



**NATIONAL
SENIOR CERTIFICATE**

GRADE 11



MARKS: 75

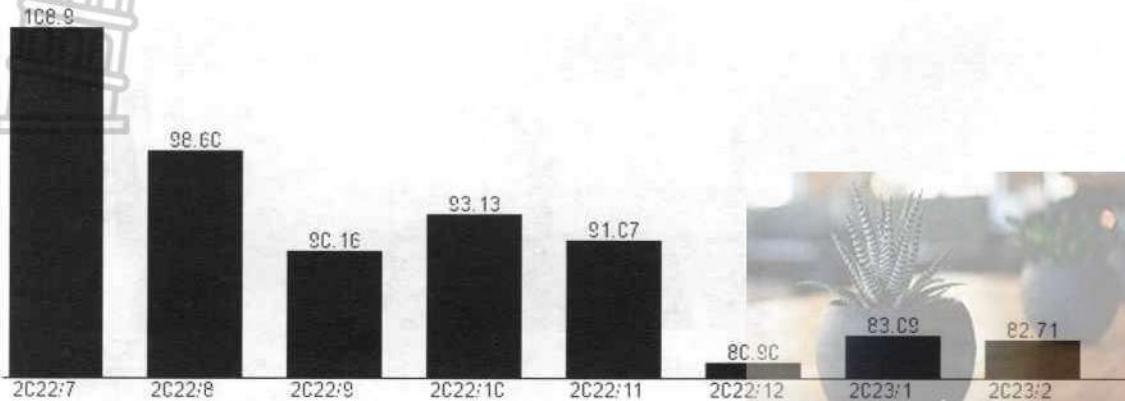
TIME: $1\frac{1}{2}$ hours

This question paper consists of 8 pages and an addendum with 2 annexures.



QUESTION 1

- 1.1 The graph below shows the commodity indicator of crude oil in USD per barrel from July 2022 to February 2023.

CRUDE OIL PER BARREL IN USD (\$) 

Commodity is a raw material or primary agricultural product that can be bought and sold, such as copper or coffee.

[source: https://www.theglobaleconomy.com/world/brent_oil_prices/]

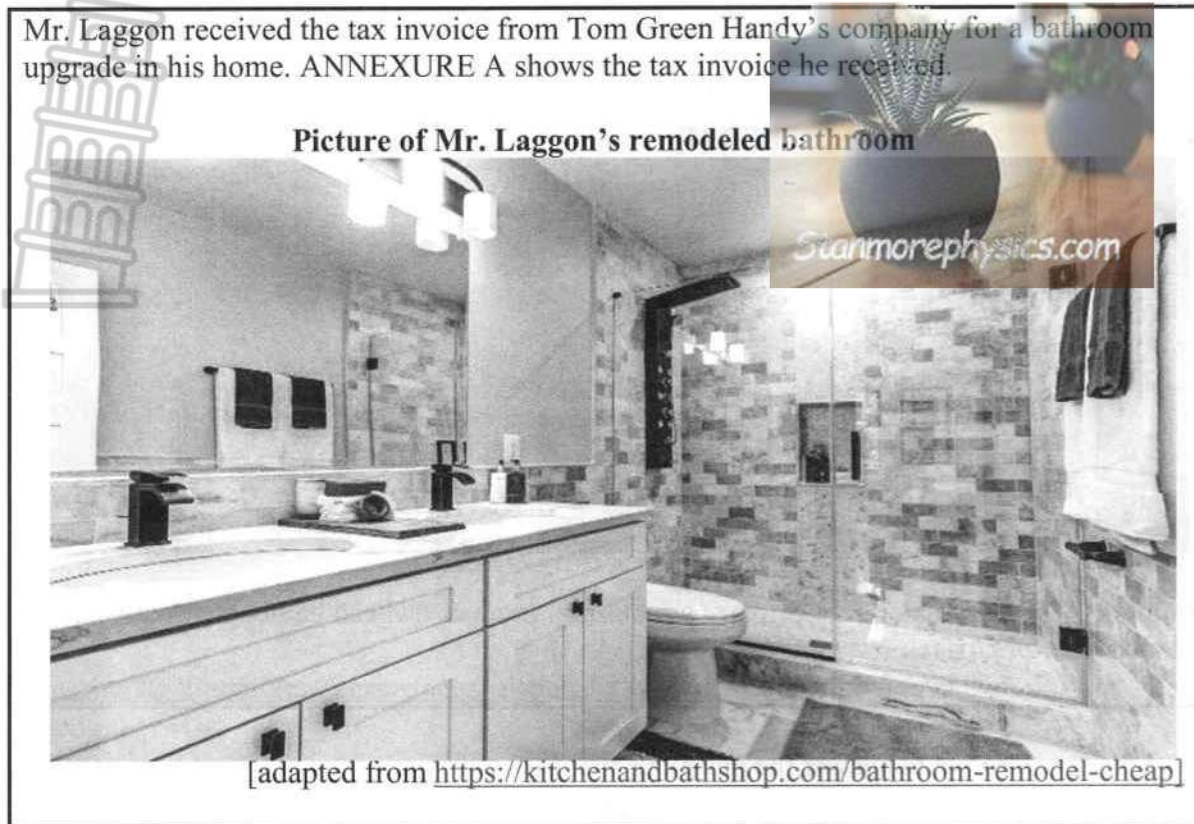
Use the graph above to answer the questions that follow.

- 1.1.1 Identify the name of the graph used to represent the information above. (2)
- 1.1.2 Determine the difference between the highest value and the lowest of the crude oil per barrel in USD (\$). (2)
- 1.1.3 Write in a simplified ratio the value of the barrel in August 2022 to the value of the barrel in January 2023. (2)
- 1.2 Molly works as an administrator and earns a gross salary of R15 000 per month, she contributes 1% of her gross salary towards UIF. She also spends 30% of her gross salary on groceries for her family.
- 1.2.1 Write out UIF in full. (2)
- 1.2.2 Determine the probability of her UIF contribution as a percentage. (2)
- 1.2.3 How much does she spend on groceries per month? (2)
- 1.3 According to SARS, the tax revenue collected was R1 563,8 billion in 2021/22 of which 25% was Value Added Tax.
- 1.3.1 Write down R1 563,8 billion as an ordinary amount without the decimal comma. (2)
- 1.3.2 Determine the VAT revenue in rands that was collected in 2021/22. (2)

[16]

QUESTION 2

- 2.1 Mr. Lagoon received the tax invoice from Tom Green Handy's company for a bathroom upgrade in his home. ANNEXURE A shows the tax invoice he received.



Use ANNEXURE A and the information above to answer the questions that follow.

- 2.1.1 Explain what will happen if Mr. Lagoon pays for the invoice on the 14th of May 2023. (2)
- 2.1.2 Show by calculations how the cost of labour of \$950 was calculated. (2)
- 2.1.3 Give ONE possible reason why the tax registered number has some missing values and write the example of a completed tax registration number. (2)
- 2.1.4 Calculate to the nearest rand the total due on this invoice, if the exchange rate is R1 costs \$0,70532 at times. (3)
- 2.1.5 Tom Green Handyman increased the labour cost per hour by 8,45%. Determine the new unit price for labour cost after the increase. (3)

2.2

Mr. Laggon downloaded TWO shower rates and bath costs for saving water in order to compare the consumption for his household budget.

Standard shower-head, low flow shower- head and bath costs



R21.02 per shower
10-minute shower with **standard** showerhead
(15 litre/min)

R6.73 per shower
6-minute shower with **low flow** showerhead
(8 litre/min)

R12.61 per bath
20 litre bath

[adapted from <https://poweroptimal.com>]

Study the information above and answer the question that follows.

2.2.1 Calculate the percentage change between a 10-minute shower and a 6-minute shower.

You may use the following formula:

$$\text{Percentage change} = \frac{\text{Amount for 10 min} - \text{Amount for 6 min}}{\text{Amount for 6 min}} \times 100\%$$

(3)

2.2.2 The average price for electricity across major metropolitan municipalities in South Africa is R3,12 per kwh. If the 10-minute shower uses 5,8 kwh of energy per shower taken, calculate the total cost of taking 60 showers.

(3)

2.2.3 Mr. Laggon states that a 10-min shower will use more water than the other options, if a full bath or shower is taken. Verify his statement by showing all calculations.

(4)

[22]

QUESTION 3

3.1

Below is the report showing thousands of South Africans face salary reductions and retrenchments. The cost of accommodation in the country's major cities is still on the rise.

Table 1: South African major cities' average rent and average salaries.

| City | Average Rent | Average Salary | % of Salary Spent on Rent |
|----------------|--------------|----------------|---------------------------|
| Pretoria | R6,500 | R33,000 | 19% |
| Johannesburg | R8,000 | R37,000 | 20% |
| Cape Town | R10,000 | R38,000 | 27% |
| Durban | R7,500 | R31,000 | 24% |
| Bloemfontein | R4,500 | R30,000 | 15% |
| Nelspruit | R5,600 | R29,000 | 19% |
| Port Elizabeth | R5,000 | R28,000 | 20% |
| Rustenburg | R5,500 | R32,000 | 17% |
| Polokwane | R5,000 | R30,000 | 16% |
| Kimberly | R4,500 | R22,000 | 20% |

[adapted from <https://businesstech.co.za/news/business/427080/salary-vs-rent/>]

Use the information and Table 1 above to answer the questions that follow.

- 3.1.1 Identify the city with the third-lowest percentage spent on rent. (2)
- 3.1.2 Determine the range of average salary in South Africa. (2)
- 3.1.3 Calculate the mean average rent. (3)
- 3.1.4 Determine the median average salary, hence explain what the answer means. (4)



3.2 Study the extract of the payslip below and answer the questions that follow.

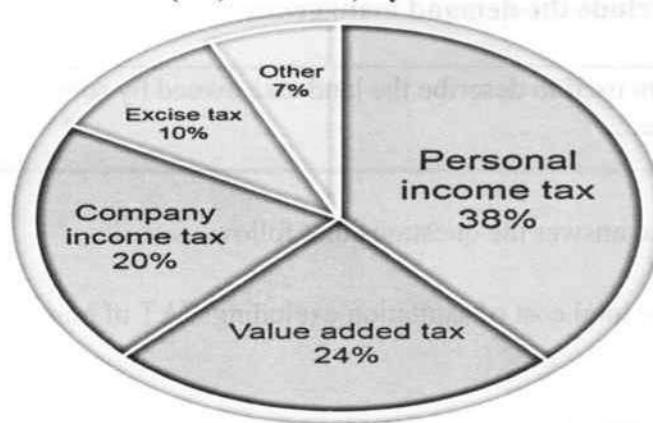
| | | | |
|-------------------------------------|--------------------|----------------------|---------------|
| Employee Name: Ms. S. Msweli | | Employee No. | 200854 |
| Department | Centre of Research | Payment date | 25.05.2023 |
| Id number | 9907115566778 | | |
| Earning | Amount | Deduction | Amount |
| Cash Salary | R41 435,90 | Total Tax | R9 369,08 |
| | | UIF E contribution | R 148,78 |
| | | MA, Discovery Health | R2 007,00 |
| | | Parking levy | R 79,65 |
| | | Vitality | R 219,06 |
| TOTAL EARNINGS | R41 435,90 | Total deductions | R11 823,45 |
| NET PAY: R _____ | | | |

[adapted from www.hr.uct.ac.za]

- 3.2.1 Define the term *gross salary* according to the given context. (2)
- 3.2.2 Determines employee's net salary for the month. (2)
- 3.2.3 In which department does the employee work? (2)

3.3 The graph below shows the National government tax collection percentage breakdown of Tax (R1,22 billion) in 2017/18 tax year.

Percentage breakdown of tax (R1,22 billion) by National Government in 2017/18



[adapted from www.statsa.gov.za/]

- 3.3.1 Identify the mathematical error on the given chart and give a possible reason for this error. (3)
- 3.3.2 Calculate the amount of company income tax collected by the government in 2017/18. (2)

[22]

QUESTION 4

- 4.1 Johannesburg Water uses an increasing block tariff for the water service. The entity currently provides 6kl for free to all residential customers and the demand management levy is charged to all customers.

ANNEXURE B shows the domestic water tariff prepayment meter. All prices in the graph exclude VAT at 15% and exclude the water demand management levy of R31,08.

Use ANNEXURE B and the information above to answer the questions that follow.

- 4.1.1 State whether the number of kilolitres consumed will represent discrete or continuous data, Give a reason for your answer. (2)
- 4.1.2 Use the graph in ANNEXURE B to calculate the total cost of consuming 28,3kl including VAT. (5)

- 4.2 The municipality charges the following sanitation tariff for private dwellings domestics.

TABLE 2: SANITATION TARIFF FOR PRIVATE DWELLINGS

| SANITATION TARIFFS: | Private Dwelling Domestic |
|---|---------------------------------------|
| ERF (m²) | 2022/2023 Tariff (R/erf/month) |
| Up to and including 300 m ² | 267,32 |
| Larger than 300 m ² to 1000 m ² | 520,38 |
| Larger than 1000 m ² to 2000 m ² | 787,24 |
| Larger than 2000 m ² | 1134,28 |
| Prices illustrated exclude the demand management levy of R274,36 & VAT@15% | |

- **ERF** is the term used to describe the land size owned by someone and registered in a deed office.

Use TABLE 2 above to answer the questions that follow.

- 4.2.1 Determine the total cost of sanitation excluding VAT of households with an ERF size of 820m². (2)
- 4.2.2 Calculate the probability as a percentage that the tariff per ERF is below R800. (3)
- 4.2.3 According to the demographic city of Johannesburg in the 2019/2020 data analysis, there were 1 035 375 households and 892 277 were using flushed toilet-public sewage. The municipality councillor indicates that 88,6 percent of the households used flush toilets in 2019/2022. Verify this statement by showing all calculations. (3)

[15]


TOTAL MARKS:75

ANNEXURE A

QUESTION 2.1

Tax Invoice

TOM GREEN HANDYMAN
 5 Mhlanga Street, White City, 4700
 Telephone:0800 *** **

| | | | |
|--|---|--------------------------|-------------------|
| Date | 06/05/2023 | Invoice number | : 0003521 |
| | | Tax Registered No | : 8530**** |
| Mr Laggon Meva 2002 White City 4700 |  | | |
| TAX INVOICE | | | |
| Quantity | Description | Unit price | Cost (\$) |
| 23.75 | Labour | 40 | 950 |
| 50 | Nails and screws | 0,80 | 40 |
| 1 | Paint and Plywood | 1000 | 1000 |
| 40 | Imported wall tiles | 14 | 560 |
| 1 | Freight | 150 | 150 |
| 1 | Sub-contractor: Tile-it | 228 | 228 |
| | | Subtotal | 2928 |
| | | Tax | 439,20 |
| | | Total due | \$3 367,20 |

Payment is due by the 10th of the Month following the date of invoice.
 Please make payments into Bank account No. 9876 **** 0321

An interest of 10% will be charged on late payments

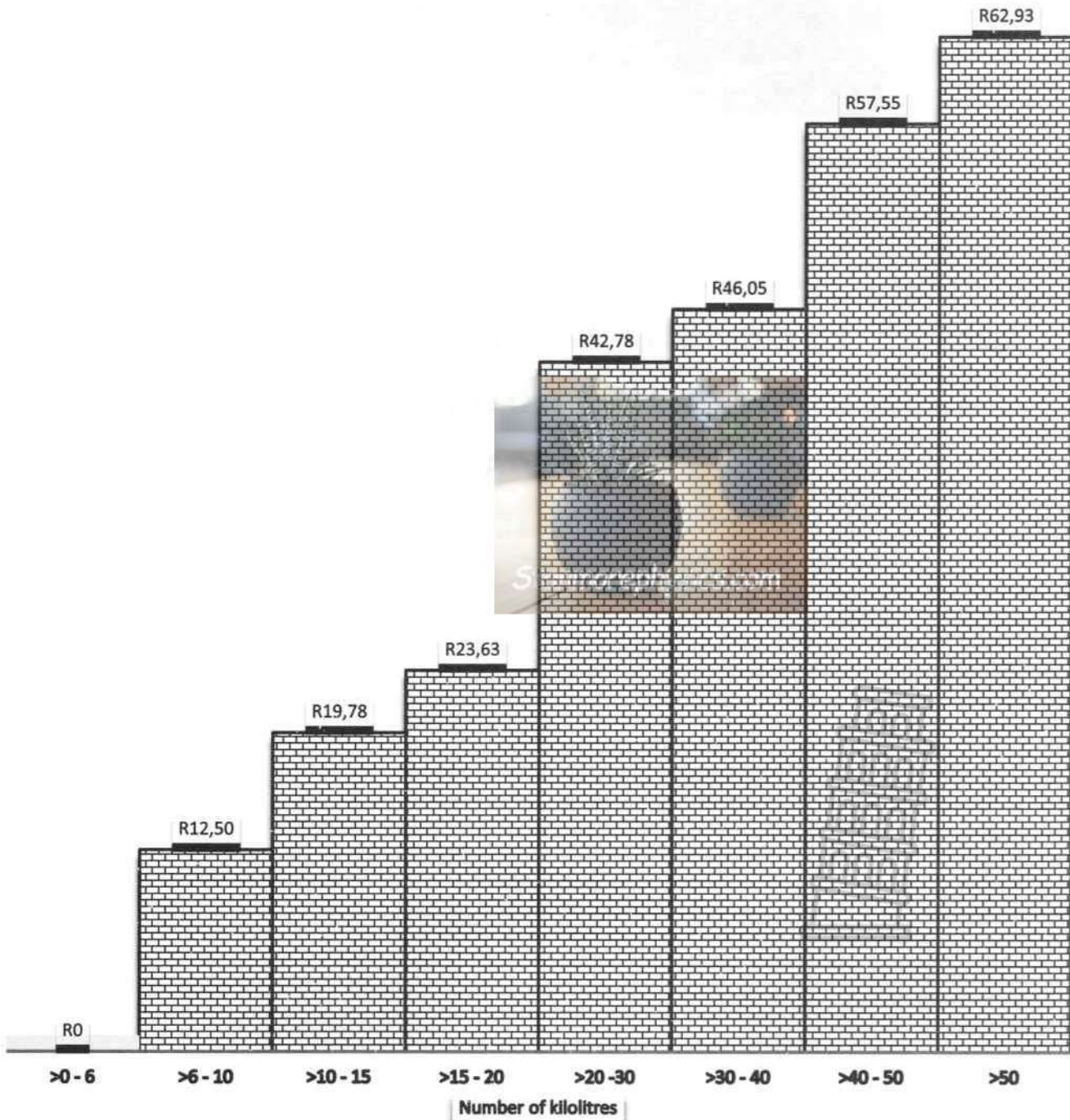
[Adapted from <https://www.pdfFiller.com>]

ANNEXURE B

QUESTION 4.1



JHB water tariff incline block per kilo litre





KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

MATHEMATICAL LITERACY P1

COMMON TEST

JUNE 2023

MARKING GUIDELINE

MARKS: 75

| SYMBOL | EXPLANATION |
|---------------|--------------------------------------|
| M | Method |
| MA | Method with accuracy |
| CA | Consistent accuracy |
| A | Accuracy (Answer) |
| C | Conversion |
| S | Simplification |
| RT/RG/RD | Reading from a table/ graph/ diagram |
| NPR | No penalty for units/rounding |
| SF | Correct substitution in a formula |
| O | Opinion/ reason/deduction/example |
| J | Justification |
| R | Rounding off/ |
| F | deriving a formula |
| E | Explanation |
| U | Units |
| AO | Answer only full marks |

This marking guideline consists of 5 pages.

| QUESTION 1 [16 MARKS] | | ANSWER ONLY FULL MARKS | |
|-----------------------|---|---|-------------|
| QUE | SOLUTION | EXPLANATION | T/L |
| 1.1.1 | Single bar graph ✓✓ A | 2A, Answer Accept: Bar graph (2) | DH L1 |
| 1.1.2 | Difference = \$108,90 - \$80,90 ✓M = \$28 ✓CA | 1M, Subtracting Correct values 1CA, Answer NPR (2) | DH L1 |
| 1.1.3 | ✓RT 98,60 : 83,09 ✓A | 1RT, Correct values 1A, Correct order. (2) | DH L1 |
| 1.2.1 | Unemployment insurance fund ✓✓ A | 2A, Answer (2) | F L1 |
| 1.2.2 | $P(\text{UIF}) = \frac{1}{2} \times 100\%$ ✓M = 50% ✓A | 1M, Probability concept 1A, Answer (2) | P L1 |
| 1.2.3 | Grocery spending = $\frac{30}{100} \times R15\ 000$ ✓M = R4 500 ✓A | 1M, Percentage concept 1A, Answer (2) | F L1 |
| 1.3.1 | R1 563 800 000 000 ✓✓ A | 2A, Answer (2) | F L1 |
| 1.3.2 | Vat collection = $\frac{25}{100} \times R1563,8\text{bn}$ ✓M = R390,95bn ✓CA | 1M, Percentage concept 1CA, Answer Accept R390 950 000 000 (2) | F L1 |
| | | | [16] |



| QUESTION 2 [22 MARKS] | | | |
|-----------------------|---|--|--------------------|
| QUE | SOLUTION | EXPLANATION | T/L |
| 2.1.1 | An interest of 10% will be charged. ✓✓RT | 2RT, Correct explanation | F L1 (2) |
| 2.1.2 | $\begin{aligned} \text{Labour} &= 40 \times 23,75 \quad \checkmark M \\ &= \$950 \end{aligned}$ | 1RT, Correct values 1M, Multiplication | F L2 (2) |
| 2.1.3 | $\begin{aligned} \checkmark O \quad \quad \quad \checkmark CA \\ \text{For security reason, } &85304412 \\ \text{OR} \\ \checkmark O \quad \quad \quad \checkmark CA \\ \text{To avoid fraud, } &85304412 \end{aligned}$ | 1O, Reason 1CA, Completed 8-digit number Accept any 4 digit combination (2) | F L4 |
| 2.1.4 | $\begin{aligned} \checkmark RT \\ \text{Amount due} &= \frac{\$3\,367,20}{\$0,70532} \quad \checkmark M \\ &= R4\,774,00 \quad \checkmark A \end{aligned}$ | 1RT, Correct Total Value 1M, Dividing by exchange rate 1A, Answer | F L3 (3) |
| 2.1.5 | $\begin{aligned} \checkmark M \\ \text{New price} &= 8,45\% \times \$40 \\ &= \$3,38 \\ &= \$3,38 + \$40 \quad \checkmark MA \\ &= \$43,38 \quad \checkmark CA \end{aligned}$ <p style="text-align: center;">OR</p> $\begin{aligned} \checkmark \checkmark MA \\ \text{New price} &= 108,45\% \times \$40 \\ &= \$43,38 \quad \checkmark CA \end{aligned}$ | 1M, Calculating the increase 1MA, Addition 1CA, Answer OR 1MA, Increasing to 108,45% 1M, Percentage concept 1CA, Answer | F L2 (3) |
| 2.2.1 | $\begin{aligned} \checkmark SF \\ \% \text{change} &= \frac{R21,02 - R6,73}{R6,73} \times 100\% \\ &= \frac{R14,29}{R6,73} \times 100\% \quad \checkmark S \\ &= 212,33\% \quad \checkmark CA \end{aligned}$ | 1SF, Correct substitution 1S, Simplification 1CA, Answer | F L2 (3) |
| 2.2.2 | $\begin{aligned} \checkmark M \quad \quad \quad \checkmark M \\ \text{Total cost} &= 60 \times 5,8 \text{ kwh} \times R21,02 \\ &= R7\,314,96 \quad \checkmark CA \end{aligned}$ | 1M, Multiplying 5,8 by 60 1M, Multiplying by R21,02 1CA, Answer | F L2 (3) |
| 2.2.3 | $\begin{aligned} \text{Standard shower head} &= 15\ell \times 10\text{min} = 150\ell \quad \checkmark M \\ \text{Low flow shower head} &= 8\ell \times 6\text{min} = 48\ell \quad \checkmark M \\ \text{Bath} &= 90\ell \quad \checkmark RT \\ \text{His statement is correct} &\quad \checkmark J \end{aligned}$ | 1M, 150 litres 1M, 48 litres 1RT, 90 litres 1J, Justification | F L4 (4) |
| | | | [22] |

| QUESTION 3 [22 MARKS] | | | |
|-----------------------|---|--|----------|
| QUE | SOLUTION | EXPLANATION | T/L |
| 3.1.1 | Rustenburg ✓✓RT | 2RT, Answer (2) | DH L2 |
| 3.1.2 | Range = R38 00 – R22 000 ✓RT = R16 000 ✓CA | 1RT, Range concept 1CA, Answer (2) | DH L2 |
| 3.1.3 | Mean = $\frac{6500+8000+10000+7500+4500+5600+5000+5500+5000+4500}{10}$ ✓M = $\frac{62\ 100}{10}$ ✓MA = R6 210 ✓CA | 1M, Adding all correct values 1MA, Dividing by 10 1CA, Mean (3) | DH L2 |
| 3.1.4 | 22000;28000;29000;30000;30000;31000;32000;33000;37000;38000 ✓ Median = $\frac{R30\ 000+R31\ 000}{2}$ ✓MA = $\frac{R61\ 000}{2}$ = R30 500 ✓A It means half (50%) of the South African workers earns above/below R30 500. ✓J | 1M, Arrangement 1MA, Calculating median 1A, Median 1J, Justification (4) | DH L4 |
| 3.2.1 | Gross salary is the salary earned by Ms Msweli before deductions ✓✓E | 2E, Correct definition (2) | F L1 |
| 3.2.2 | Net = R41 435,90 – R11 823,45 ✓RT = R 29 612,39 ✓CA | 1RT, Subtracting correct values 1CA, Answer (2) | F L2 |
| 3.2.3 | Centre of research ✓✓RT | 2RT, Answer (2) | F L1 |
| 3.3.1 | Percentages does not add up to 100% on pie chart, ✓✓A rounding of percentage. ✓E | 2A, Answer 1E, Explanation (3) | DH L4 |
| 3.3.2 | Company Income tax = 20% × R1,22 billion ✓M = R0,244 billion ✓CA | 1M, Multiplication of correct values 1CA, Answer (2) | DH L2 |
| | | [22] | |

| QUESTION 4 [15] | | | |
|-----------------|--|---|----------|
| QUE | SOLUTION | EXPLANATION | T/L |
| 4.1.1 | Continuous. ✓A Number of litres are measured ✓E OR Histogram represents continuous data ✓E | 1A, Answer 1E, Explanation OR 1E, Explanation (2) | DH L1 |
| 4.1.2 | $\begin{aligned} \text{Total cost} &= R31,08 + (6 \times 0) + (4 \times R12,50) + (5 \times R19,78) \\ &+ (5 \times R23,63) + (8,3 \times R42,78) \\ &= R31,08 + R0 + R50 + R98,90 + R48,15 + R355,074 \\ &\quad \checkmark CA \\ &= R653,204 \times 115\% \checkmark M \\ &= R751,18 \checkmark CA \end{aligned}$ | 1M, Adding water demand levy 1M, Adding correct rates 1CA, Amount before VAT 1M, Adding VAT (15%) 1CA, Total cost (5) | F L3 |
| 4.2.1 | $\begin{aligned} \text{Total cost} &= R274,36 + R520,38 \checkmark RT \\ &= R 794,74 \checkmark CA \end{aligned}$ | 1RT, Adding correct values 1CA, Answer (2) | F L2 |
| 4.2.2 | $\begin{aligned} P(\text{erf} < 800\text{m}^2) &= \frac{3}{4} \times 100\% \checkmark A \\ &= 75\% \checkmark CA \end{aligned}$ | 1A, Numerator 1A, Denominator 1CA, Answer (3) | P L2 |
| 4.2.3 | $\begin{aligned} \text{Percentage} &= \frac{892\,277}{1\,035\,375} \times 100\% \checkmark MA \\ &= 86,18\% \\ \text{His statement is incorrect.} &\checkmark J \end{aligned}$ | 1M, Dividing correct values 1MA, Percentage concept 1J, Justification (3) | HD L4 |
| | | [15] | |
| | | TOTAL MARKS: 75 | |

