basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

MATHEMATICAL LITERACY P2

MAY/JUNE 2024

MARKS: 150

TIME: 3 hours

This question paper consists of 12 pages an addendum with 6 annexures.

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INSTRUCTIONS AND INFORMATION

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

2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 2.2
   - ANNEXURE C for QUESTION 3.2
   - ANNEXURE D for QUESTION 4.1
   - ANNEXURE E for QUESTION 4.2
   - ANNEXURE F for QUESTION 5.1

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 calculations clearly.

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

8. Indicate units of measurement, where applicable.

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

10. Write neatly and legibly.

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QUESTION 1

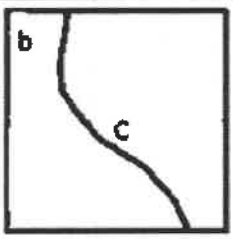
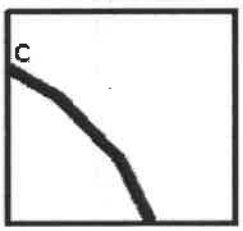
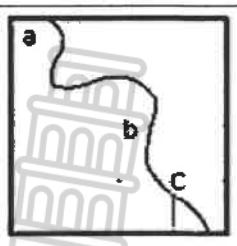
1.1 TABLE 1 below shows a list of explanations and definitions in COLUMN B, and mathematical terms and concepts in COLUMN A.

TABLE 1: TERMS AND CONCEPTS WITH EXPLANATIONS AND DEFINITIONS

COLUMN A	COLUMN B
1.1.1 Circumference	A time measurement equivalent to six hundred seconds
1.1.2 Probability	B the measuring of hotness or coldness
1.1.3 One hour	C the line from one end of a circle to the other end
1.1.4 Temperature	D equivalent to the mass of a person divided by the height squared
	E the boundary that surrounds a circular shape
	F time measurement equivalent to three thousand six hundred seconds
	G the likelihood that something might happen
	H a number showing the relationship between the distance on a map and the actual distance

Use TABLE 1 above and choose an explanation or definition from COLUMN B that matches the term or concept in COLUMN A. Write only the letter (A–H) next to the question numbers (1.1.1 to 1.1.4) in the ANSWER BOOK, e.g. 1.1.5 J. (8 x 1) (8)

1.2 The three sketches below represent the same portion of the physical world which is drawn using three different scales (A, B and C) in random order.

Sketch 1	Sketch 2	Sketch 3
		

The following scales (in random order) were used to draw these sketches:

A **1 : 100 000**
B **1 : 25 000**
C **1 : 50 000**

Use the information and sketches above to answer the questions that follow.

1.2.1 Name the type of scale used to draw the sketches above. (2)

1.2.2 Interpret the scale 1 : 50 000. (2)

1.2.3 Write down the scale that was used to draw Sketch 2. (2)

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1.3 The picture below shows information boards (a traffic sign and distance information) and vehicles heading in a southerly direction.

The numbers displayed next to the names of the towns on the information board show the distance in kilometres from the information board to that town.

PICTURE OF INFORMATION BOARDS AND VEHICLES HEADING SOUTH



Use the information above to answer the questions that follow.

1.3.1 Give the shapes of the information boards. (2)

1.3.2 Write down the distance a motorist must still travel, in a northerly direction, to reach Bloemfontein. (2)

1.3.3 The 120 on the traffic sign board indicates 120 km/h.

Interpret 120 km/h in context. (2)

1.3.4 Determine the distance from Trompsburg to Johannesburg. (2)

1.3.5 State the general direction of Trompsburg from the information sign. (2)

1.3.6 The length of one of the road signs is 90 cm.

Convert this length to metres. (2)

[26]

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QUESTION 2

2.1

ANNEXURE A shows the site map of the Bloem Agricultural Show and the entrance gates to the showgrounds.

The main exhibition halls are named Protea, Daisy, Tulip and Lily.

The Daisy Hall has a length of 65 m.

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

2.1.1 Write down the gate number for the main public entrance. (2)

2.1.2 State the maximum number of public parking areas available. (2)

2.1.3 Determine the number of gates used by vehicles. (2)

2.1.4 Write down only the letter that makes the following statement TRUE:

The probability of finding a gate on the eastern side of the site is …

A impossible.
B an even chance.
C certain. (2)

2.1.5 Give the general direction of Gate 12 from the Amusement Park. (2)

2.1.6 A layout plan will be drawn of this site map using a scale of 1 : 8 000.

Determine, rounded to the nearest mm, the length of the Daisy Hall on this layout plan. (4)

2.2

One of the exhibitors sells pedal go-karts for kids (see picture alongside), which requires parts to be assembled in order to ride the pedal go-kart.

ANNEXURE B shows assembly instructions arranged in two columns. In COLUMN A are written instructions arranged in order and in COLUMN B are visual instructions (pictures), not arranged in any specific order.

PICTURE OF A COMPLETED PEDAL GO-KART FOR KIDS



Use ANNEXURE B and the information above to answer the question that follows.

Choose a picture from COLUMN B that matches the written instruction in COLUMN A. Write only the letter (A–E) next to the question numbers (2.2.1 to 2.2.5), e.g. 2.2.6 F. (5 x 1) (5)

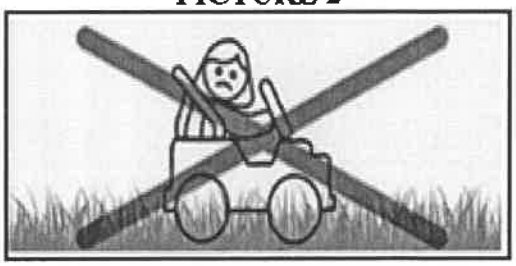
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2.3 The pictures below illustrate safety instructions for using the pedal go-kart.

SAFETY INSTRUCTION: PICTURE 1



SAFETY INSTRUCTION: PICTURE 2



Write down an explanation for ONE of the safety instructions illustrated in the pictures above. (2)

2.4 TABLE 2 below shows the number of horses, small livestock and cattle from the Free State, Gauteng and other provinces on display at the Bloem Agricultural Show. One value (**X**) has been omitted.

TABLE 2: THE NUMBER OF HORSES, SMALL LIVESTOCK AND CATTLE ON DISPLAY FROM VARIOUS PROVINCES

PROVINCES	HORSES	SMALL LIVESTOCK	CATTLE	TOTAL
Free State	612	1 476	363	**2 451**
Gauteng	163	**X**	62	**565**
Other	585	1 024	371	**1 980**
TOTAL	**1 360**	**2 840**	**796**	**4 996**

[Adapted from Bloemshow/factsheet.pdf]

Use TABLE 2 to answer the questions that follow.

2.4.1 Determine missing value **X**. (2)

2.4.2 Write down, in simplified fractional form, the probability of NOT randomly selecting a horse from the total number of animals shown in TABLE 2 above. (3)

2.4.3 A farmer visits the display where all the cattle are kept. He is specifically interested in purchasing cattle from the Free State.

Calculate, as a percentage, the probability of the farmer randomly selecting cattle from the Free State. (3)

[29]

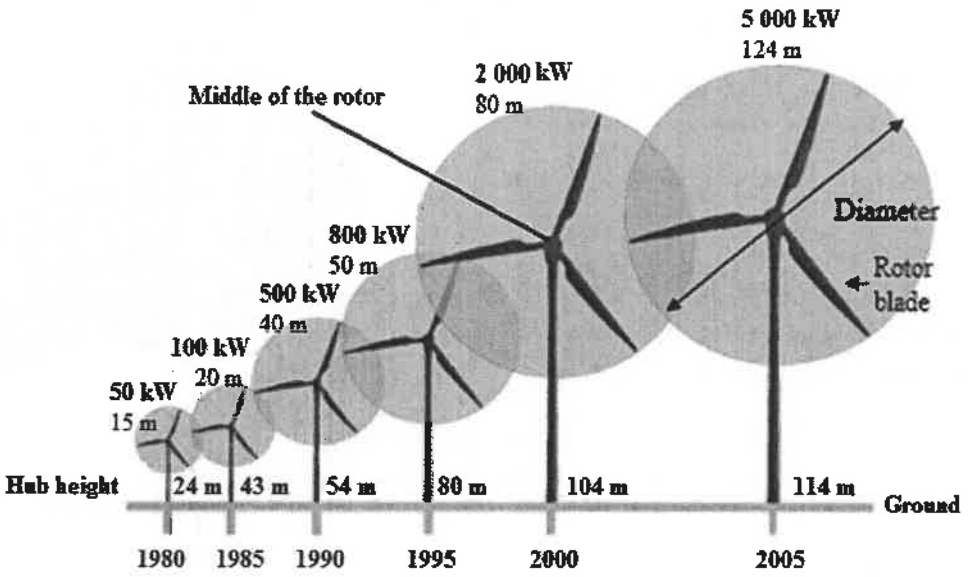
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QUESTION 3

3.1 Wind turbines are used as an alternative way to generate electricity.

The picture below shows how the size of the wind turbine and the generation capacity has changed from 1980 to 2005.

PICTURES OF WIND TURBINES AND GENERATION CAPACITY USED FROM 1980 to 2005



NOTE:
Hub height = distance from the ground to the middle of the wind turbine's rotor

5 000 kW: Power generation of 5 000 kilowatt
124 m: Diameter of the circle made by the rotor blades of the wind turbine = 124 m

Area of a circle = 3,142 × radius^2

Use the information above to answer the questions that follow.

3.1.1 Write down the amount of power generated by the wind turbine with the second-tallest hub height. (2)

3.1.2 Give ONE possible reason why the rotor blade size of the wind turbine from 2005 is larger than the rotor blade size of the wind turbine from 1980. (2)

3.1.3 Calculate, in metres, the maximum height that the tip of the rotor blade of the tallest wind turbine can reach as it turns. (3)

3.1.4 Anam says that the area covered by the rotor blade of the tallest wind turbine in motion is 12 077,748 m^2.

Verify, with calculations, whether or not her statement is VALID. (4)

3.1.5 Determine the percentage increase in power generation from 1995 to 2005. (4)

3.1.6 Give ONE other possible source of generating electricity that can be used in South Africa. (2)

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3.2 A completed rectangular-based compost box is made up of three sections sharing some common panel boards. The sections are assembled by slotting panel boards into panel posts.

ANNEXURE C shows a rectangular compost box linking sections A, B and C with some common panel boards.

Some dimensions of the compost box are also shown.

You may use the following formulae, where applicable:

Perimeter of a rectangle = 2 × (length + width)

Volume = length × width × height

1 m^3 = 1 000 litres

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

3.2.1 Calculate the perimeter of the base of the compost box. (4)

3.2.2
- First, the boxes of Section A and Section C were completely assembled.
- The box in Section B fits in between Section A and Section C.
- Section B has fewer front panel boards than the back and shares side panel boards with Section A and Section C, as shown on ANNEXURE C.

Determine how many additional panel boards are required to completely assemble the box in Section B. (3)

3.2.3 The maximum height of the decomposing compost matter in each section, C : B : A, is in the ratio 3 : 5 : 7.

Determine, in litres, the total capacity for the decomposing matter in Section A and Section B. (6)

3.3 If the temperature rises above 70 °C, the compost will sterilise itself (kill the good micro-organisms).

Convert this temperature to degrees Fahrenheit.

Use the formula: $°C = \frac{5}{9} \times (°F - 32°)$ (3)

[33]

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QUESTION 4

4.1 Anda is a teacher in Zambia. ANNEXURE D shows a detailed layout plan of the school building where he teaches.

Use the information in ANNEXURE D to answer the questions that follow.

4.1.1 Write down, in simplified form, the ratio of the number of single doors to the number of double doors on the school layout plan. (3)

4.1.2 Name the rooms that have TWO double doors and ONE single door. (3)

4.1.3 State ONE feature that indicates that the school has more than one level. (2)

4.1.4 During an evacuation drill, Anda took the following route:

- Exited the room and turned left into the hallway
- Went straight past three single doors on the left and a fire extinguisher on the right
- Turned right at the end of that hallway
- Passed two rooms each having a double door
- Then used the 'Exit to use in case of fire'

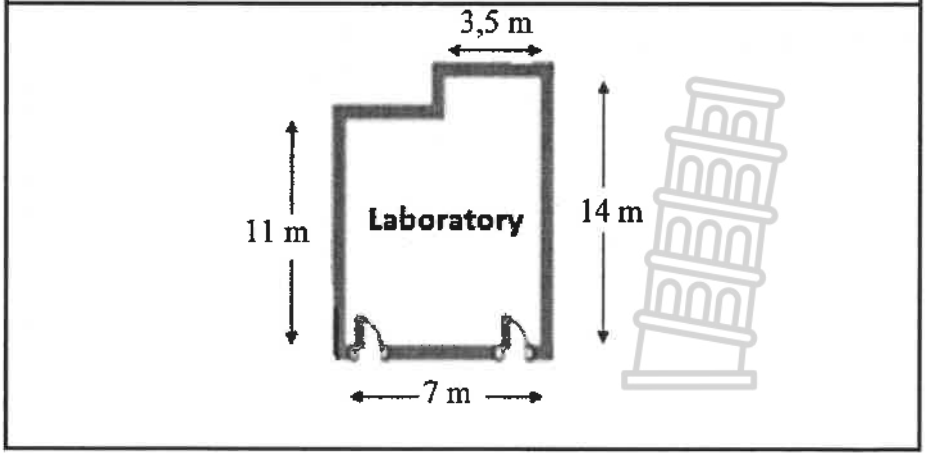
Determine the room from which Anda exited during the evacuation drill. (3)

4.1.5 The laboratory floor needs to be re-tiled.

The dimensions of the tiles that will be used are: 600 mm × 600 mm. There are five tiles in a box.

The sketch and inner dimensions of the laboratory floor are below.

INNER DIMENSIONS OF THE LABORATORY FLOOR



The science teacher claimed that they would need a minimum of 40 boxes of tiles to tile the laboratory floor if cutting and breakages are ignored.

Verify, showing ALL calculations, if his claim is VALID.

Use the formula: **Area of a rectangle = length × width** (10)

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4.2 Anda uses the strip map in ANNEXURE E to plan his travels.

ANNEXURE E shows the strip map of roads connecting Zambia to South Africa.

Use the information in ANNEXURE E to answer the questions that follow.

4.2.1 Write down the total number of countries shown on the strip map. (2)

4.2.2 Name the town that is 403 km from Bulawayo. (2)

4.2.3 Anda travelled from Victoria Falls to Bulawayo. He had to pick up a friend from Hwange N.P. before reaching Bulawayo. Anda left Victoria Falls at 09:55 and travelled at an average speed of 97 km/h to Hwange N.P.

(a) Determine, to the nearest minute, at what time he reached his friend.

You may use the formula: **Speed = distance ÷ time** (5)

(b) Calculate the total distance he travelled from Victoria Falls to Bulawayo. (3)

[33]

QUESTION 5

5.1 Bontle owns a four-storey building with eight similar apartments, which she rents out.

ANNEXURE F shows the layout plan of the ground floor of the four-storey building showing two apartments.

PICTURE OF THE FRONT OF THE APARTMENT BUILDING



The total exterior length of the building is 58 feet.

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

5.1.1 Write down the number of enclosed balconies in this building. (2)

5.1.2 Calculate, in feet, missing value A on the layout plan. (5)

5.1.3 Give ONE valid reason why Bontle stated that the apartments are open-plan living. (2)

5.1.4 Identify the name of ONE common feature found in each of the bathrooms. (2)

5.1.5 One of the apartment entrance doors has 3B as a number.

Give a possible interpretation of this number. (2)

5.1.6 Bontle calculated the exterior length of the building to be 17,6784 m.

(a) Determine, rounded to THREE decimal places, the conversion factor she used in the form **1 m = ... feet**. (3)

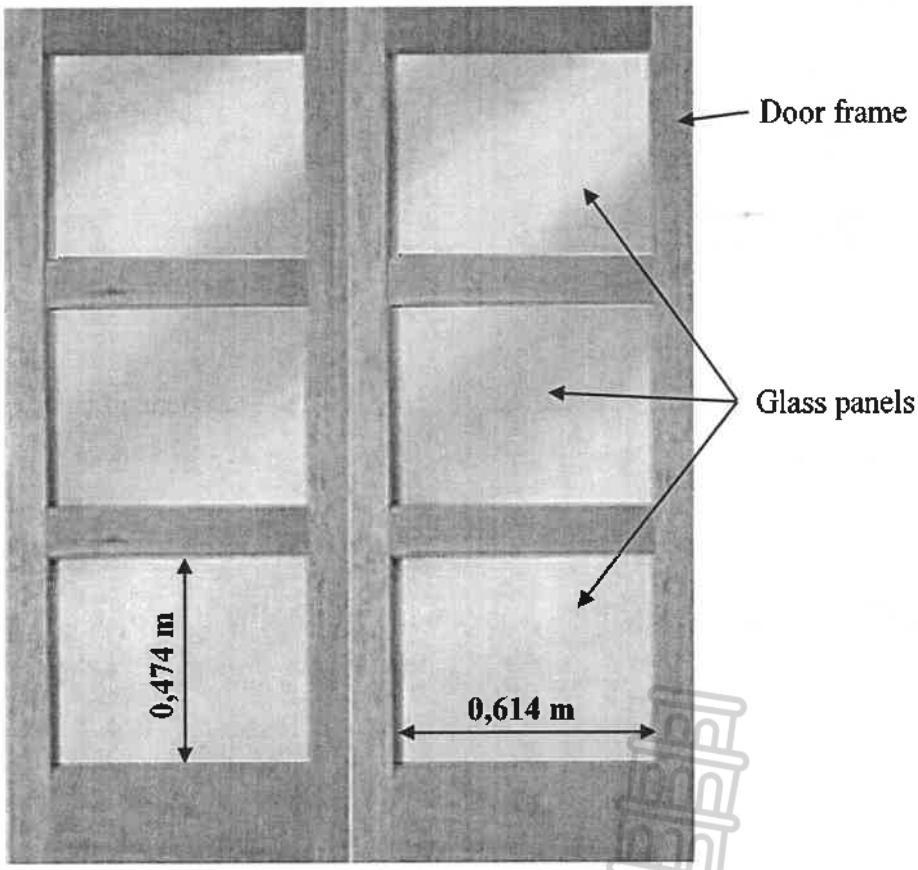
(b) Hence, convert to metres the exterior width of the building. (3)

5.2 The entrance door of the apartment building is a double door with six equally sized glass panels.

Bontle wants to replace all the glass panels with laminated safety glass. She received the following information:

- Mass of the safety glass is 15 kg per m^2
- Price of the safety glass is R490 per m^2
- Delivery charge is R820 for the first 20 kilograms, and thereafter R53,50 per kg, or part thereof
- Consider only the inner measurements for glass panels (ignore overlaps)

PICTURE OF THE ENTRANCE DOOR WITH INNER DIMENSIONS OF THE ORIGINAL GLASS PANELS



You may use the formula: **Area of a rectangle = length × width**

5.2.1 Calculate, rounded to ONE decimal place, the area of ONE glass panel. (2)

5.2.2 Bontle stated that it will cost her less than R2 000 for the purchase and delivery of all the safety glass panels for the double door.

Verify, showing ALL calculations, whether her statement is VALID. (8)
[29]

TOTAL: 150

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ADDENDUM

MAY/JUNE 2024

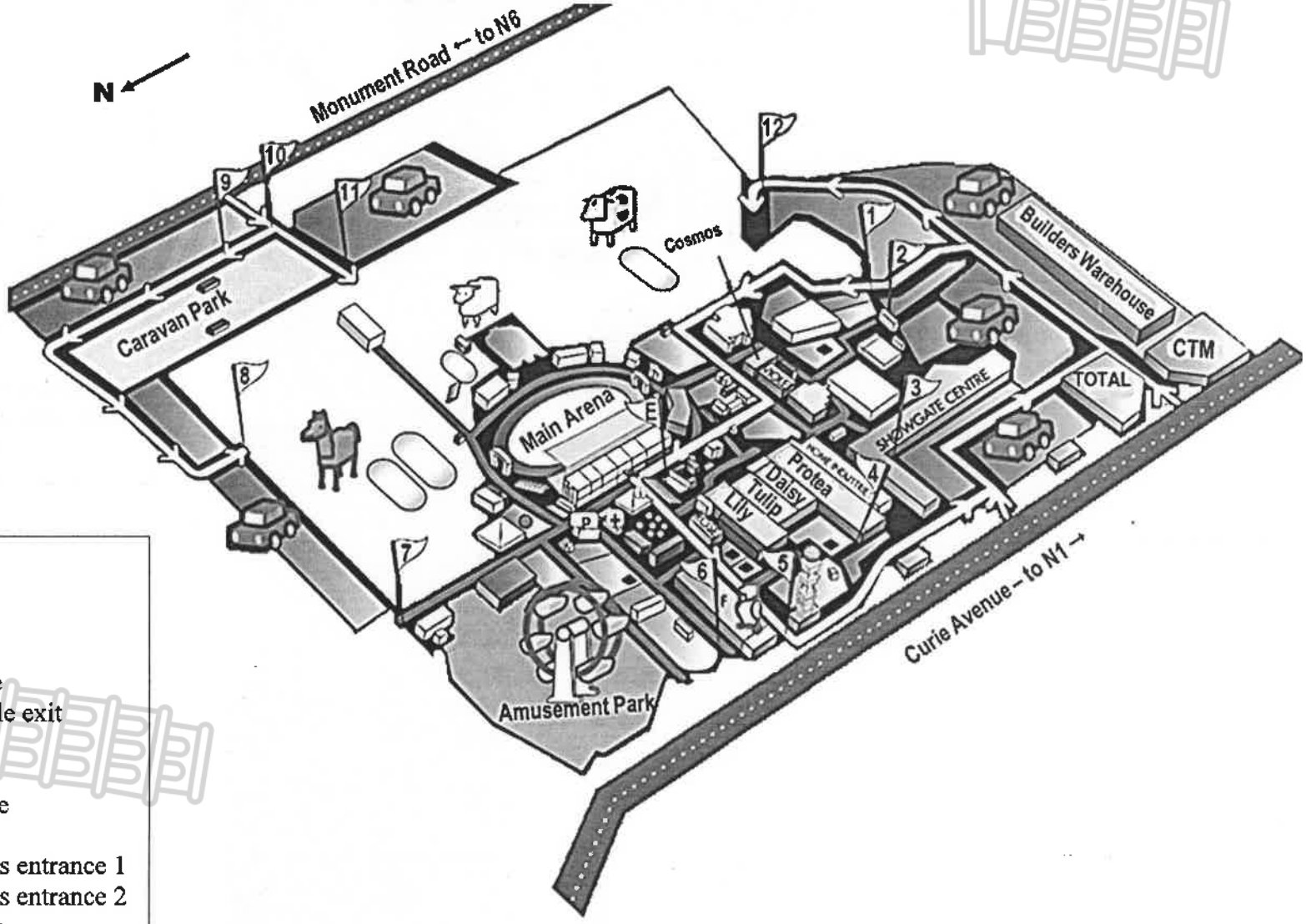
This addendum consists of 7 pages with 6 annexures.

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ANNEXURE A
QUESTION 2.1

SITE MAP OF THE BLOEM AGRICULTURAL SHOW AND THE ENTRANCE GATES TO THE SHOWGROUNDS

KEY	
P	Police
+	First aid
	Public parking area
	Horses
	Sheep, goats and pigs (Small livestock)
	Cattle
E	Main entertainment area
	The position and number of the gates

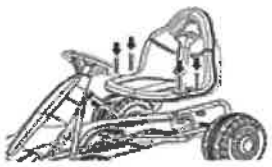
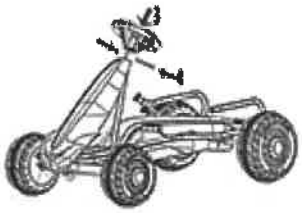
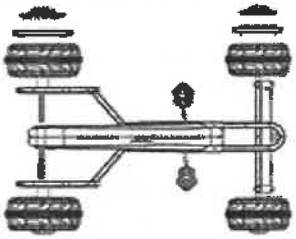
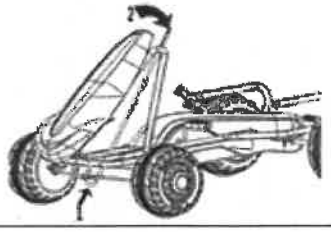
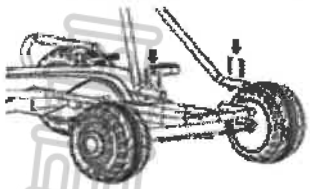


GATES
1 Vehicle entrance
2 Main public entrance
3 Showgate public entrance
4 Devil's Fork Factory public entrance
5 Vodacom public entrance and vehicle exit
6 Police gate (no entrance)
7 Railway public entrance
8 Horses vehicle and breeders entrance
9 Caravan park and vehicle entrance
10 Small livestock vehicle and breeders entrance 1
11 Small livestock vehicle and breeders entrance 2
12 Cattle vehicle and breeders entrance

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ANNEXURE B

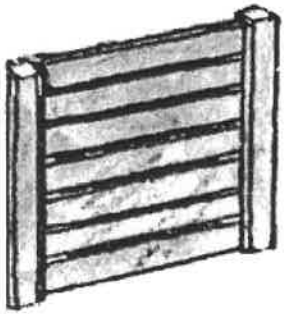
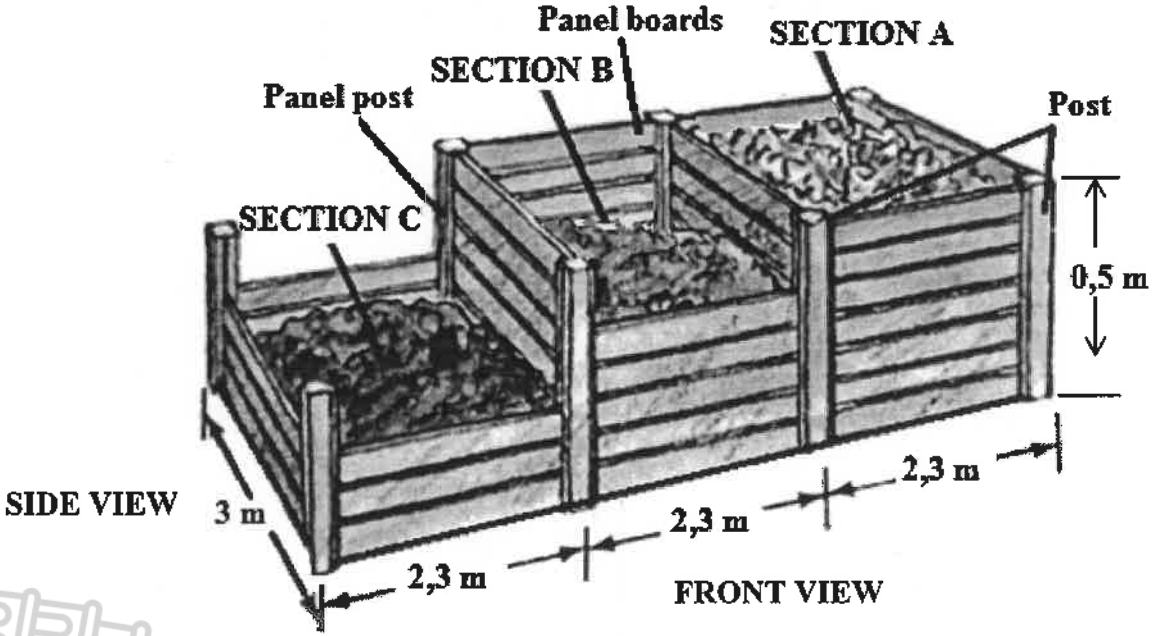
QUESTION 2.2

	COLUMN A: INSTRUCTIONS	COLUMN B: PICTURES
2.2.1	**Assemble the wheel caps** Fasten the hubs to the rims and then insert the decorative cover into the wheel cover.	A 
2.2.2	**Attach the frame tubing to the pedal mechanism** Attach the frame tubing to the pedal mechanism and secure.	B 
2.2.3	**Assemble the steering mechanism** Insert the steering rod through the hole at the bottom of the frame and into the central hole of the bracket.	C 
2.2.4	**Assemble the front panel and steering wheel** Insert the steering wheel into the steering rod. Then affix, tightening the locknut.	D 
2.2.5	**Assemble the seat** Fasten the seat on the body with four bolts, washers and nuts.	E 

[Adapted from Kogan-Kids-Pedal-Go-Kart-KAPDGKRTBLA-Manual]

ANNEXURE C

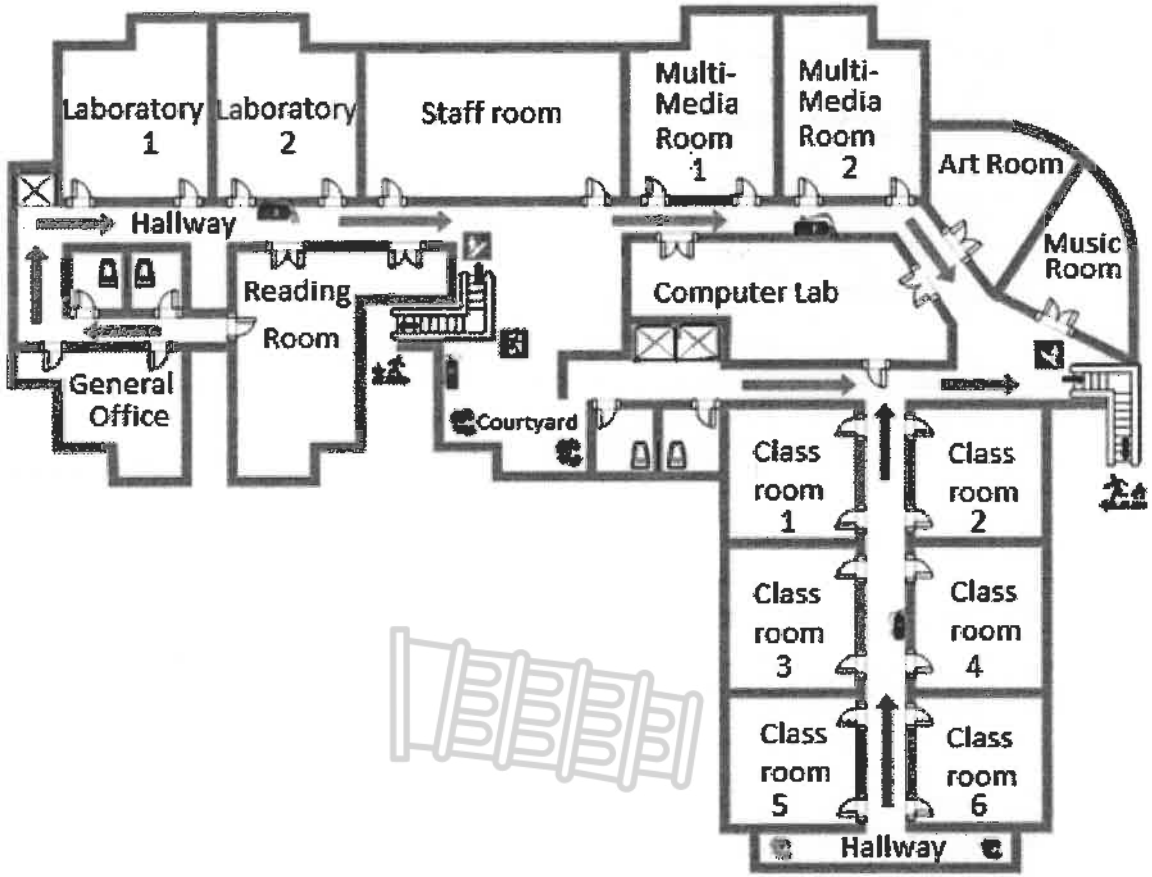
QUESTION 3.2

ONE OF THE FOUR EQUAL VIEWS OF SECTION A	RECTANGULAR-BASED COMPOST BOX SHOWING THREE LINKED SECTIONS (A, B and C) WITH PANEL BOARDS
	

ANNEXURE D

QUESTION 4.1

LAYOUT PLAN OF THE SCHOOL BUILDING



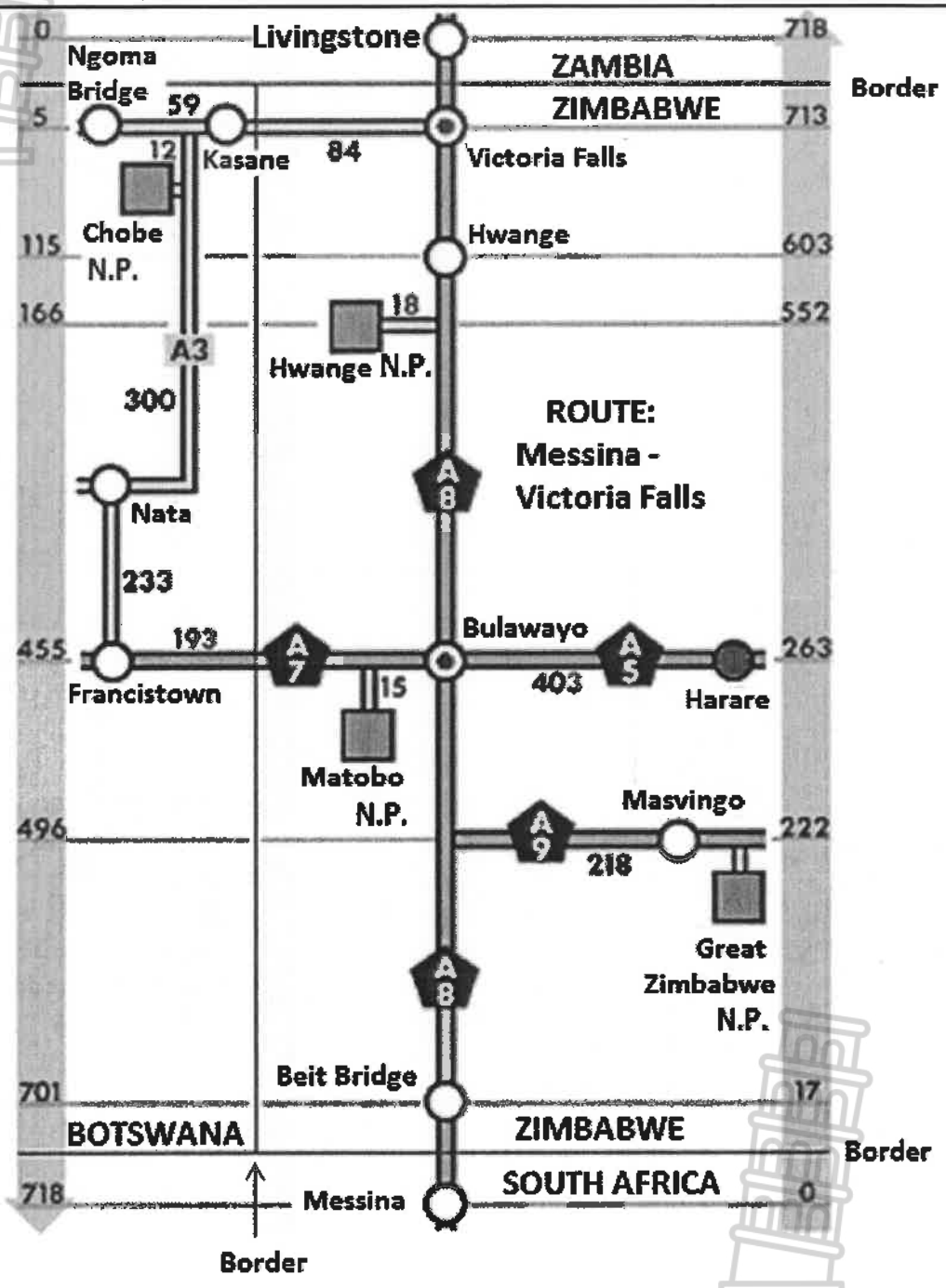
KEY	
EXPLANATION	**SYMBOL**
Door, single	
Door, double	
Exit to use in case of fire	
Stairs	
Fire extinguisher	
Hallway direction to follow in case of evacuation	

[Source: www.edrawsoft.com/template-school-layout.html]

ANNEXURE E

QUESTION 4.2

STRIP MAP OF ROADS CONNECTING ZAMBIA AND SOUTH AFRICA



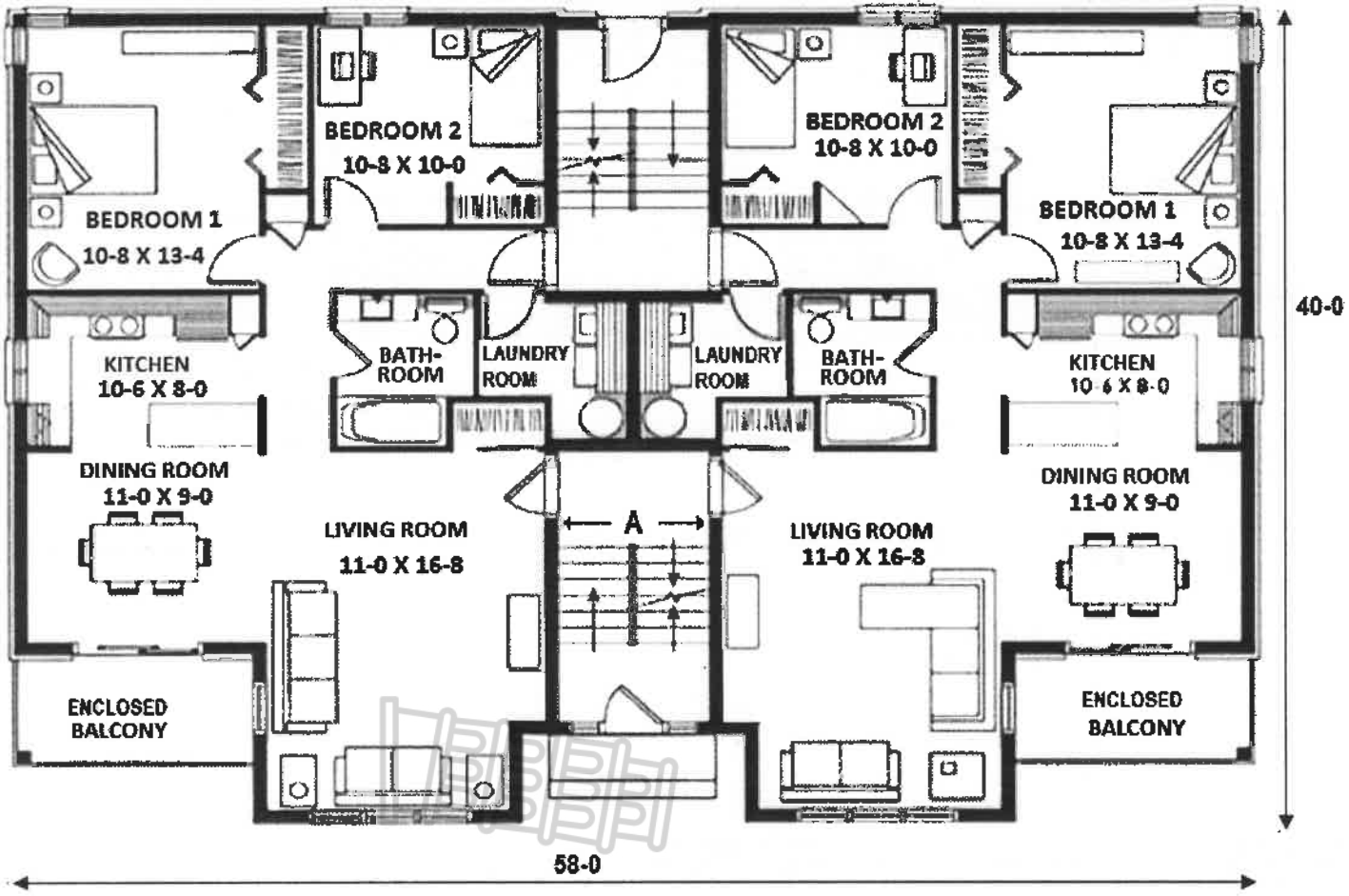
KEY:

National road	=	A9	**SOUTH AFRICA**	=	Country
National road(Botswana)	=	A3	**Harare**	=	Town/City
National park (N.P.)	=				

ANNEXURE F

QUESTION 5.1

LAYOUT PLAN OF THE GROUND FLOOR OF THE FOUR-STOREY BUILDING SHOWING TWO APARTMENTS



KEY:	
	Window
	Door
	Sliding door
	Wardrobe/ Cabinet/Storage space
	Stairs
	Brick wall 2 feet thick

NOTE: 58-0 means 58 feet
10-8 means 10 feet and 8 inches
All dimensions inside the building are given as length × width.

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