basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION

MATHEMATICAL LITERACY P1

2015

MARKS: 150

TIME: 3 hours

This question paper consists of 12 pages, 3 annexures and 1 answer sheet.

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of FIVE questions. Answer ALL the questions.

2.   Use ANNEXURE A to answer QUESTION 1.2, ANNEXURE B for QUESTION 3 and ANNEXURE C for QUESTION 4. Answer QUESTION 4.7 on the ANSWER SHEET. Write your centre number and examination number in the spaces on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.

3.   Number the answers correctly according to the numbering system used in this question paper.

4.   Start EACH question on a NEW page.

5.   You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

6.   Show ALL the calculations clearly.

7.   Round off ALL final answers appropriately according to the context, unless stated otherwise.

8.   Indicate units of measurement, where applicable.

9.   Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10.   Write neatly and legibly.

QUESTION 1

1.1

Mrs Venter has a prepaid electricity meter in her home. The municipality uses sliding scale tariffs for prepaid electricity. The more electricity you purchase in a calendar month the higher the subsequent tariff becomes.

TABLE 1 below shows the standard sliding scale tariffs per month for prepaid electricity.

TABLE 1: 2014/2015 Standard sliding scale tariffs per month for prepaid electricity

NUMBER OF UNITS	TARIFF (INCLUDING 14% VAT)
The first 500 kWh	R1,0746 per unit
501 to 1 000 kWh	R1,2208 per unit
1 001 to 2 000 kWh	R1,3109 per unit
2 001 to 3 000 kWh	R1,4809 per unit
More than 3 000 kWh	R1,6048 per unit

[Source: citypower.co.za]

1 unit = 1 kWh

The following photographs of Mrs Venter's electricity meter show the meter readings (in kWh) before and after her first purchase of electricity for the month of May.

02/05/15	02/05/15
Before purchase	**After purchase**

1.1.1   Mrs Venter purchased R360 worth of electricity on 2 May 2015.

(a)   Show that the meter reading after the purchase is CORRECT.   (3)

(b)   Calculate the VAT amount on this electricity purchase.   (3)

1.1.2   On 25 May 2015 the meter reading was 250,7 kWh. How many kWh units of electricity were used from the day of purchase up to this date?   (2)

1.1.3   On 1 June 2015 Mrs Venter purchased 560 units of electricity. Calculate the cost of her purchase.   (6)

1.1.4   If the prepaid electricity tariffs are due to increase by 13,5% on 1 July 2015, calculate the new tariff per unit for units between 2 001 and 3 000 kWh.   (3)

1.2 | A few years ago Mrs Yengopal's company bought a car on a special purchase agreement. No deposit was paid and the payment plan required fixed monthly instalments over five years and a balloon (residual) amount as a final 61st payment. A balloon (residual) amount is a lump sum owed to the financier at the end of the special purchase agreement after regular fixed monthly repayments have been made.

The company receives a tax invoice as well as an updated bank statement every month. ANNEXURE A shows the tax invoice for 5 September 2014.

    1.2.1   Use ANNEXURE A to answer the following questions.

        (a)   How many fixed monthly instalments are still to be paid from the date of the invoice until the expiry date of the special purchase agreement? (2)

        (b)   Identify the arrears amount as reflected on the invoice. (2)

        (c)   Express the monthly interest given on the invoice as a percentage of the monthly fixed instalment. (3)

        (d)   Determine the total amount the company would have paid for the car (including the residual amount) at the end of the period. (4)

    1.2.2   TABLE 2 shows the bank statement the company received together with the tax invoice. (Some of the details have been omitted.)

TABLE 2: Bank statement for the period 2014/08/06 to 2014/09/05

TRANSACTIONS	DATE	DEBITS (DR)/ CREDITS (CR)	OUTSTANDING CAPITAL BALANCE
Opening balance	2014/08/06		...
Debit order	2014/08/20	R4 249,78 CR	R140 446,50 DR
Interest	2014/08/20	R1321,21 DR	R141 767,71 DR
Service fee	2014/08/20	*R57,00 DR	R141 824,71 DR
Closing balance	**2014/09/05**		**R141 824,71 DR**
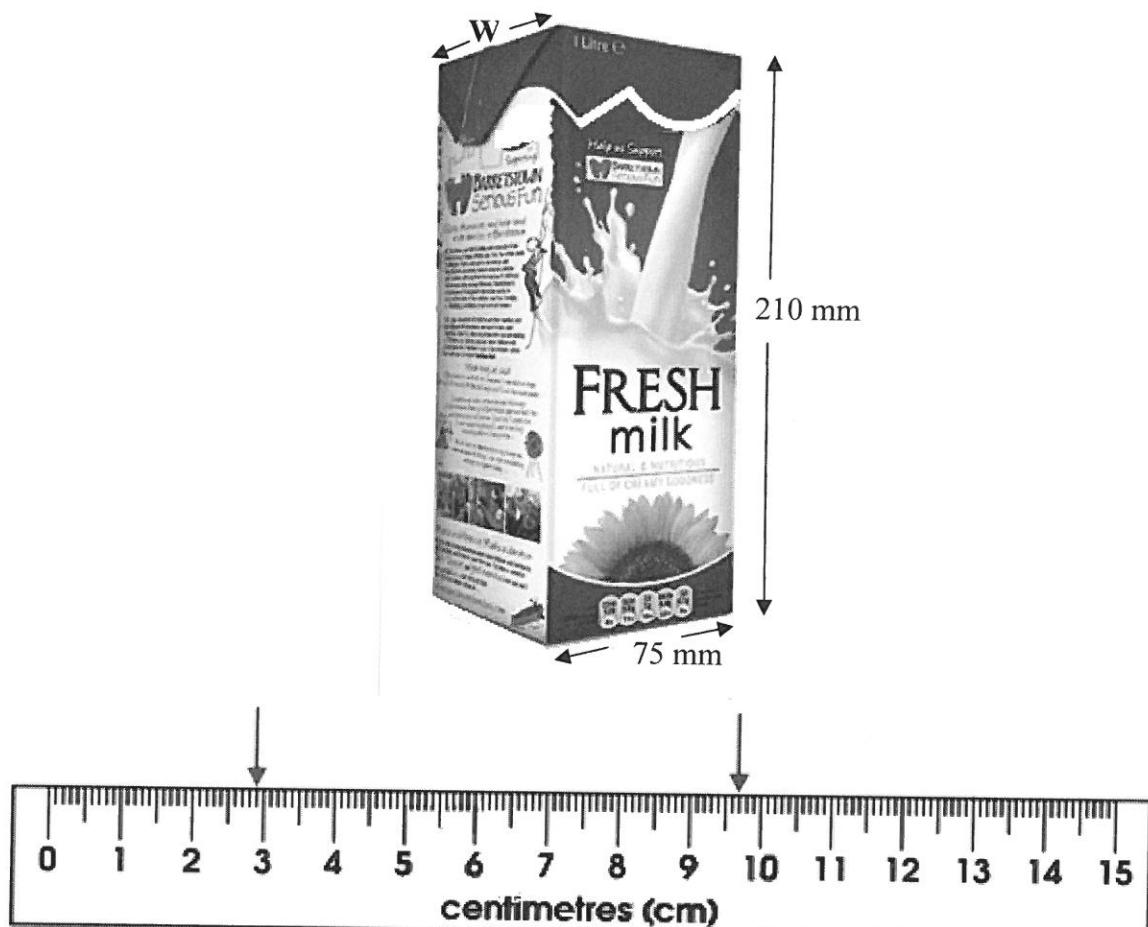
   *Transaction includes VAT (14%).

        (a)   Calculate the opening balance on 6 August 2014. (3)

        (b)   Identify the transaction on the bank statement that is VAT inclusive. (2)

        (c)   Explain, in words, how the closing balance on this statement was calculated. (3)

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QUESTION 2

2.1   Freda uses a recipe that requires milk. Below is a picture of a rectangular milk carton with some of the measurements shown and also a diagram of a ruler showing the width of the carton.

Milk carton

210 mm

75 mm

The distance indicated between the two arrows on the ruler represents the width of the carton.

You may use the following formulae:

Volume of a rectangular prism = length × width × height
Area of a rectangle = length × width

2.1.1   Explain the term *capacity*.   (2)

2.1.2   Read off the width (in mm) of the carton.   (2)

2.1.3   Calculate the volume (in mm^3) of the carton.   (3)

2.1.4   The four sides of the carton are printed with the producer's logo and information about milk. The expiry date is printed on top of the carton. There is no printing on the bottom of the carton.

Determine the total surface area (in cm²) of the carton that can be used for printing.   (5)

2.2   Freda decides to make two pap tarts at the same time. She uses the recipe (for one pap tart) below that she received from a friend.
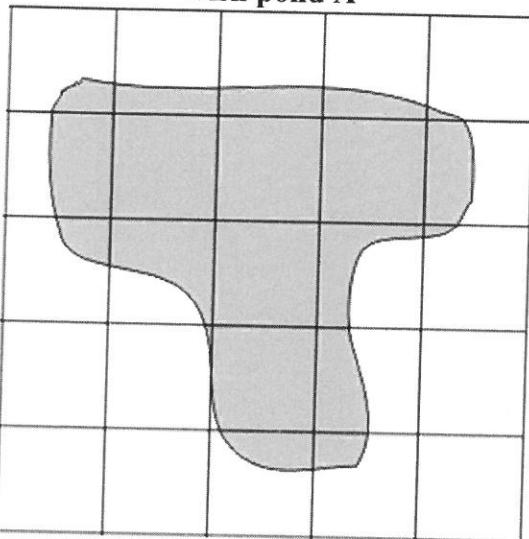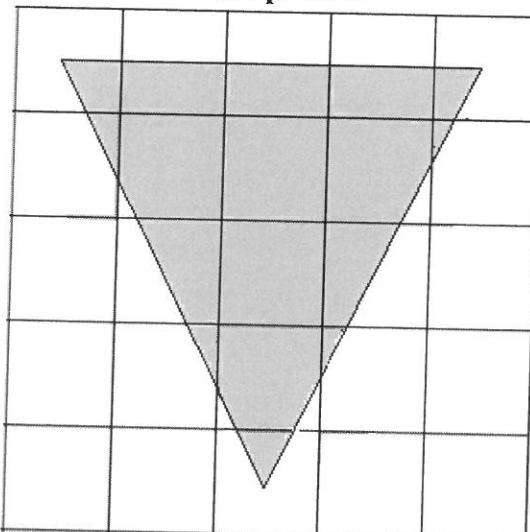
Pap tart	**Method**
	Prepare the maize pap using the milk, stock, salt and maize meal. Let the pap simmer for 30 minutes. Add the polony to the pap. Add the cheese as a top layer on the pap. Bake the tart in a preheated oven at 180 °C for about 15 minutes. Let the pap tart stand for about 10 minutes to allow it to set before serving.
Ingredients (for ONE tart) 125 mℓ milk 720 mℓ chicken stock $\frac{1}{2}$ teaspoon salt 150 g coarse maize meal 2 packets polony, diced 4 cups of grated cheese	1 000 mℓ = 4 cups

2.2.1   How many cups of milk is required to make TWO pap tarts?   (2)

2.2.2   Calculate the total volume (in mℓ) of the liquid ingredients needed for TWO pap tarts.   (2)

2.2.3   Convert the mass of the maize meal required for TWO pap tarts to kilogram.   (2)

2.2.4   Freda started making the two pap tarts at 11:20 and served the tarts at 12:30, directly after it had set.

Determine the extra time that she took to prepare the two pap tarts.   (3)

2.2.5   Freda e-mailed the recipe for the pap tart to her friend in London, but converted the temperature to Fahrenheit (°F).

Convert the temperature of 180 °C to °F.

You may use the following formula:

Temperature (in °F) = temperature (in °C) × 1,8 + 32   (2)

2.3 | Manchu wants to build fishponds. He draws the top view plans of two fishponds on squared paper as indicated in the diagrams below. The shaded areas represent the top surface areas of the fishponds.

Fish pond A   **Fish pond B**

Each square block represents 1 m².

2.3.1   Determine the approximate top surface area (in m²) of fishpond **A**. Show ALL calculations.

(3)

2.3.2   Fishpond **B** has a top surface area of exactly 8 m². Soil is removed to a uniform depth of 76 cm to make the pond. Determine the volume (in m^3) of the soil removed.

You may use the following formula:

Volume of the pond = top surface area × uniform depth

(3)

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QUESTION 3

Mr Nass does maintenance work at the Nelson Mandela Bay Stadium. He uses his private vehicle to travel to the stadium. The layout plan of a section of the stadium complex is shown on ANNEXURE B.

Use ANNEXURE B to answer the following questions.

3.1   Which view of the stadium complex is given on the layout plan?   (2)

3.2   Name the possible vehicle gates that Mr Nass could pass through to park his vehicle in Prince Alfred Park.   (3)

3.3   Name the access road leading to gate G10.   (2)

3.4   If a person enters though Pedestrian gate BC, determine on which side he will find Imatu Park.   (2)

3.5   Identify the zone(s) that are located north-west of Imatu Park.   (2)

3.6   The assembly points on three sides of the stadium are shown on the plan. Write down the name of the assembly point on the western side of the stadium using the same type of labels as used for the other assembly points.   (2)

3.7   Determine:

        3.7.1   The number of vehicle gates at the stadium complex that are NOT shown on this layout plan (all the gates are numbered from G1 to G13)   (2)

        3.7.2   The general direction of Gate CD from Lake Side   (2)

3.8   If ONE of the lifts of the stadium is faulty, determine the probability that the faulty lift will be located on the western side of the stadium. Express the probability as a percentage rounded off to ONE decimal place.   (3)

3.9   Briefly explain why medical aid centres are necessary for a stadium.   (2)
                                                                                         [22]

QUESTION 4

Keano is a rugby supporter that followed the 2014 Rugby Championships. He was disappointed that the South African team finished second on the log. He analysed the results as shown in TABLE 3 on ANNEXURE C. The country where the game takes place is called the host country and this country appears first on the results table. The host country's results are also mentioned first.

Use ANNEXURE C to answer the following questions.

4.1   Name the stadium and city where the South African team beat Australia.   (2)

4.2   Which country hosted the game that had the biggest difference in scores?   (2)

4.3   Determine how many times the one team scored more than double the points scored by the other team.   (2)

4.4   Calculate the probability (in simplified fraction form) of randomly choosing a game that was played in South Africa.   (3)

4.5   Which country's team lost their host game in September?   (2)

4.6   Use the points scored by the South African team to answer the following questions.

      4.6.1   Arrange the points scored in descending order.   (2)

      4.6.2   Hence, calculate:

          (a)   The mean points scored   (3)

          (b)   The median points scored   (2)

          (c)   The range of the points scored   (2)

          (d)   The modal points scored   (2)

4.7   The line graph on the ANSWER SHEET shows the points scored by the South African team. Draw another line graph on the same grid to represent the points scored against the South African team.   (6)

4.8   Use the graph or the table to answer the following questions.

      4.8.1   On which date was the difference between the points scored the biggest?   (2)

      4.8.2   How many days lapsed between the second and third games played?   (2)

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QUESTION 5

5.1

The petrol price is determined by the Department of Minerals and Energy. On the first Wednesday of every month the petrol price is fixed for a month.

TABLE 4 below shows the petrol price (in cents per litre) from January 2014 to September 2014 for both unleaded (93 octane and 95 octane) petrol and lead-replaced petrol (LRP).

TABLE 4: Petrol price (in cents per litre) from January 2014 to September 2014

Date of Price Fixing	Inland Price			Coastal Price		
	Unleaded		LRP	Unleaded		LRP
	93 octane	95 octane	93 octane	93 octane	95 octane	95 octane
3 September	1341	1366	1341	1317	1325	1325
6 August	1408	1433	1408	1384	1392	1392
2 July	1408	1433	1408	1384	1392	1392
4 June	1379	1402	1379	1355	1361	1361
7 May	1401	1424	1401	1377	1383	1383
2 April	1416	1439	1416	1392	1398	1398
5 March	1411	1432	1411	1391	1395	1395
5 February	1375	1396	1375	1355	1359	1359
1 January	1336	1357	1336	1316	1320	1320

[Source: www.aa.co.za]

5.1.1   On which date was the coastal price of 93 octane unleaded petrol fixed at its lowest? (2)

5.1.2   During which month was the price of 95 octane unleaded petrol the highest? (2)

5.1.3   Determine the difference between the inland price and the coastal price per litre of 93 octane unleaded petrol on 1 April 2014. (3)

5.1.4   During which month did the price of 93 octane unleaded petrol remain unchanged? (2)

5.1.5   Between which two consecutive months was the decrease in the inland price of 93 octane unleaded petrol the greatest? (2)

5.1.6   Determine the percentage change in the coastal price of 93 octane LRP petrol between May 2014 and June 2014. Round off your answer to TWO decimal places.
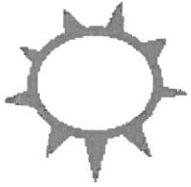
You may use the following formula:

$$\text{Percentage change} = \frac{\text{Difference in price}}{\text{Initial price}} \times 100\%$$

(4)

5.2   Mr Mthembu has to go on a business trip. He plans to stay in Barberton for one day and in East London for two days. He obtains a weather forecast for the two towns to help him decide what clothes he would need for his trip. A summary of the information he obtained is given below with the minimum and maximum temperatures given in degrees Celsius.

Three-day weather forecast for Barberton

Friday – 25/09/2015	Saturday – 26/09/2015	Sunday – 27/09/2015
32°/17°	33°/15°	18°/13°
Rain: 0%	Rain: 0%	Rain: 50%

Three-day weather forecast for East London

Saturday – 26/09/2015	Sunday – 27/09/2015	Monday – 28/09/2015
18°/11°	15°/13°	21°/12°
Rain: 20%	Rain: 80%	Rain: 100%
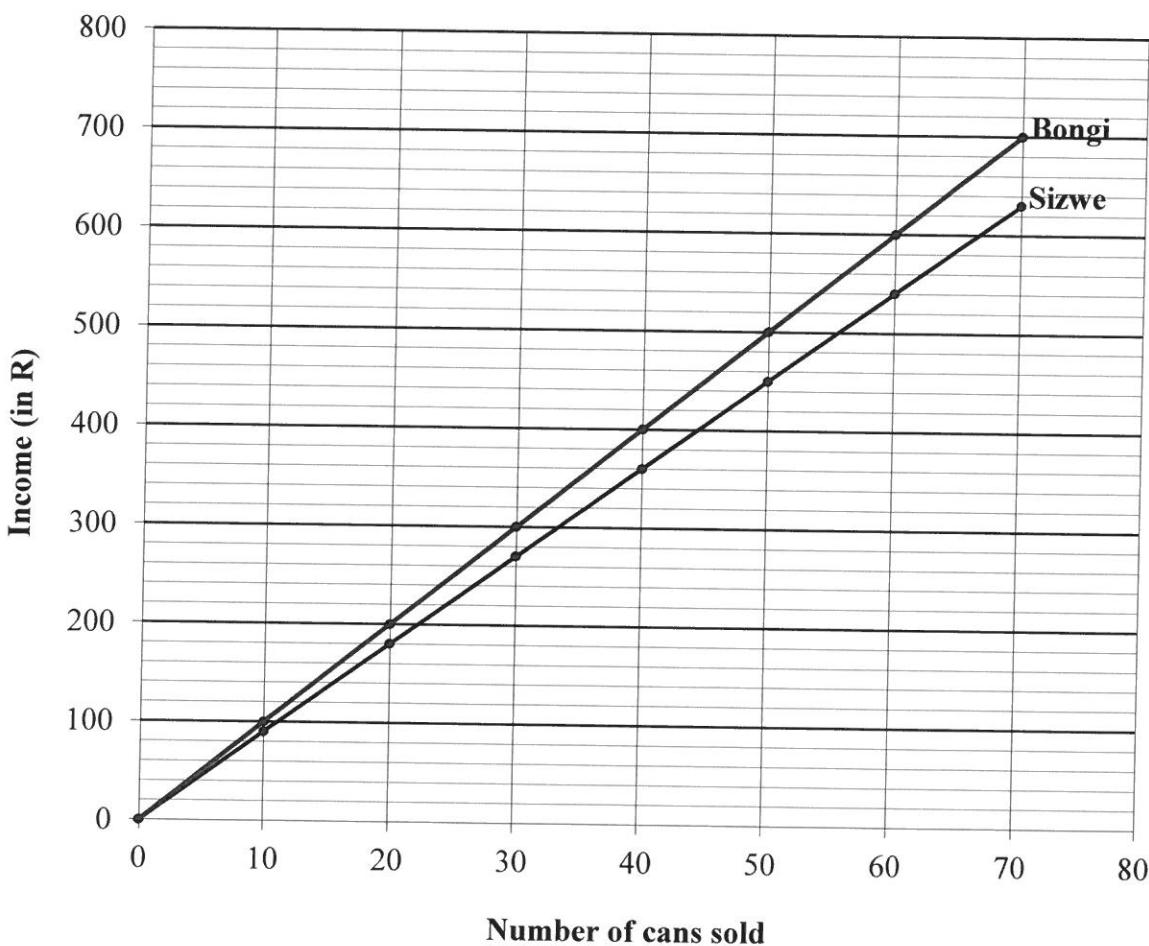
[Adapted from accuweather.com]

5.2.1   On which day will it definitely be raining in East London?   (2)

5.2.2   Write down the name of the town and the date where the forecast shows an even chance of rain.   (2)

5.2.3   Identify the lowest predicted minimum temperature for Barberton during the three days.   (2)

5.3 | Sizwe and Bongi each buy the same number of cases of cool drink. A case of 24 cans of cool drink cost R153,60. Sizwe sells his cans at R9,00 each.

The following line graphs show the income of Sizwe and Bongi respectively for various numbers of cans of cool drink they sold.

Sizwe and Bongi's income from the sale of cans of cool drink

5.3.1   Calculate the cost price of ONE can of cool drink.   (2)

5.3.2   Calculate Sizwe's profit if he buys and sells 96 cans of cool drink.   (3)

5.3.3   Use the graph to determine the following:

(a) Bongi's selling price for ONE can of cool drink   (3)

(b) The number of cans of cool drink that must be sold so that Bongi's profit would be exactly R60 more than the profit made by Sizwe if they both buy and sell the same number of cans of cool drink   (2)

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TOTAL: 150
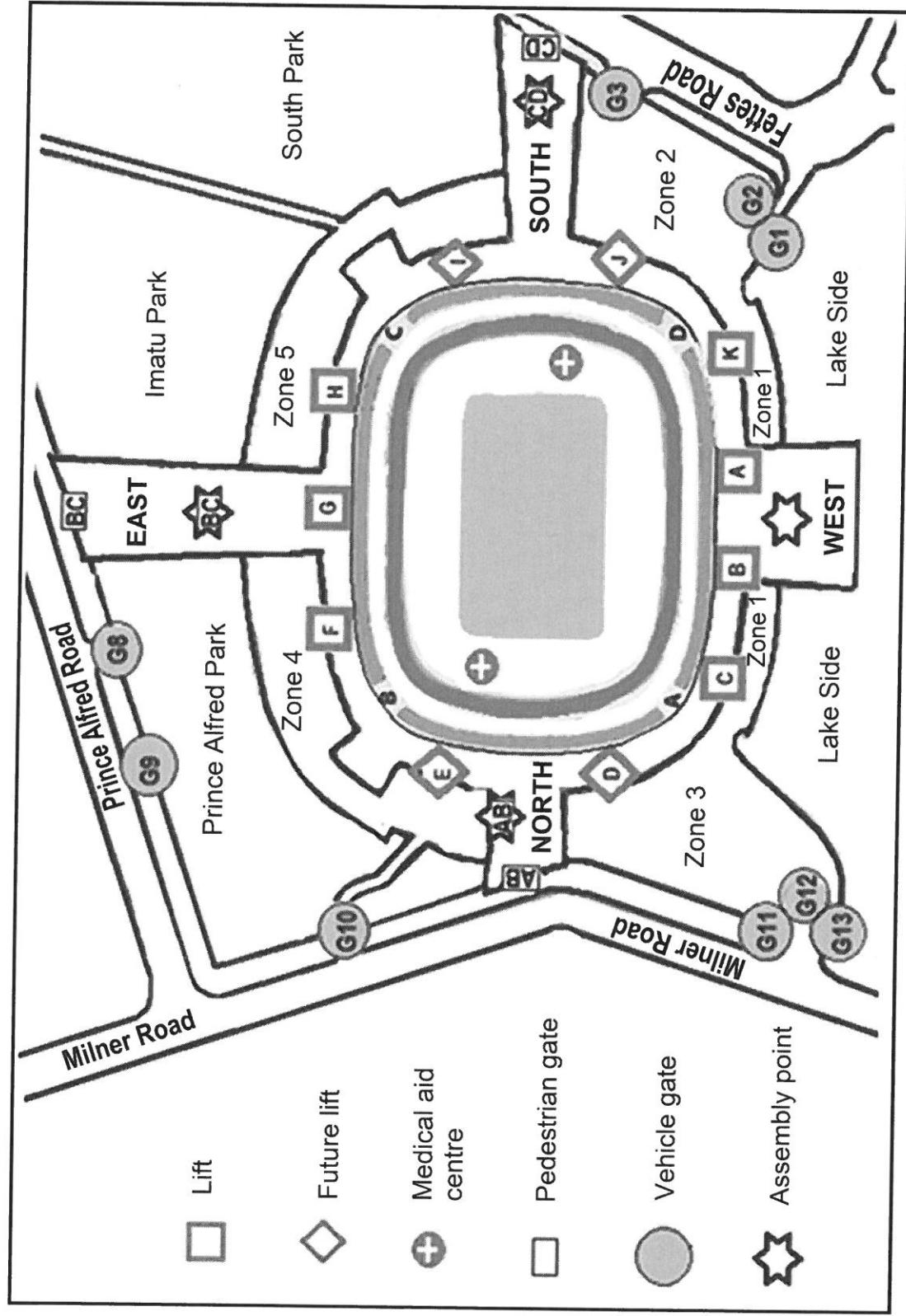
ANNEXURE A

QUESTION 1.2

TAX INVOICE NO: WB/97471224	
DATE: 2014/09/05	Wheels Bank

NCR Registration No:	NCRCP001	
Physical Address:	1 Boom Street Oakville 2221	A Division of SA Bank Limited An Authorised and Registered Credit and Financial Services Provider
Postal Address:	Private Bag X01 Oakville 2201	
Telephone number: Fax number: E-mail:	0861 222 1212 0861 222 1213 service@wheelsbank.co.za	

CUSTOMER AGREEMENT DETAILS

Customer number	10022227955
Account number In the name of	85165354295 Mrs R Yengopal
Goods description	Mercedes-Benz C180k Be Classic A/T
Original capital balance Instalment amount (fixed) Frequency of instalment Date commenced Expiry date Original term (months) No. of remaining instalments	R298 716,00 R4 249,78 MONTHLY 2010/06/04 2015/06/20 61 **9**
Balloon/Residual Outstanding capital balance	R115 491,44 R141 824,71
Actual contract balance	R153 320,62

Summary of Transactions for Statement Period	
Payments received	R4 249,78
Interest	R1 321,21
Fees levied	R57,00

Instalment Details	
Instalment due date	2014/09/20
Instalment due amount	R4 249,78
Advanced amount	R0,00
Arrears amount	R0,00
Amount due	**R4 249,78**

GAUTENG

ANNEXURE B

QUESTION 3

[Adapted from *Access Management* layout plan]

ANNEXURE C

QUESTION 4

TABLE 3: Results of the 2014 Rugby Championship

October 2014				
Date		**Score**		**Venue**
5	Argentina	21 – 17	Australia	Estadio Malvinas Argentinas, Mendoza
4	South Africa	27 – 25	New Zealand	Ellis Park Rugby Stadium, Johannesburg
September 2014				
Date		**Score**		**Venue**
27	South Africa	28 – 10	Australia	Newlands, Cape Town
27	Argentina	13 – 34	New Zealand	Estadio Ciudad de La Plata, La Plata
13	Australia	32 – 25	Argentina	Skilled Park, Gold Coast, Queensland
13	New Zealand	14 – 10	South Africa	Westpac Stadium, Wellington
6	Australia	24 – 23	South Africa	Patersons Stadium, Perth
6	New Zealand	28 – 9	Argentina	McLean Park, Napier
August 2014				
Date		**Score**		**Venue**
23	Argentina	31 – 33	South Africa	Padre Ernesto Martearena, Salta
23	New Zealand	51 – 20	Australia	Eden Park, Auckland
16	South Africa	13 – 6	Argentina	Loftus Versfeld, Pretoria
16	Australia	12 – 12	New Zealand	ANZ Stadium, Sydney

[Source: www.supersport.co.za]

ANSWER SHEET

QUESTION 4.7

CENTRE NUMBER:

EXAMINATION NUMBER:

Points scored by and against the South African team during the 2014 Rugby Championship