

Grade 11 Mathematical Literacy Paper 2

Total Marks: 150

Time allocated: 3 hours

Instructions:

- This paper consists of FIVE questions.
- Answer ALL questions.
- Start each question on a new page.
- Show ALL calculations.
- An approved non-programmable, non-graphical scientific calculator may be used.
- When applicable, round answers to TWO decimal places, unless otherwise specified.
- Diagrams are NOT necessarily drawn to scale.
- Number all answers correctly according to the numbering used in this question paper.
- Write your name on any annexures provided and hand them in with your paper.
- Write neatly in a blue pen.

QUESTION 1

1.1.1. Jo worked for 3 years for a company that makes birdhouses. She was retrenched after this period, but she could claim from UIF. She will only be able to claim for a maximum of 6 months. On retrenchment, her salary was R6 240 per month.

1.1.2. Calculate how much money was paid to the UIF each month (by her AND her employer). (3)

1.1.3. On retrenchment Jo will only be paid a percentage of the salary he earned in the last 6 months. This percentage is known as the Income Replacement Rate (IRR) and is calculated as follows:

$$IRR = 29,2 + \frac{99\,779,68}{3\,239,6 + \text{monthly salary}}$$

Use the formula to calculate what percentage of her monthly salary will be paid to Jo each month. Give your final answer to 1 decimal place.

(3)

1.1.4. Now calculate the amount that Jo will receive from the UIF per month. (2)

1.1.5. For how many days will Jo be paid if workers are entitled to claim for 1 day's pay for every 6 days they have worked? (3)

1.1.6. Use your answer to QUESTION 1.1.3 to calculate how much Jo will be paid per day. (3)

1.1.7. Now calculate the total amount Jo could receive from UIF in the 6 month period. (2)

1.2. Below is an example of one of the birdhouses Jo's company makes:



Each bird house is made from wood and is painted with colourful paints, then sealed with a double coat of varnish. A metal ring is affixed to the top of each birdhouse so it may hang in the trees. Costs are as follows:

Item	Cost
1 litre tin of paint (all colours)	R46
500 ml tin of varnish	R34
Nails	R0,10 each
Wood block	R3,50 each
Metal ring	R0,40 each

1.2.1. Each birdhouse uses 350 ml of paint and 200 ml of varnish. Calculate the cost of paint and varnish per birdhouse. (5)

1.2.2. Each bird house uses one metal ring, 7 wooden blocks and 8 nails. Calculate the total cost of these items per bird house. (3)

1.2.3. Hence, calculate the total cost of materials to make one birdhouse. (2)

1.2.4. The company's fixed weekly costs are as follows: R1 600 rent; R2 500 wages. Use this information to create a formula to calculate weekly costs to produce and sell birdhouses if the cost per birdhouse is R55,40.

Write the formula in the form:

Weekly cost (rand) = ... + ... (3)

1.2.5. Determine the cost to produce 50 birdhouses in one week. (2)

1.2.6. The table below shows income from selling the birdhouses:

Number of birdhouses	20	40	60	80	100	120	140
Income (R)	2 400	4 800	7 200	9 600	A	B	C

a) Use the table to determine the selling price of one birdhouse. (2)

b) Use your answer to QUESTION 1.2.6 a) to find the values of **A**, **B** and **C** in the table. (6)

1.2.7. The cost of producing birdhouses is drawn on a line graph (ANNXURE A). Use the table in QUESTION 1.2.6 to include a line showing the income generated for the different number of birdhouses on the same set of axes. Label each line. (6)

1.2.8. Use your graph to identify the approximate break-even point.

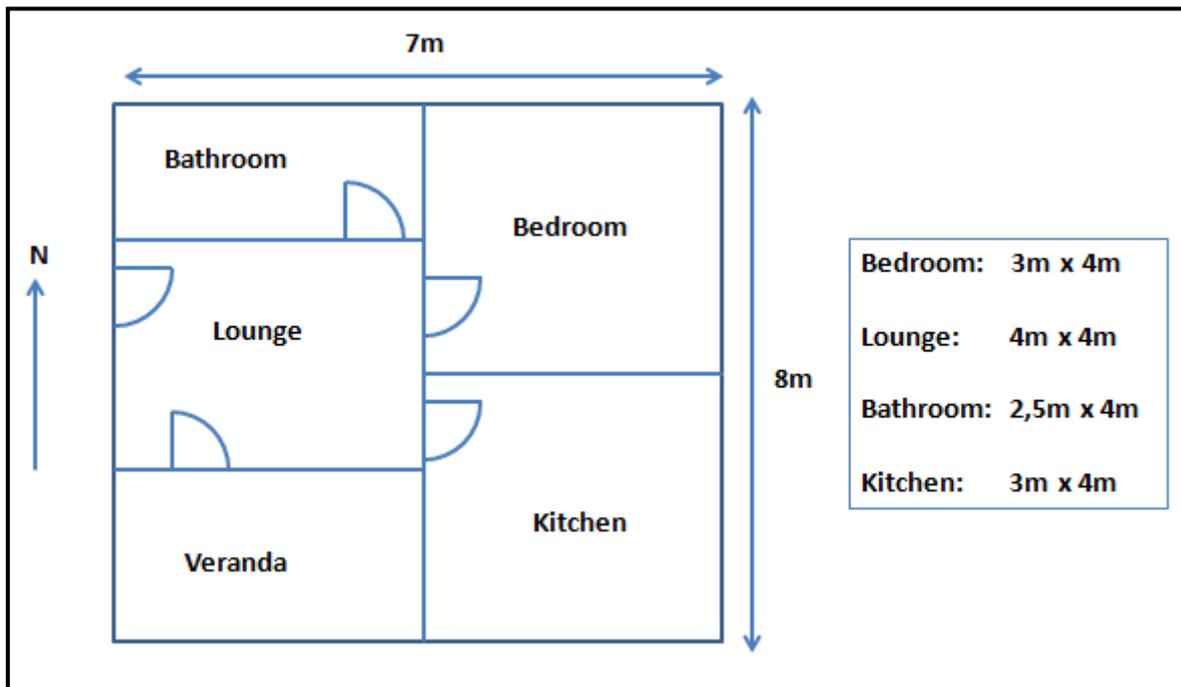
(2)

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QUESTION 2

Below is a floor plan of Winston's townhouse. The measurements for each room are given next to the plan.

Winston's geyser burst and his carpets were ruined. He wants to replace the old carpets with laminate flooring in the bedroom, lounge and kitchen. He also wants to tile the veranda with new tiles.



2.1. Calculate the dimensions of the veranda.

(3)

2.2. Calculate the area of the veranda to be tiled.

(2)

2.3. The tiles for the veranda costs R129,95 per square metre. Calculate the cost of the tiles needed for the veranda.

(2)

2.4. Calculate the total area to be covered with laminate flooring in the bedroom, lounge and kitchen.

(4)

2.5. The laminate flooring is sold in packs that can cover $1,4\text{m}^2$ and each pack costs R169,80.

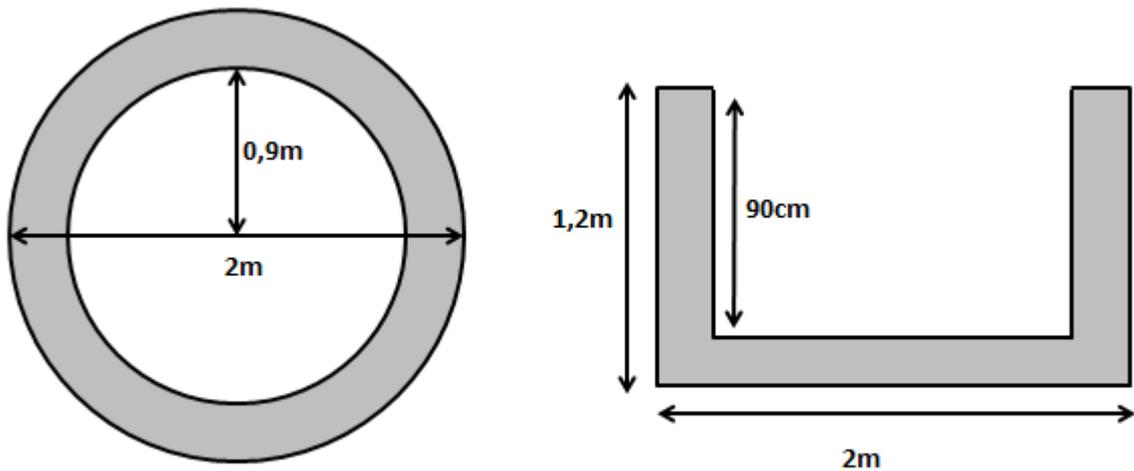
2.5.1. Calculate how many packs of laminate flooring are needed.

(2)

2.5.2. Wilson budgeted R6 000 for the tiling of the veranda and the laminate flooring. Show, with calculations, whether his budgeted amount is correct. Include by how much he is over or under on his budget.

(6)

2.6. Wilson also wishes to build a pond in the garden. The pond will be round and will be made of poured concrete. The dimensions of the pond are given on the top and side views below. The shaded areas represent where the concrete will be poured.



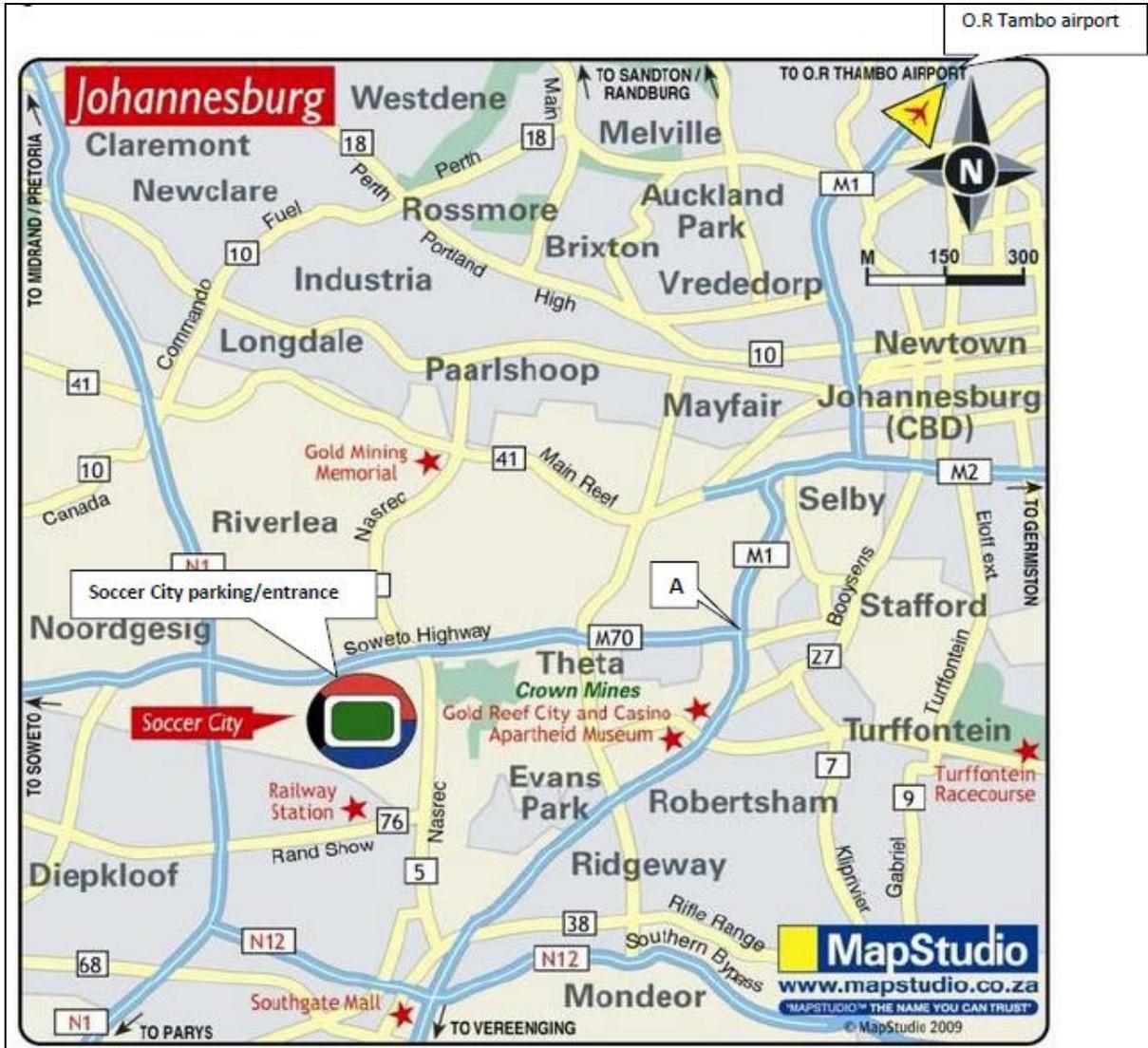
2.6.1. Calculate the volume of concrete that will be used for this pond, in m^3 . Give your answer correct to 1 decimal place. (Round off answers only at the very end of your calculations).
Show ALL working. (8)

2.6.2. $1\text{cm}^3 = 1\text{ml}$ concrete. Calculate how many millilitres of concrete are needed. (3)

[30]

QUESTION 3

3.1. Look at the map below and answer the questions that follow:



- 3.1.1. A band called Foo Fighters is coming to South Africa to play at Soccer City in December 2014. Angie is coming from Durban to watch the band and she will fly into O.R. Tambo airport. Give Angie detailed directions from the airport to Soccer City. (3)
- 3.1.2. Due to traffic, Angie is dropped off at point A on the map and she walks along the M70 to the entrance of Soccer City (indicated in the red section). Calculate her the time it will take, in minutes, for her to reach the entrance of the stadium if she walks at a constant speed of 8km/h. (7)
- 3.1.3. 1 mile is equal to 1,6km. Calculate the distance Angie walked in miles. (2)
- 3.1.4. After the concert, Angie is going to stay with her cousin in Randburg. In which direction is Randburg from the stadium? (2)

- 3.1.5. Which highway (and in which direction) would someone take if they are coming to the stadium from Vereeniging? (2)
- 3.1.6. If someone turned into Nasrec Road from Rifle Range, would the stadium be on their left or right? (2)
- [18]**

QUESTION 4

- 4.1. During the Easter holidays the traffic department carried out routine checks on 1 000 cars travelling on the N3 towards Durban. The following defects were found:

VEHICLE PART	DEFECTIVE RATE
Steering system	1 out of 18 cars
Windscreen wipers	1 out of 40 cars
Light bulbs	1 out of 5 cars
Brakes	1 out of 10 cars
Exhausts	1 out of 25 cars
Tyres	1 out of 20 cars

- 4.1.1. Determine which vehicle part was the least defective. (2)
- 4.1.2. Of the vehicle inspected, how many had defective brakes? (2)
- 4.1.3. Calculate the probability of a vehicle NOT having defective tyres. Give your answer as a percentage. (2)
- 4.1.4. What is the most commonly defective part? (2)
- 4.1.5. If 3 500 cars are checked, how many of them are likely to have defective windscreen wipers? (2)
- 4.1.6. A car is stopped at random and the brakes and exhausts are checked. Complete the tree diagram on **ANNEXURE B** to show the possible results when this car is checked. (5)
- 4.1.7. Jared claims that there is an equal chance of someone's car having good brakes with a good exhaust and someone having bad brakes with a good exhaust. Is Jared correct? Explain your answer. (3)

- 4.2. The table below shows the number of insects counted on a rose bush over one day, checked at one hour intervals.

5	7	12	4	5	13	2	1	2	0	4	4	8	3	6
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- 4.2.1. Write the number of insects counted in ascending order. (2)

- 4.2.2. Find the median number of insects. (2)
- 4.2.3. What is the modal number of insects? (2)
- 4.2.4. Calculate the mean number of insects. (3)
- 4.2.5. Calculate the range in the number of insects on the rose bush. (2)
- 4.2.6. Would you say that there is a large insect population in this garden? Explain your answer. (3)
- 4.2.7. How many insects were counted in total? (2)
- 4.2.8. The rose bush was examined every day for a certain number of days and in total 785 insects were counted. Assuming that the same number of insects was counted on the rose bush each day, over how many days was this rose bush examined? (3)
- 4.2.9. The insects counted on day one were grouped according to type, as shown below. Re-draw the table calculating each insect as a sector in a pie chart, using the information given. You do NOT need to draw a pie chart. Round answers to the nearest whole.

Insect	Frequency
Lady bug	13
Aphid	26
Bee	1
Fly	3
Beetle	2
Ant	31

Table:

Insect	Fraction	Percentage	Angle of pie cart
Lady bug			
Aphid			
Bee			
Fly			
Beetle			
Ant			

($18/2 = 9$)

[46]

QUESTION 5

Refer to the map of the Umgeni Valley Nature Reserve on **ANNEXURE C**.

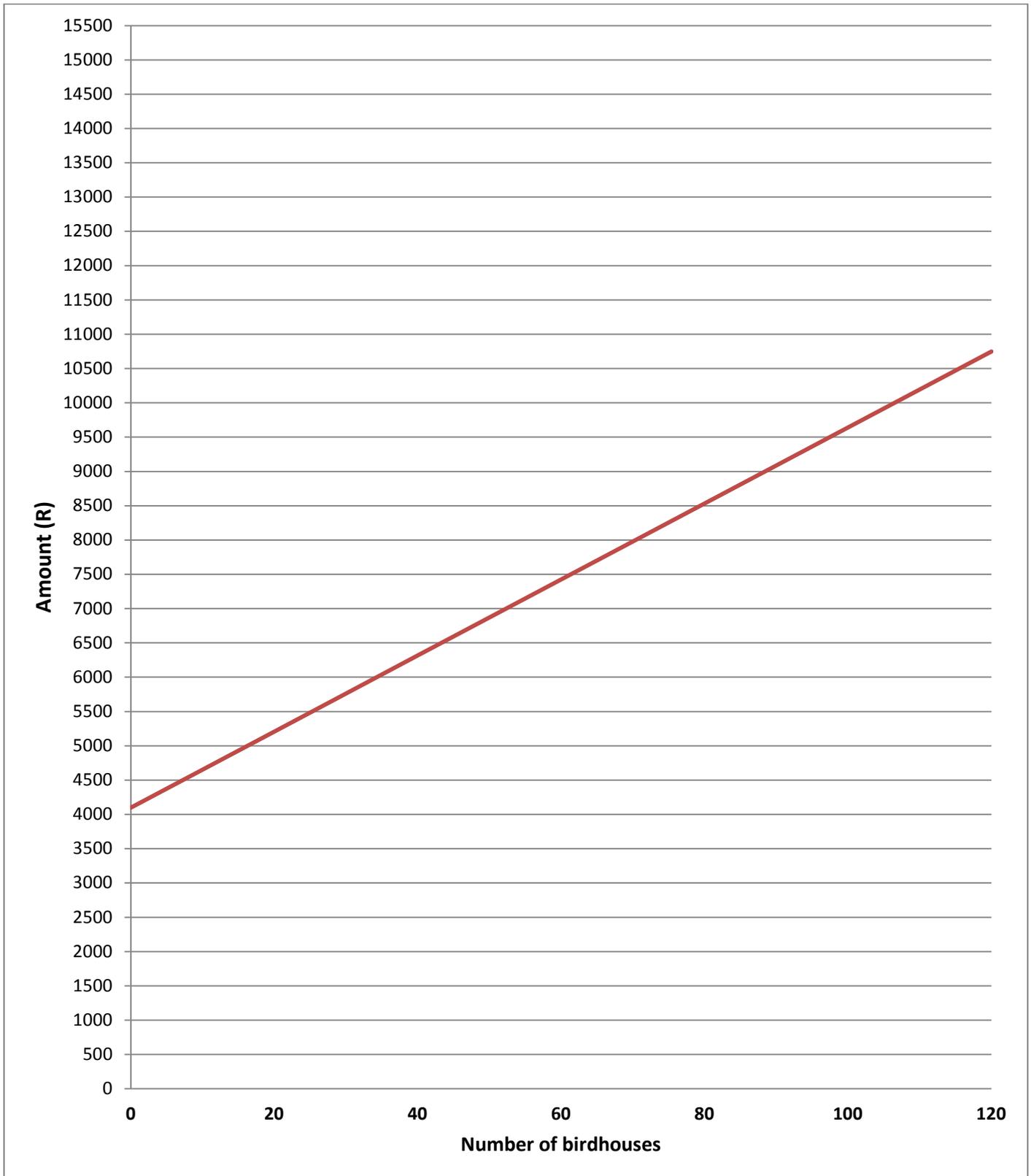
- 5.1. Determine the ratio scale of the map. Write it in the form 1: ____ (3)
- 5.2. Use the line scale to determine the actual straight-line distance from Parking 2 to The Saddle. (2)
- 5.3. Calculate the approximate distance, in kilometres, one would drive along the road to get from Parking 2 to Parking 4. (4)

[9]

GRAND TOTAL: [150]

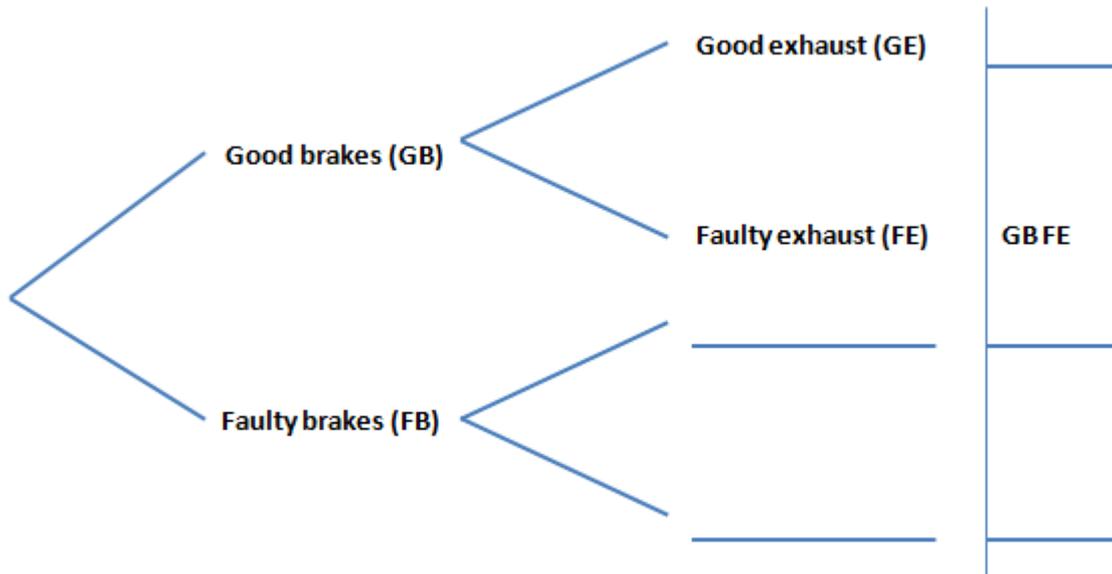
ANNEXURE A – QUESTION 1.2.7

NAME: _____



ANNEXURE B – QUESTION 4.1.6

NAME: _____



ANNEXURE C – QUESTION 5

