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KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA



NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY

COMMON TEST

JUNE 2022

MARKS: 100

TIME: 2 hours

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

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INSTRUCTIONS AND INFORMATION

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

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

    - ANNEXURE A for QUESTION 1.3
    - ANNEXURE B for QUESTION 2.2

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 calculation clearly.

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

8. Indicate units of measurements, where applicable.

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

10. Write neatly and legibly.

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QUESTION 1

1.1 Municipality charges its domestic consumers an electricity cost of 103.42 cents per kilowatts used.

1.1.1 Convert the tariff charge into rand value. (2)

1.1.2 Determine the cost of using 348.2kwh by the household. (2)

1.1.3 An elderly couple pays 87.5% of the original cost as per pensioners discount.

Determine the couples cost in cents (2)

1.2 A scale on the map is given as 1:200 000

1.2.1 Give the name of the scale on the above statement. (2)

1.2.2 Explain the meaning of the scale given above in words. (2)

1.2.3 Convert 200 000cm into meters. (2)

1.3 Two Oceans Marathon is one of the most popular event in the Cape Town annual calendar. Study the map carefully in ANNEXURE A and then answer the following questions.

1.3.1 The first medics are found after how many kilometres during the race? (2)

1.3.2 How many kilometres does the marathon run? (2)

1.3.3 Where is the highest point of the marathon found? (2)

1.3.4 Mention two places where water points are found in the marathon route. (2)

[20]

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QUESTION 2

2.1 Mr Wayne works and receives his payslip every month. Study the payslip below and answer the questions that follow.

ZAMA ZAM PACKAGING			
		Payslip Number :14	
Employee details			
ID:9803050936086	Mr Wayne	Pay date: 31 May 2022	
Bank Account:984****4281		Department: General Affairs	
Tax No. 12537514		Occupation: Cleaning service staff	
EARNINGS	**AMOUNTS**	**DEDUCTIONS**	**AMOUNTS**
Basic Salary	R5 200	Provisional tax (SITE)	R22
Meal Allowance	R1 000	Retirement insurance	R250
Transport Allowance	R1 000	UIF (1% of gross salary)	**A**
		Company load	R680
Total Gross salary	**R7 200**	**Total deductions**	**B**
	Net salary = **C**		
Unemployment insurance fund is levied at most for 1% of gross income			
Maximum UIF threshold equates to R177,12			

2.1.1 What is Mr Wayne's date of birth? (2)

2.1.2 Determine in year(s) and month(s) for Mr Wayne service period on this company. (2)

2.1.3 Calculate the value of **A**, which is Mr Wayne's monthly UIF contribution. (2)

2.1.4 Hence, calculate the missing value **B** and **C** in the payslip. (4)

2.1.5 Mr Wayne state that his UIF claim benefit will be less than R140 per annum.

a) Verify Mr Wayne statement showing all calculations, whether his statement is correct.

You may use the following formula:

$$\textbf{UIF benefit} = \frac{\textbf{Annual gross x 60\%}}{\textbf{365 days}}$$ (4)

b) Mr Wayne states that he can still claim his UIF benefits after four years of resignation.

Critically comment on Mr Wayne's statement (3)

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2.2 Study ANNEXURE B showing Cape Town International Airport Parking tariffs and answer the questions that follow.

2.2.1 Give the maximum number of hours a car can park in the **pickup zone** for R45 paid. (2)

2.2.2 How much will a person pay for parking at the ***shade*** for 18 hours 40 minutes? (2)

2.2.3 Mr Wayne's sister parked her car at **P5 long stay**, she states that the difference between 0 to 5 days parking and weekly parking per day cost on the same parking is R83.60.

(4)

Verify her statement by showing all calculations.

2.2.4 Name the graph that can best represent parking tariffs. (2)

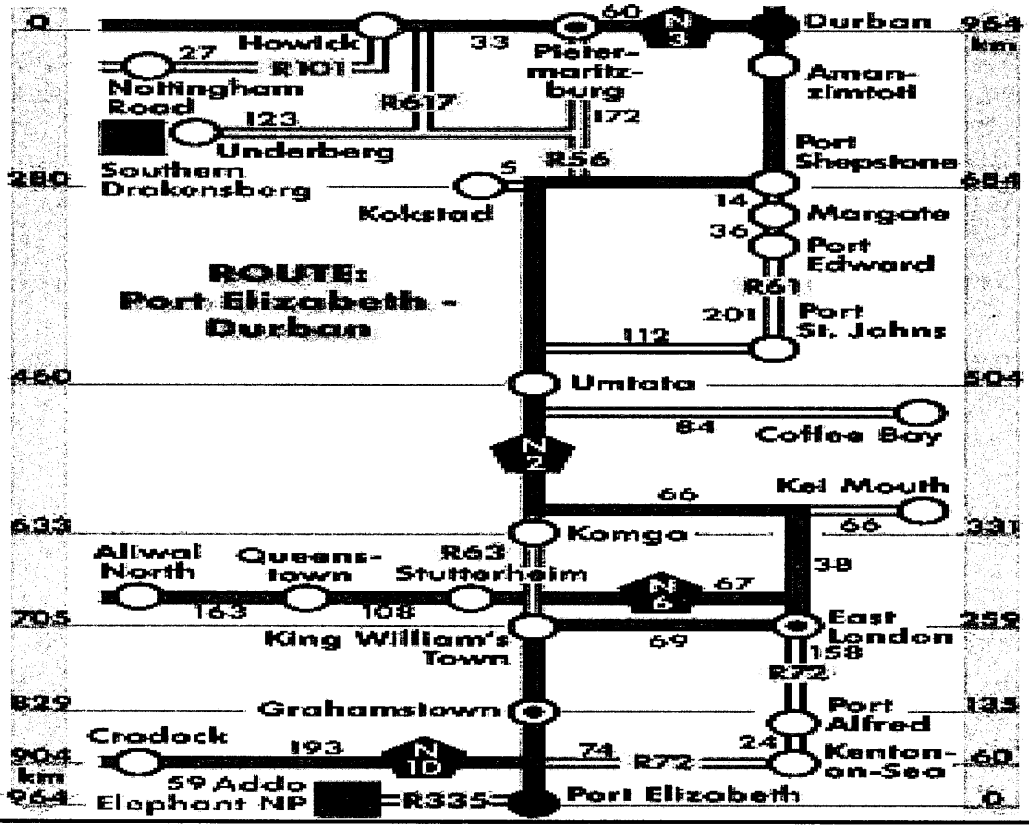
2.2.5 Determine the probability of Mr Wayne paying more than R90.00, if he parked in the parkade. Give your answer in simplified form. (3)

[30]



QUESTION 3

3.1 Below is the strip chart representing distances between various coastal towns. Study the chart and answer the questions that follow:



Source: [https://docplayer.net.html]

3.1.1 Calculate the total distance between Durban and Nottingham Road? (2)

3.1.2 A traveller would take approximately 120min to drive from Durban to Nottingham road with normal traffic flow. Show with calculations the speed he will be travelling at.
You may use the following formula: (4)

$$\textbf{Average Speed} = \frac{Total\ Distance}{Driving\ Time}$$

3.1.3 Calculate the distance between Kokstad and Umtata, then determine the scale used to draw the strip chart. (4)

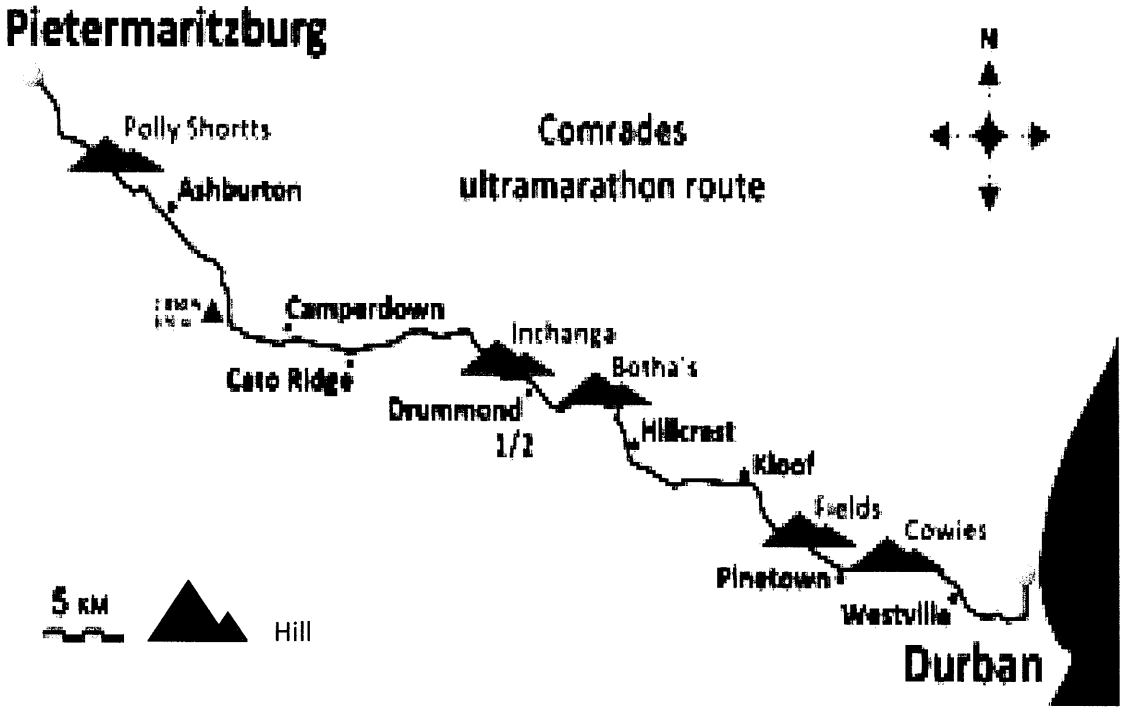
3.1.4 Use the scale calculated in 3.1.3 to verify whether the distance given on the chart between Komga and Kei Mouth is correct. (4)

3.1.5 Give ONE possible reason that can cause a person to spend more time on the road between two towns mentioned in 3.1.1. (2)

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3.2 Comrade Marathon is the most popular race that is ran by thousands of athletes. The route starting point alternate each year between Durban and Pietermaritzburg.

COMRADES' MARATHON ROUTE MAP



[source: https://en.wikipedia.org/wiki/Comrades_Marathon]

Study the comrade marathon map above and answer the questions that follow.

3.2.1 What is the general direction of Durban from Pietermaritzburg? (2)

3.2.2 The marathon distance is 89 km (55,3 miles) and start at 05:30 and finishes at 17:30.

a) Determine (rounded to TWO decimal place) the conversion factor for the distance marathon in the form of **1 mile :...km** (2)

b) Calculate the duration of the comrade marathon in hours. (2)

3.2.3 The map denotes a down run of the comrade marathon. Explain why the race is called a down run. (2)

3.2.4 The 2022 marathon have 11 000 athletes registered and 55% are males. Determine the number of male athletes registered to participate on the marathon (2)

3.2.5 The Drummond cut-off time is at 11:30, Give ONE possible reason for cut-off time. (2)

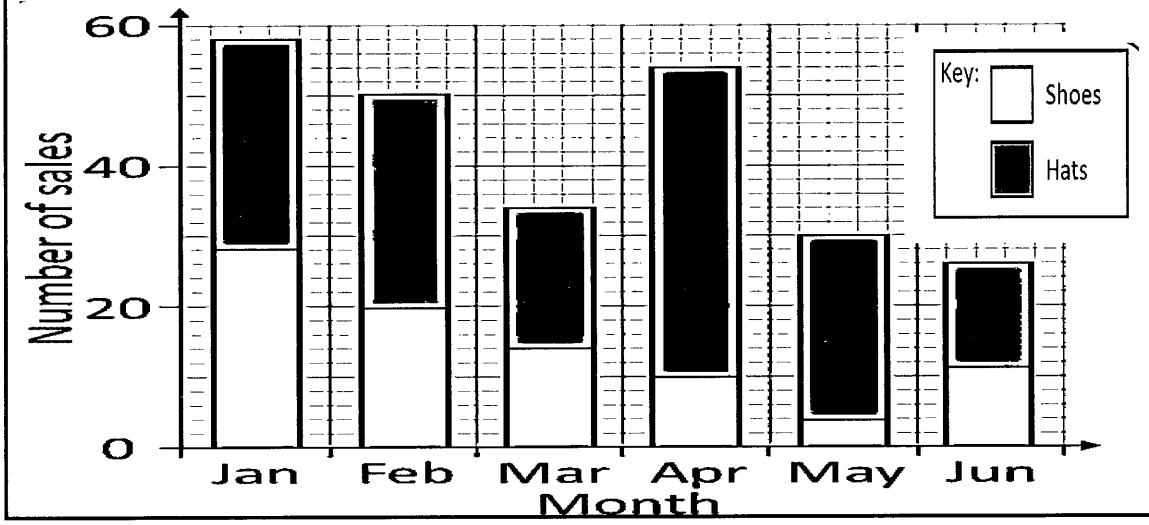
3.2.6 Calculate the distance in kilometres between Cowie's hill and Botha's hill (2)

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QUESTION 4

4.1 Deoprize clothing store sells shoes and hats. The graph shows the total sales for both items in January 2020 to June 2020.



Study the graph above and answer the questions that follow.

4.1.1 Identify the type of the graph and give ONE element that is missing on the graph. (2)

4.1.2 Determine the highest number of hats sold per month. (2)

4.1.3 Calculate the total number of shoes sold in the given period. (2)

4.2 Deoprize clothing collected the data prises from Google shopping list from different outlets. TABLE 2 below shows the listed prices. Study TABLE 2 below to answer the questions that follow.

Table 2: Prices of Shoes and hats in Rands (ALL prices Excludes 15% VAT)

Hats(R)	49,90	89,90	69,90	39,20	409	52	55	92	52	99	39
Shoes(R)	350	999	450	280	350	720	192	800	450	220	280

4.2.1 Give the type of data collection method used to obtain the prices of the items. (2)

4.2.2 Calculate the mean price of the shoes. (3)

4.2.3 Deoprize manager indicates that the median VAT of the median hat price is R7.80. Verify this statement. (4)

4.2.4 Determine the range of the prices for the shoes. (2)

4.2.5 Which measure of central tendency between the mean and the mode will the best to describe the prices of the items. Give a reason for your choice. (3)

[20]

TOTAL MARKS:100

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ADDENDUM

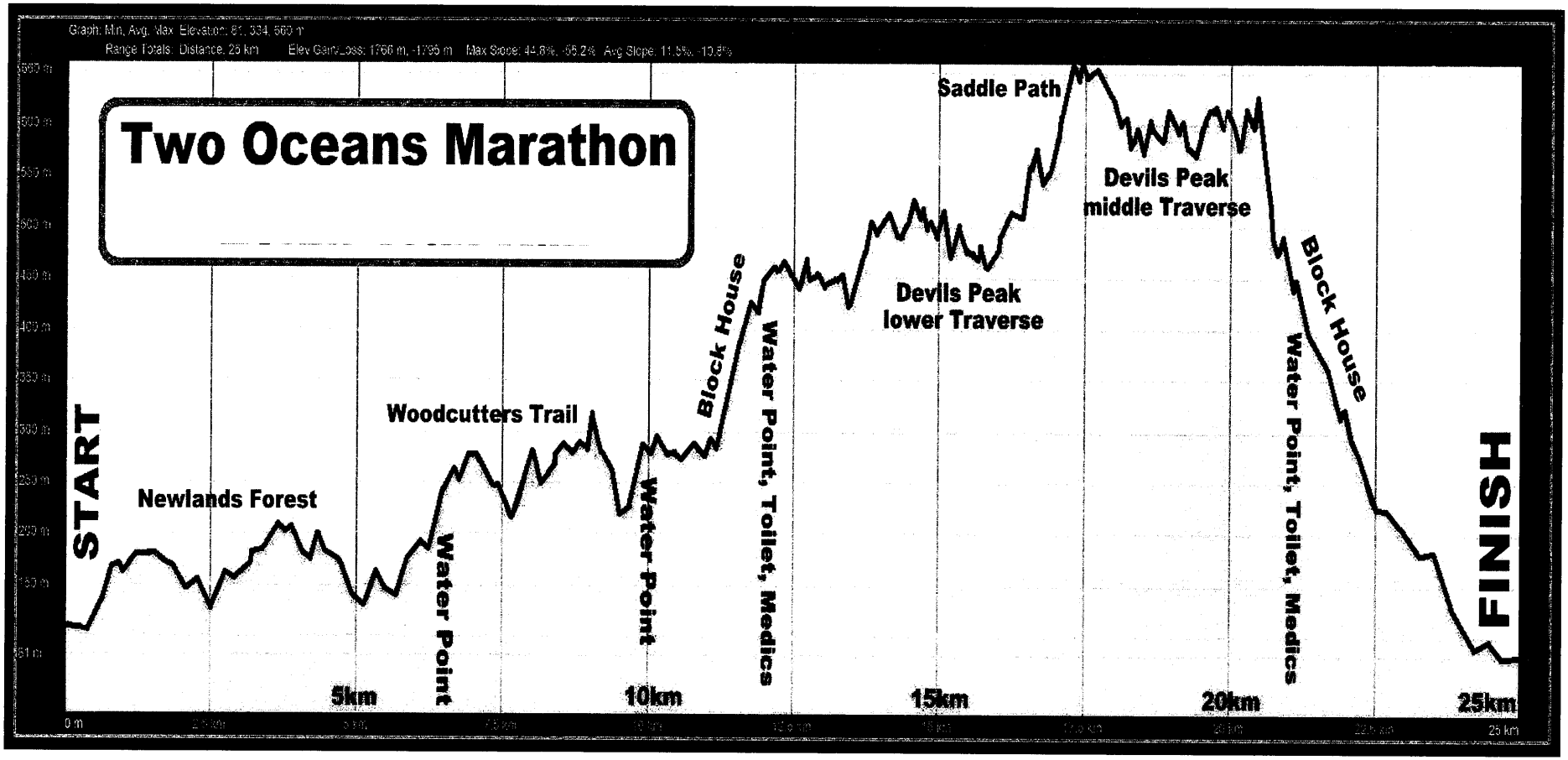
JUNE 2022

This addendum consists of 3 pages with 2 annexures.

ANNEXURE A

Question 1.3

TWO OCEANS MARATHON ELEVATION MAP



[source : https://www.twooceansmarathon.org.za]

ANNEXURE B
Question 2.2



Parking Tariffs

Hours	PARKADE Excluding Ground Floor P1	PARKADE Excluding Ground Floor P2	SHADE Excluding Long Stay P3	SHADE Excluding Long Stay P4
0 - 1	R 18.00		R 12.00	
1 - 2	R 42.00		R 26.00	
2 - 3	R 62.00		R 38.00	
3 - 4	R 84.00		R 46.00	
4 - 12	R126.00		R 92.00	
12 - 24	R176.00		R120.00	
24 +	Thereafter R 105.00 for every additional 12 hours or part thereof.		Thereafter R 71.00 for every additional 12 hours or part thereof.	

P5 LONG STAY

0 - 5 DAYS R688.00 (MINIMUM TARIFF CHARGEABLE)
6 DAYS R324.00 (R54 PER DAY X 6 DAYS)
7 DAYS R378.00 (R54 PER DAY X 7 DAYS)
Thereafter R54.00 PER DAY or part thereof

P1 PICK UP ZONE

0 - 30 min - No Charge
31 - 45 min - R18.00
45 - 60 min - R45.00
Thereafter R53.00 PER HOUR or part thereof

Ph: (021)936 3613 or 24 hours 082 736 4930

[source: http://cape-townairport.co.za/]

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MARKING GUIDELINE

MARKS: 100

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.

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QUESTION 1 [20 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
1.1.1	Rands = $\frac{103,42}{100}$ ✓M = R1,0342✓CA	1M, Conversion dividing by 100 1CA,Answer **Accept R1,03** **NPR** (2)	L1 F
1.1.2	Cost = R1,0342 ×348,2kwh ✓M = R360,108 =R360,11 ✓CA **OR** Cost = 103,42 ×348,2kwh ✓M =36 010.844 cents ✓CA	1M, Multiplying by Rate 1CA, Answer in rands **Accept R358,65** **OR** 1M, Multiplying by rate 1CA, Answer in cents (2)	L1 F
1.1.3	✓M Block 1 tariff = $\frac{87,5}{100}$ ×103,42 =90,4925 cents✓A	1M, Multiplying rate by percentage 1A, Answer **NPR** (2)	L1 F
1.2.1	Number scale✓✓A	2A, Answer (2)	L1 MP
1.2.2	One unit on the map represents twenty thousand units in reality/actual ground✓✓E **OR** The map is 20 000 times smaller than the actual ground. ✓✓E	2E, Explanation (2)	L1 MP
1.2.3	Meters = $\frac{20\,000cm}{100}$ ✓MA = 200 ✓A	1MA, Dividing by 100 1A, Answer (2)	L1 MP
1.3.1	10 km ✓✓RT	2RT, Answer (2)	L1 M&P
1.3.2	25 km ✓✓RT	2RT, Answer (2)	L1 M&P
1.3.3	Saddle Path ✓✓RT	2RT, Answer (2)	L1 M&P
1.3.4	Woodcutters Trail ✓RT Block House ✓RT	1RT, Answer 1RT, Answer (2)	L1 M&P
		[20]	



QUESTION 2[30 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
2.1.1	05 March 1998 ✓✓A	2A, Answer **Accept 980305 OR 05/03/1998** (2)	L1 F
2.1.2	Service Period = $\frac{14}{12}$ months ✓M = 1,166666666 ≈ 1year 2months ✓A	1M, Dividing by 12 1A, Correct years and months (2)	L2 M
2.1.3	**A** = $\frac{1}{100}$ × R7200✓M = R72 ✓A	1M, Multiplying R7200 by 1% 1A, Answer (2)	L2 F
2.1.4	**B** = R22 +R250 +R72 +R680✓M = R1024 ✓CA ✓M **C** =R7200 – R1024 =R6176 ✓CA	**CA from 2.1.3** 1M, Adding correct values 1CA, Answer 1M,Subracting Correct values 1CA, Answer (4)	L2 F
2.1.5(a)	UIF benefit = $\frac{R86400 \times 60\%}{365}$ ✓A ✓SF =R142,03 ✓CA His statement is incorrect ✓J	1A, Annual gross 1SF, Correct substitution 1CA, Answer 1J,Justification (4)	L3 F
2.1.5(b)	✓A Agree, All UIF claims that are within 5years are payable irrespective of nature of departure. ✓✓R	1A, Answer 2R, Reason (3)	L4 F
2.2.1	Duration = $\frac{60min}{60}$ ✓M = 1 hour✓A	1M, Dividing by 60 1A, Answer (2)	L2 M
2.2.2	R120✓✓RT	2RT, Answer (2)	L1 F
2.2.3	Daily cost(0-5days) = $\frac{R688}{5 \text{ days}}$ ✓M =R137,60✓A Difference = R137,60-R54✓M =R83,60 Her statement is correct✓J	1M,Dividing by 5 days 1A, Daily rate of R137,60 1M, Difference 1J, Justification (4)	L3 F
2.2.4	Step graph✓✓A	2A, Answer (2)	L1 F
2.2.5	P(above R90) = $\frac{2}{6}$ ✓A ✓A = $\frac{1}{3}$ ✓CA **OR** P (above R90) = 1 - $\frac{4}{6}$✓M✓A = $\frac{1}{3}$ ✓CA	1A, Numerator 1A, Denominator 1CA, Simplification **OR** 1M, Probability concept 1A, Correct fraction 1CA, Simplification (3)	L2 P
		[30]	

QUESTION 3 [30 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
3.1.1	Total Distance = 60 + 33 + 27 ✓MA = 120km ✓A	1MA, Adding all correct distances 1A,Answer (2)	L2 M&P
3.1.2	Average speed = $\frac{120\ km}{120\ min}$ ✓SF = $\frac{120\ km}{2\ hrs}$ ✓C = 60km/h ✓A ✓U	1SF, Correct substitution 1C, Conversion to hours 1A, Answer 1U, Units (4)	L3 M
3.1.3	Distance = 460 – 280 **OR** 684 – 504 = 180km ✓M Scale = 2.5cm : 180km ✓M = 2.5 : 18 000 000 ✓C = 1: 7 200 000 ✓CA	1M, Measuring distance 1M, Concept of scale 1C, Conversion 1CA, Answer (4)	L3 M
3.1.4	Measured distance = 5cm ✓M Scale = 1 : 7 200 000 Actual distance = 5 x 7 200 000 ✓CA = 36 000 000 = 360km ✓ CA ∴ The distance given is incorrect ✓O	**CA from 3.1.3** 1M, Measured distance 1CA, Using scale 1CA, Distance 1O, Deduction (4)	L4 M
3.1.5	• High traffic volumes ✓✓O **OR** • Poor road condition **OR** • Delays caused by traffic officials **OR** • Road accidents **OR** Any other valid reason	2O, Opinion (2)	L4 M&P
3.2.1	South East ✓RT	2RT,Answer (2)	L1 MP
3.2.2(a)	Ratio = $\frac{55\ miles}{55}$: $\frac{89\ km}{55}$ ✓MA = 1 mile :1,61km✓A	1MA, Dividing by 55 both sides 1A, Correct answer (2)	L2 M
3.2.2(b)	Duration = 17:30 -05:30 ✓M = 12hours✓A	1M, Subtracting times 1A, Answer **AO** (2)	L2 M
3.2.3	Because the starting point of the marathon is at the highest point above sea level✓✓O **OR** The finishing point is at the lowest height above sea level✓✓O	2O, Reason (2)	L4 MP
3.2.4	Male athletes = $\frac{55}{100}$ × 11 000✓M = 6050✓A	1M, Percentage concept 1A, Correct answer **AO** (2)	L2 MP

QUE	SOLUTION	EXPLANATION	L/T
3.2.5	In order to disqualify incompetent athletes✓✓O **OR** In order to manage broadcasting times for other programmes. ✓✓O **OR** Athletes won't run for the rest of the day. ✓✓O **OR** Any other valid reason	2R, Reason (2)	L4 MP
3.2.6	Distance = 74km – 45km✓RT = 29km✓CA	1RT, Correct distance difference 1CA, Answer **Accept 26km to 32km** (2)	L3 MP
		[30]	

QUESTION 4 [20 MARKS]			
QUE	**SOLUTION**	**EXPLANATION**	**L/T**
4.1.1	Compound bar graph✓A Heading ✓A	1A, Correct graph 1A, Answer (2)	L1 DH
4.1.2	No of hats = 54 – 10✓MA = 44 hats✓A	1MA, Correct values subtracted 1A,Answer (2)	L3 DH
4.1.3	Shoes = 29+20+14+10+4+12 ✓M =89✓CA	1M, Adding values 1CA, Number of shoes (2)	L2 DH
4.2.1	Survey ✓✓A	2A, Answer (2)	L1 DH
4.2.2	Mean = ✓M $\frac{350+999+450+280+350+720+192+800+450+220+280}{11}$ $=\frac{5091}{11}$✓MA =R462,82✓CA	1M,Adding values 1MA,Dividing by 11 1CA, Answer. (3)	L2 DH
4.2.3	R39,R39.20,R49.90;R52;R52;**R55,**R69,90;R89,90;R92; R99;R409 ✓M VAT (median) = 15% ×R55✓CA✓MA =R8,25 Incorrect statement. ✓J	1M, Arranging prices 1CA,Correct median 1MA, Calculating vat by15% 1J, Justification (4)	L4 DH
4.2.4	Range = R999- R192✓MA =R807 ✓A	1MA, Range concept 1A,Answer **AO** (2)	L2 DH
4.2.5	✓A ✓✓E Mode, mode is not affected by outliers/ the modal price will indicate the most favourable item by customers.	1A,Answer 2E,Explanation (3)	L4 DH
		[20]	
		TOTAL MARKS: 100	

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