | Area of a newspaper opening = $\pi \times r^2$  
0,013 m² = 3,14 × $r^2$  
0,00414... m² = $r^2$  
41,401... cm² = $r^2$  
r ≈ 6,434... cm  
The radius of the newspaper is 6 cm  
∴ The newspaper will fit.  
**OR**  
Newspaper radius (in cm) = $\frac{12}{2} = 6$  
Area of a circle = $\pi \times r^2$  
= 3,14 × (6 cm)²  
= 3,14 × (0,06 m)²  
≈ 0,0113 m²  
∴ The newspaper will fit. |
|       | 1SF substitution  
1C conversion  
1CA value of $r$  
1A radius of newspaper  
1CA conclusion |
|       | **OR**  
1A radius  
1SF substitution  
1C converting  
1CA simplification  
1CA conclusion |
|       | **Answer only 1 mark** |
| 4.2.1 | ✓ A ✓ M ✓ M  
Cost = R30,50 + R4,50 × mass of parcel greater than 1kg  
**OR**  
✓ A ✓ M  
Cost = R30,50 + R4,50 × $a$ ✓ M  
where $a$ is the mass of a parcel greater than 1 kg  
**OR**  
✓ A ✓ M ✓ M  
Cost = R30,50 + R4,50 × (mass of parcel – 1) |
|       | **NOTE No variable in second term (symbol or words), max 1 mark**  
1A basic rate R30,50  
1M the rate for more than 1 kg  
1M multiplied with the mass greater than 1 kg |
| 4.2.2 | ✓ SF  
A = R30,50 + R4,50 × (2,5 – 1) = R37,25 ✓ CA  
Additional mass in kg = $\frac{R70,55 – R30,50}{R4,50}$ ✓ M  
= 8,9 ✓ CA  
∴ B = 1 + 8,9 = 9,9 ✓ CA  
**OR**  
✓ SF  
A = R30,50 + R4,50 × (2,5 – 1) = R37,25 ✓ CA  
R70,55 = R30,50 + R4,50 × $a$ ✓ SF  
R40,05 = R4,50 × $a$ ✓ S  
8,9 = $a$ ✓ CA  
∴ B = 1 + 8,9 = 9,9 ✓ CA |
|       | 1SF substitution (CA from question 4.2.1)  
1CA value of A  
1M subtracting R30,50  
1M dividing R4,50  
1CA additional mass  
1CA value of B  
**OR**  
1SF substitution (CA from question 4.2.1)  
1CA value of A  
1SF substitution  
1S simplification  
1CA value of $a$  
1CA value of B  
**Answer only: full marks** | 12.2.1 L2 | 12.2.1 L3(3) |
### 4.2.3

#### THE COST OF AN ORDINARY PARCEL PER MASS

<table>
<thead>
<tr>
<th>Mass (in kilogram)</th>
<th>Cost (in rand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
</tr>
</tbody>
</table>

1A plotting points (0, 5; 30, 50) and (1; 30, 5)
1A plotting point (3; 39, 50)
1A drawing horizontal line with open circle between 0 and 0,5
1A drawing horizontal line between 0,5 to 1
1CA drawing the line from 1 to 3
1A continue line beyond (3; 39, 50) with correct slope

#### 4.3.1

| Walmer Health Centre | ✔ ✔ ✔ A |

2A correct place across Main Road
1A place on left
If DIY Store 2 marks

(6)
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</tr>
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</table>
| 4.3.2 | The length of the vacant land on the map $\approx 16$ mm  
The width of the land on the map $\approx 13$ mm | ✓A | 1A measurements  
(accept lengths from 15 mm to 19 mm;  
Accept widths from 12 mm to 14 mm) |
| | | | L3 (1)  
L4 (3) |
| | Area of vacant land on the map $= 1,6 \text{ cm} \times 1,3 \text{ cm}$  
$= 2,08 \text{ cm}^2$ ✓CA | | 1CA area of vacant land |
| | Number of sites $= \frac{2,08 \text{ cm}^2}{0,15 \text{ cm}^2}$  
$= 13,866$  
$\approx 13$ ✓CA | | 1CA number of sites |
| | She can only get 13 sites on the vacant land | | 1CA verification |
| | ∴ Her claim is not valid ✓CA | | OR |
| OR | The length of the vacant land on the map $\approx 16$ mm ✓A  
The width of the land on the map $\approx 13$ mm | | 1A measurements  
(accept lengths from 15 mm to 19 mm;  
Accept widths from 12 mm to 14 mm) |
| | Area of vacant land on the map $= 1,6 \text{ cm} \times 1,3 \text{ cm}$  
$= 2,08 \text{ cm}^2$ ✓CA | | 1CA area of vacant land |
| | Area covered by the sites $= 14 \times 0,15 \text{ cm}^2$  
$= 2,1 \text{ cm}^2$ ✓CA | | 1CA area of the sites |
| | This area is more than the area on the map | | 1CA verification |
| | ∴ Her claim is not valid ✓CA | | Answer only:  
NO marks |

[34]
## QUESTION 5 [28 MARKS]

<table>
<thead>
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</tr>
</thead>
</table>
| 5.1.1| Schools and industries are closed therefore more people book their drivers test in December ✓ ✓ O  
OR With schools etc. closed there are less cars on the road during holidays, so less chance to make mistakes and fail the test. ✓ ✓ O  
Any other valid explanation | 2O explanation                                                             | 12.4.4 L4 |
| 5.1.2| Minimum = 16 and maximum = 60 ✓ M  
Range = 44 ✓ CA | 1M identifying min and max values  
(accept minimum values of 14 to 18)  
1CA range  
(accept values from 42 to 46)  
Correct answer only: full marks | 12.4.3 L2 |
| 5.1.3| Toni did not arrange the bars in calendar/chronological order, hence creating the impression that there was an increase. ✓ ✓ J  
Example: January the number of learners was 52 and February was 24 ✓ CA  
OR any other suitable example | 2J explanation  
1CA example | 12.4.6 L4 |
| 5.2.1| No change in the cost after 15 hours. ✓ ✓ J  
OR Constant cost from 15 hours onwards. ✓ ✓ J  
OR For 15 hours or more of driving lessons there is a fixed rate of R1 500. ✓ ✓ J | 2J correct description | 12.2.3 L4 |
<table>
<thead>
<tr>
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<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.2 (a)</td>
<td>No payment for zero lessons. OR Payment will only be made once the driving lessons start.</td>
<td>2J correct description</td>
<td>12.2.3 L4</td>
</tr>
<tr>
<td>5.2.2 (b)</td>
<td>A learner driver pays a basic amount of R600 for the first two hours. Then R50 per hour for every additional hour.</td>
<td>1A R600 1A time period 1A rate in rand</td>
<td>12.2.3 L4</td>
</tr>
<tr>
<td>5.2.3</td>
<td>At point Q, both Options cost the same at the same time. OR There were 10 hours of driving that cost R1 000 for both Options.</td>
<td>1O same cost 1O same time</td>
<td>12.2.1 L4</td>
</tr>
<tr>
<td>5.2.4 (a)</td>
<td>With Option B Zaheera will get 14 hours of driving lessons. OR Zaheera must choose Option B to get 2 more hours of driving lessons than in Option A.</td>
<td>1A correct option 1J justification</td>
<td>12.2.3 L4</td>
</tr>
<tr>
<td>5.2.4 (b)</td>
<td>Toni would benefit more from Option A. She still gets R1 200 but in a shorter time than Option B. OR Option A, she will have 2 hours to train someone else.</td>
<td>1A correct option 1J justification</td>
<td>12.2.3 L4</td>
</tr>
<tr>
<td>5.2.5</td>
<td>Option A is cheaper for Zaheera. OR She must choose Option A she will pay R600 for the driving lessons.</td>
<td>1A correct option 2J justification</td>
<td>12.2.3 L4</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>-------------</td>
<td>----</td>
</tr>
<tr>
<td>5.2.6</td>
<td><strong>Option A:</strong>&lt;br&gt;Cost for 30 hours = R1 500 ✓A</td>
<td></td>
<td>1A cost option A</td>
</tr>
<tr>
<td></td>
<td><strong>Option B:</strong>&lt;br&gt;Cost for 30 hours = R600 + (R50 per hour × 28 hours)&lt;br&gt; = R600 + R1 400&lt;br&gt; = R2 000 ✓CA</td>
<td>✓A ✓A</td>
<td>1A basic rate&lt;br&gt;1A rate multiplied by hours&lt;br&gt;1CA cost</td>
</tr>
<tr>
<td></td>
<td>∴ Difference in cost = R2 000 − R1 500&lt;br&gt; = R500 ✓CA</td>
<td></td>
<td>1CA difference in cost</td>
</tr>
<tr>
<td></td>
<td><strong>Option A:</strong>&lt;br&gt;Cost for 30 hours = R1 500 ✓A</td>
<td></td>
<td>1A cost option A</td>
</tr>
<tr>
<td></td>
<td><strong>Option B:</strong>&lt;br&gt;Cost for 30 hours&lt;br&gt; = R600 + (R100 per two hours × 14 two hour periods)&lt;br&gt; = R600 + R1 400&lt;br&gt; = R2 000 ✓CA</td>
<td>✓A ✓A</td>
<td>1A basic rate&lt;br&gt;1A rate multiplied by period&lt;br&gt;1CA cost</td>
</tr>
<tr>
<td></td>
<td>∴ Difference in cost = R2 000 − R1 500&lt;br&gt; = R500 ✓CA</td>
<td></td>
<td>1CA difference in cost</td>
</tr>
<tr>
<td></td>
<td><strong>Option B:</strong>&lt;br&gt;For 22 hours it costs R1 600&lt;br&gt;It is increasing with R100 every 2 hours ✓A</td>
<td>✓A</td>
<td>1A rate&lt;br&gt;1A extra cost&lt;br&gt;1CA cost</td>
</tr>
<tr>
<td></td>
<td>∴ Extra cost = 4 × R100 = R400 ✓A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost for 30 hours = R1 600 + R400&lt;br&gt; = R2 000 ✓CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Option A:</strong>&lt;br&gt;Cost for 30 hours = R1 500 ✓A</td>
<td></td>
<td>1A cost option A</td>
</tr>
<tr>
<td></td>
<td>∴ Difference in cost = R2 000 − R1 500&lt;br&gt; = R500 ✓CA</td>
<td></td>
<td>1CA difference in cost</td>
</tr>
</tbody>
</table>

Correct answer only: full marks

(5)

Total: 150

[28]