higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(First paper)

NQF LEVEL 4

(10401034)

14 February 2025 (X-paper)
09:00–12:00

Non-programmable calculators may be used.

This question paper consists of 10 pages and 2 annexures.

011Q1S2514

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
MATHEMATICAL LITERACY
NQF LEVEL 4
(First paper)
TIME: 3 HOURS
MARKS: 150

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a new page.
5. Show all the calculations clearly.
6. Round off the answers correctly according to the given context. In all cases where the context is not specific, round off the answers to two decimal places.
7. Answer QUESTIONS 3.1.1, 4.1.3 and 5.1.5 on the attached ANSWER SHEET. Write your EXAMINATION NUMBER and CENTRE NUMBER on each ANSWER SHEET, detach it from the question paper and hand it in with the ANSWER BOOK.
8. Indicate units of measurement, where applicable.
9. Diagrams are not necessarily drawn to scale.
10. Use only a black or blue pen.
11. Write neatly and legibly.

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QUESTION 1

1.1 Rearrange the following in ascending order.

$$0.4; \frac{7}{15}; 35\%; \frac{3}{7}$$ (2)

1.2 Your sister is struggling with her NC(V) L2 school work and got the following marks in three different tests. Which subject does your sister struggle with most according to the below scores?

SUBJECT	SCORE
Mathematical Literacy	$\frac{14}{23}$
Applied Accounting	$\frac{12}{30}$
Financial Management	$\frac{15}{41}$

(2)

1.3 Calculate the following without using a calculator. Show all calculations.

1.3.1 $40 - [20 - \{14 - (16 - 6 \times 4 - 2)\}]$ (3)

1.3.2 $$\frac{\frac{2}{3} - \frac{1}{4}}{5 \times 1\frac{1}{2}}$$ (4)

1.4 The price of product A increases from R15 to R30, and the price of product B increases from R30 to R50. Which product has the largest percentage increase? (5)

1.5 The distance from Bloemfontein to Kimberly is 165 km. The cost of petrol is R24,96 per litre. How much will it cost for the car that travels 12 km per litre? (4)

1.6 Convert $5cm^2$ to mm^2. (1)

1.7 Three partners, Bushy, Manibi and Lemmy, invest money in a small business. The amounts they invest are R10 000, R12 000 and R6 000, respectively. At the end of the first year of trading, the total profit of the business was R14 350. They each receive profits in proportion to their investment. How much does each partner receive? (6)

1.8 A petrol tanker started pumping fuel at a filling station at 5:02 pm and completed at 19:15. Determine the time taken to complete the pumping. (3)

[30]

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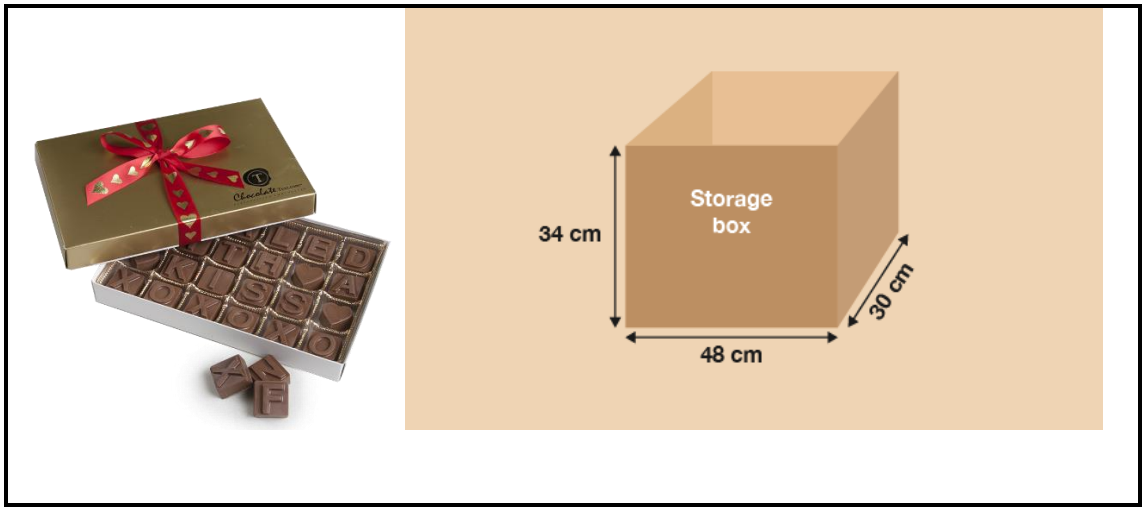
QUESTION 2

2.1 You are packing boxes of chocolates. Each chocolate box measures 23 cm long by 15 cm wide by 4 cm high and you are packing them into a storage box with the effective internal dimensions of 48 cm long, 30 cm wide and 34 cm high.

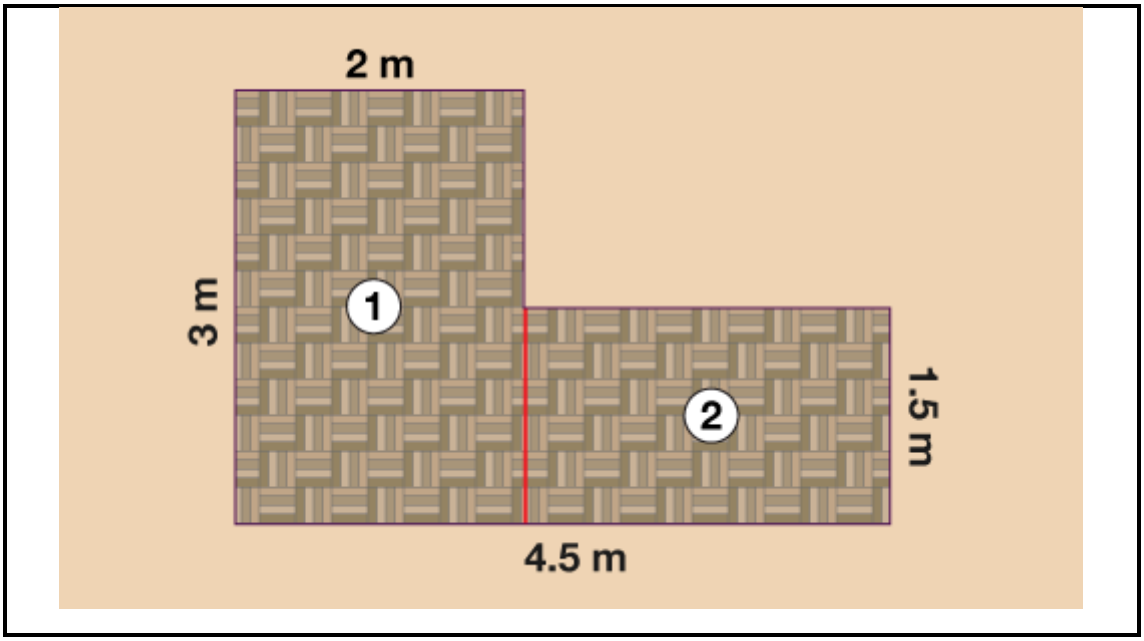


[Source: *https://images.app.goo.gl/S37uGsFqmumLbRe96*]

2.1.1 Calculate the capacity of the storage box in cm^3. (2)

2.1.2 If the chocolate boxes need to be packed flat (horizontally), what is the maximum number of chocolate boxes that can be packed in one storage box? (5)

2.2 An L-shaped floor has dimensions as shown below. You want to tile the floor with tiles that measure 0,25 m by 0,25 m. The cost of one tile is R10,40.



[Source: *https://images.app.goo.gl/S37uGsFqmumLbRe96*]

2.2.1 What is the shape of the tiles to be used? (1)

2.2.2 Calculate the total number of tiles needed to tile the whole floor.

Formula: Area = L^2 and Area = L × B (10)

2.2.3 Determine the cost of the tiles calculated in QUESTION 2.2.4 above. (2)

2.2.4 Tiles come in boxes. Each box contains 9 tiles. How many boxes will be needed to complete the floor? (3)

2.3 You are given a large box that can hold 3,5 kg maximum weight. If each small box of biscuits weighs 200 g, how many small boxes can you pack into a large box without exceeding the maximum weight? (2)

2.4 A manager at college organised a workshop for 50 people. She has projected that each person will have 3 glasses of fruit juice. If she serves juice in cylindrical glasses with a height of 18cm and a diameter of 5cm, how many litres of juice must she procure for the workshop? (5)

[30]

QUESTION 3

3.1 An office cabinet was bought on credit with a monthly repayment of R1 600 and interest rate of 24% per annum. The cash price of the cabinet is R8 000.

Use the table below to answer the following questions:

Loan Repayment (in rand)

	Interest on outstanding balance	Outstanding total	Payment	Remaining balance
Start of loan period	R0,00	**R8 000**	R0,00	**R8 000**
End of 1st month	***a***	R8 160	R1 600	R6 560
End of 2nd month	R131,20	***b***	R1 600	R5 091,10
End of 3rd month	R101,82	R5 193,02	***c***	R3 593
End of 4th month	R71,86	R3 664,18	R1 600	***d***

3.1.1 Use ANNEXURE A to complete the table above for loan repayment (round to the nearest cent). (4)

3.1.2 What is the total interest paid during the first 3 months? (2)

3.1.3 Calculate the amount of the remaining instalment to pay off the loan at the end of the 6th month. (4)

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3.2 The table below indicates electricity tariff of Manga Ung Metro Municipality for the period of December 2023 to March 2024.

Electricity Tariff

Blocks	Tariff: Summer	Price per kWh
Block 1	0-50 kWh	R171,10
Block 2	51- 350 kWh	R182,09
Block 3	>350 kWh	R248,47

3.2.1 How much would you pay per kWh if you used 40 kWh of electricity? (2)

3.2.2 Calculate the cost of 75 kWh of electricity. Round off your answer to the nearest cent. (3)

3.2.3 Show that if you used 300 kWh of electricity, you would pay approximately R54 100 (6)

3.2.4 Calculate the cost of using 500 kWh of electricity. (6)

3.3 The college bought a printer for R5 668,07 VAT inclusive. Calculate the price without VAT. VAT is charged at 15%. (3)

[30]

QUESTION 4

4.1 A vendor borrowed R25 000 from a friend. A vendor agreed to pay back R3 125 every month. Use the table below to answer the following questions:

Monthly Balance

Months	0	1	2	3	**A**	5	6	7	8
Monthly balance	25000	21875	18750	15625	**B**	9375	6250	3125	**C**

4.1.1 Use the information on the table to extend the numerical patterns by completing the missing values of A, B and C.

Write only the answer next to the letter (A–C) in the ANSWER BOOK. (3)

4.1.2 How many months will it take the vendor to pay off the debt? (2)

4.1.3 Make use of the above table to draw a line graph on the ANNEXURE A. Give the line graph a suitable heading. Label the horizontal and vertical axes. (5)

4.1.4 Derive a formula to calculate the monthly outstanding amount. (3)

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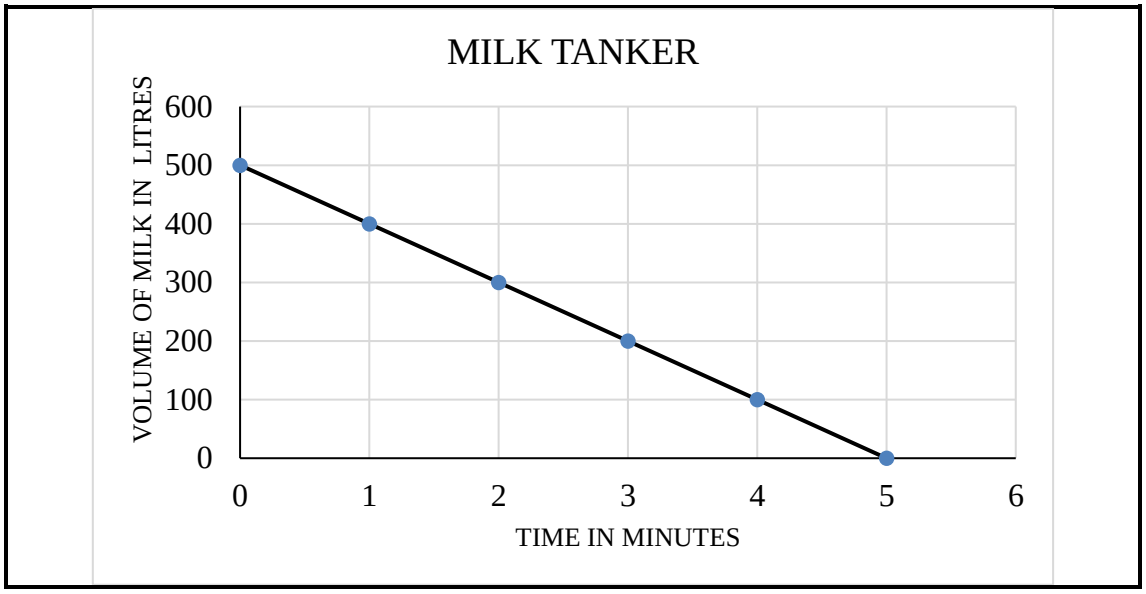
4.1.5 Is the relationship between the monthly balance and number of months to pay a debt direct or indirect? Give a reason for you answer. (2)

4.1.6 Which variable is dependent? (1)

4.2 A large milk tanker holds a certain number of litres of milk. It empties milk into a cooling machine at a rate shown by the graph below. Use the graph below to answer the questions that follow:



4.2.1 How much milk does the milk tanker hold?

4.2.2 How long does it take to empty the tanker?

4.2.3 How much milk is left in the tanker after 4 minutes?

4.2.4 How long does it take to release 300 litres?

(4 × 1) (4)

4.3 An Uber driver charges a callout fee of R30,00 and R15,00 per km travelled.

4.3.1 Write down the formula to calculate the total cost of travel. (3)

4.3.2 Determine the first three terms of the pattern. (3)

4.3.3 Identify the constant difference in the pattern. (2)

4.3.4 Calculate the distance travelled if R150,00 was paid. (2)

[30]

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QUESTION 5

5.1 The table below shows the 2023 prices for Inland 93 Octane petrol and Coast 95 Octane petrol in cents per litre from January until June 2023. Use the table to answer the questions that follow:

South African Fuel Price History in cents per litre

MONTH	PETROL LEADED REPLACEMENT	
	Inland 93 Octane Petrol (cents/ litre)	**Coast 95 Octane Petrol (cents/ litre)**
January	2110	2075
February	2138	2103
March	2265	2230
April	2264	2225
May	2301	2262
June	2230	2191

5.1.1 Calculate the mean price of Inland 93 Octane petrol. (2)

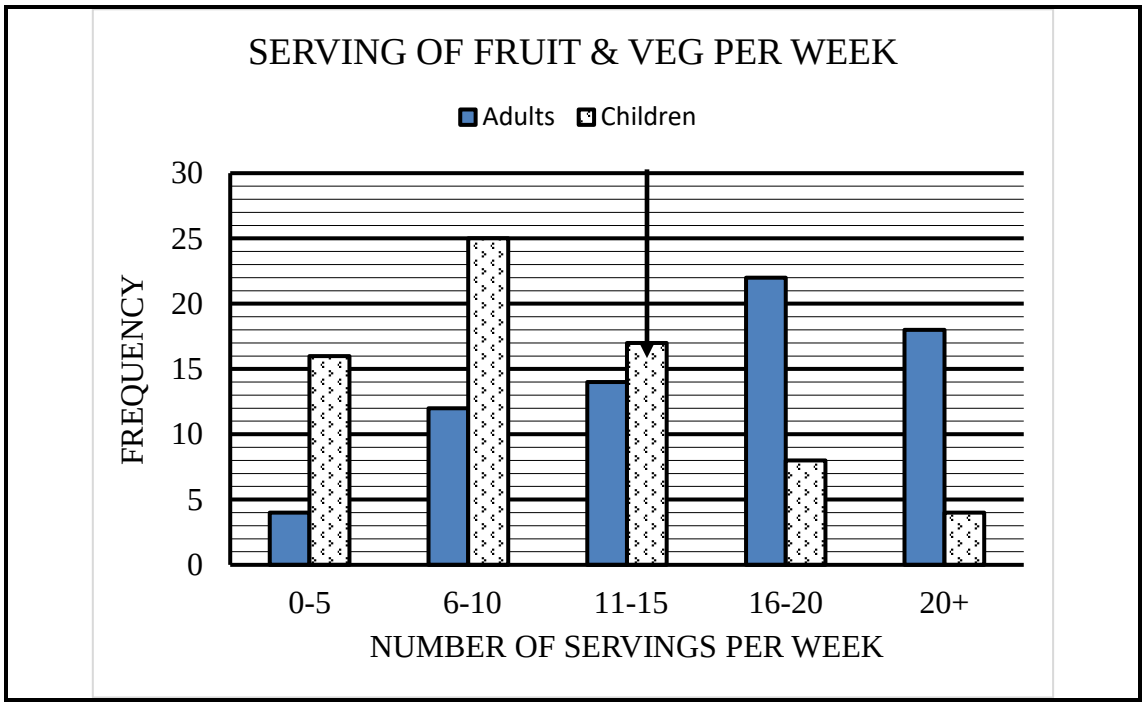
5.1.2 Calculate the mean price of Coast 95 Octane petrol. (2)

5.1.3 Find the median of both Inland 93 and Coast 95 Octane petrol respectively. (4)

5.1.4 Which measure of central tendency in QUESTION 5.1.1, QUESTION 5.1.2 and QUESTION 5.1.3 is the best to use and why? (2)

5.1.5 Draw a double bar graph on ANNEXURE B to represent both Inland 93 and Coast 95 Octane petrol and label it accordingly. (5)

5.2 Use the graph provided below to answer the questions that follow.



5.2.1 How many adults and children combined eat between 0 and 5 servings of fruit and vegetables per week? (1)

5.2.2 What is the difference between the number of children who eat between 6 – 10 servings of fruit and vegetables per week and children who eat 20+ servings of fruit and vegetables per week? (1)

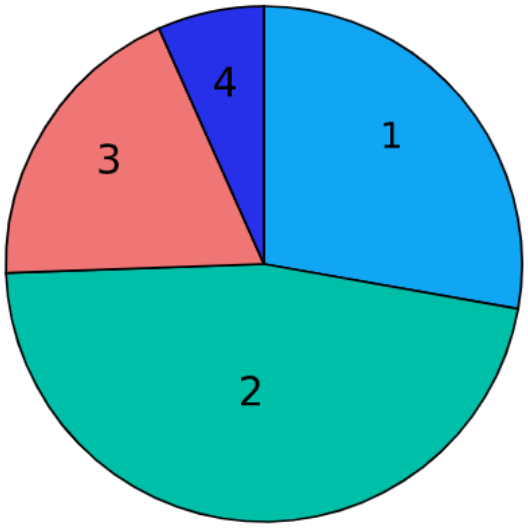
5.2.3 What is the highest category of servings of fruit and vegetables eaten per week by adults? (1)

5.2.4 What is the ratio of adults to children who have 0–5 servings? (2)

5.2.5 The 16–20 serving for children is what percentage of the serving for adults? (1)

5.2.6 Calculate the percentage decrease for the 0–5 category to the 20+ category for children. (2)

5.3 A survey was done asking 90 people how many bathrooms were in their home. Freddie drew a pie chart to display the results of this survey.



5.3.1 What number of bathrooms was most common in this survey? (1)

5.3.2 Calculate the number of people who have 1 bathroom in their house, given that the angle is 100° in the pie chart. (2)

5.3.3 Approximately how many people have 3 and 4 bathrooms? (1)

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5.4 A survey asked college Level 2 and Level 4 students if they could study abroad, would they choose London, Pairs, or Madrid. The results appear below:

College Level	Foreign Country for Study			
	London	Paris	Madrid	Total
L2	90	80	70	240
L4	80	95	95	270
Total	170	175	165	510

5.4.1 What is the probability that a student chosen at random is not a level 2 student?

5.4.2 What is the probability that a student chosen at random is a level 4 and selected London?

5.4.3 What is the probability that a student chosen at random is a level 2 and selected Madrid?

(3 × 1) (3)

[30]

TOTAL: 150

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EXAMINATION NUMBER: | | | | | | | | | | | | | |

CENTRE NUMBER: | | | | | | | | | | | |

ANNEXURE A

ANSWER SHEET

3.1.1

	Interest on outstanding balance	Outstanding total	Payment	Remaining balance
Start of loan period	R0,00	**R8 000**	R0,00	**R8 000**
End of 1st month	*a* ….	R8 160	R1 600	R6 560
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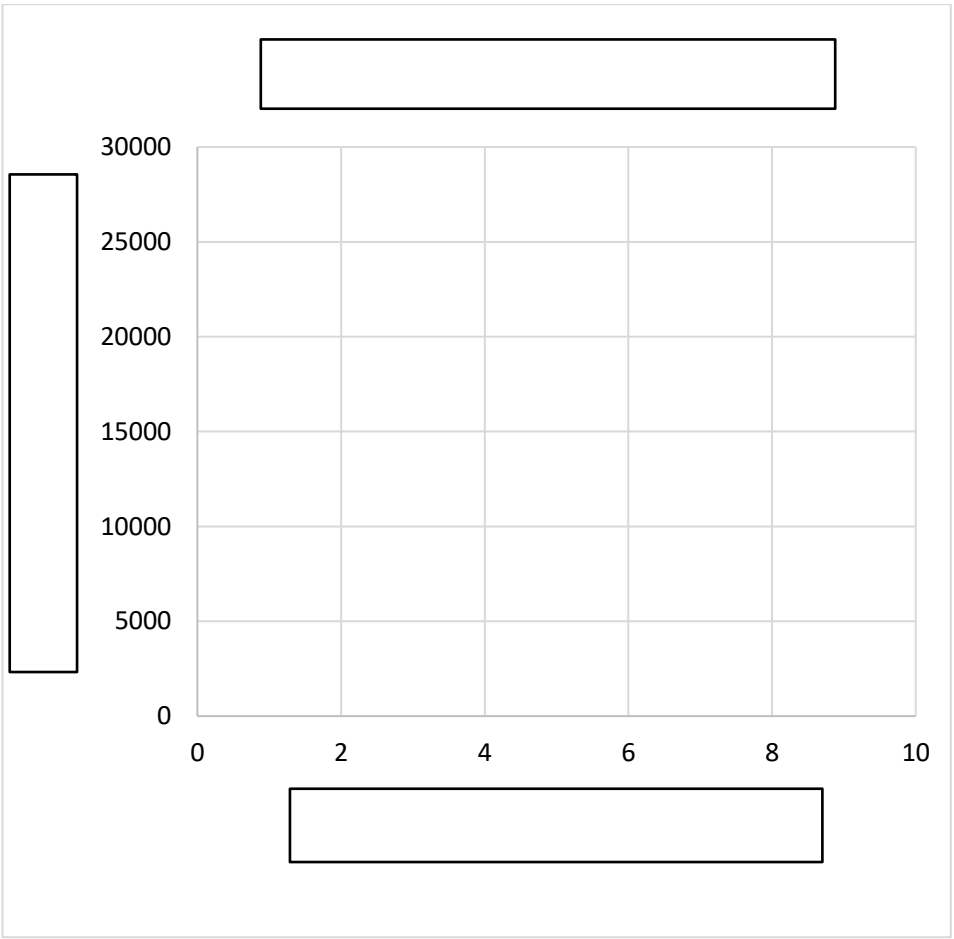
End of 3rd month	R101,82	R5193,02	*c* ...	R3 593
End of 4th month				*d* ...

(4)

4.1.3



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EXAMINATION NUMBER: | | | | | | | | | | | | | |

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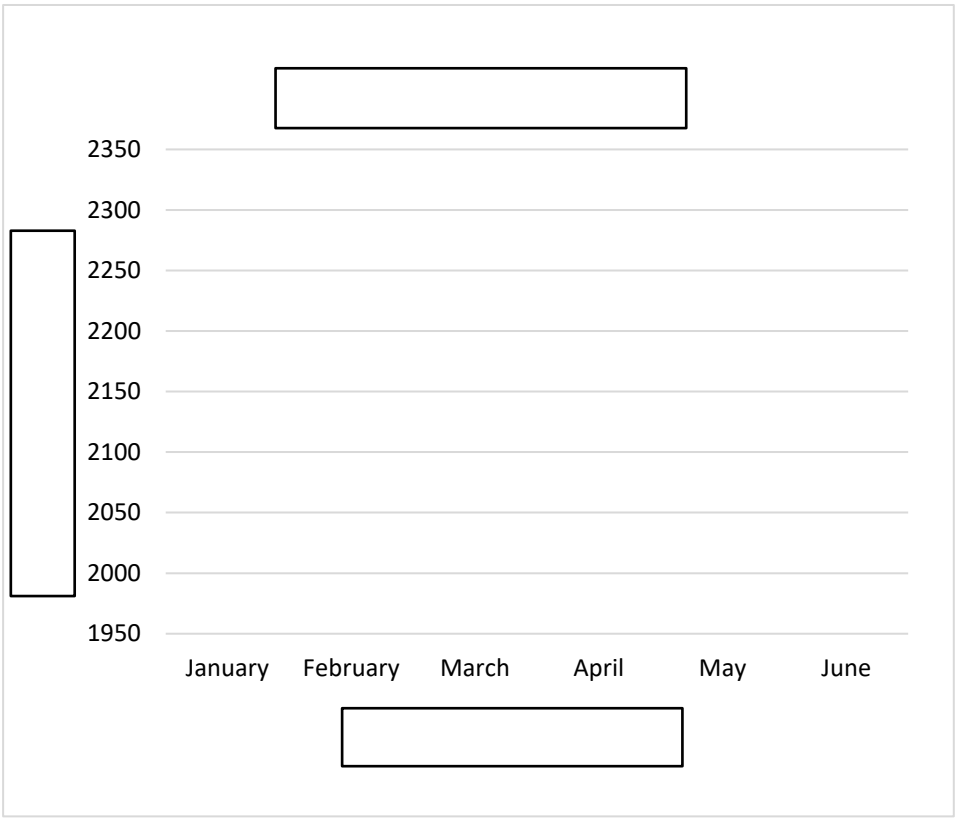
ANNEXURE B

ANSWER SHEET

5.1.5



(5)

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