**FORM IV**

**MATHEMATICS**

**PAPER 121/2 2017**

**MARKING SCHEME**

1. (3 marks)





1. (3 marks)





1. (3 marks)



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1. (3 marks)



1. . (4 marks)



1. . (2 marks)



1. 



1. .

(3marks)



1. . (3 marks)



1. (a) Expand (1 + ½*x*)10up to the fourth term.



(b) Hence, find the value of (0.84)10. (3 marks)



1. .

**15**

**20**

**25**

**0**

**5**

**10**

**Velocity (m/s)**

**1**

**2**

**3**

**4**

**5**

**6**

**Time (t)**

(a) the average rate of change of velocity between *t=2.5* seconds and *t= 5* seconds. (2 marks)

(b) the instantaneous rate of change at *t = 4* seconds. (2 marks)

1. .

(a) Calculate the length PQ. (2 marks)



(b) If ZT = 4cm and PT: TQ = 3:5, find XT. (2 marks)



1. (3 marks)

Let the constants be hand K so that:



1. . (3 marks)



**SECTION II** (50 marks)

*Answer* ***only five*** *questions in this section in the spaces provided.*

1. .(a) Find the probability of picking ;

(i) a yellow bead (1 mark)



(ii) A red or green bead. (2 marks)



(b)(i)

(3 marks)

(ii)  (4 marks)

1. .

(a) Calculate the employees:

(i) Basic salary for May; (2 marks)



(ii) Total taxable income in May of that year. (2 marks)



(b) calculate the net tax paid by the employee. (4 marks)



(c) calculate the employee’s net income. (2 marks)



1. .Draw a suitable straight line graph to represent this information.



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Log a | 0 | 0.20 | 0.48 | 0.60 | 0.70 | 0.78 |
| Log T | 0.48 | 1.08 | 1.43 | 1.68 | 1.88 | 2.03 |

(2 marks)

(b) Determine the values of h and n. (3 marks)



(c) Solve the equation relating T to a. (1 mark)



1. .(a) Given that the population of antelopes in the 10th year was 5 200 000, determine:

(i) The annual population increment. (2 marks)



(ii) The total number of antelopes during the 10 years. (2 marks)



(b) Determine the population of weaver birds, correct to the nearest during the tenth year. 2 marks)



(c) Determine correct to the nearest bird;

(i) The total number of birds during the 10 years. (2 marks)



(ii) the population of the antelopes after a decrease 10% in the 11th year. (2 marks)



1. .(a) Complete the table by filling in the missing values of y. (2 marks)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *x* | -4 | -3.5 | -2.5 | -2 | -1.5 | -1 | -0.5 | 0 | 0.5 | 1 | 1.5 | 2.0 |
| *y* | **-12** | -4.1 | 1.1 | **0** | -2.6 | **-6** | -9.4 | **-12** | -13.1 | **-12** | -7.9 | **0** |

1. the graph of for  (3 marks)

(c) By drawing a suitable straight line, on the same grid as (b) above, solve the equation. (5 marks)

|  |  |  |
| --- | --- | --- |
| *x* | 0 | 1 |
| *y* | -6 | -5 |



1. A circle with centre C has equation 

(a) (2 marks)



(b) (i) the coordinate of C (1 mark)

**Centre (-1,6)**

(ii) the radius of the circle (1 mark)

**Radius = 5**

(c) (i) Show that the x-coordinates of P and Q satisfies the equation

 (3 marks)

B1

 M1

 A1

(ii) Given that P has coordinates (2, 2), find the coordinates of Q. (2 marks)

 M1A1

Q has coordinates (-5,9) A1

(iii) Hence find the midpoint of PQ. (1 marks)

Mid point of ‘their’ (-5,9) and (2,2) =  A1

1. .(a) Calculate the amount of water in litres, supplied in one hour. (3 marks)





(b) Estimate the minimum number of families in this estate. (3 marks)



1. (2 marks)



(d) (2 marks)



1. Using a ruler and a compasses only construct triangle ABC such that AB = 4 cm, BC = 5 cm and angle ABC =120°. Measure AC. (3 marks)

On the diagram, construct a circle which passes through the vertices of the triangle ABC. Measure the radius of the circle. (4 marks)

Measure the shortest distance from the centre of the circle to the line BC (1 mark)

Determine the length of arc BC. (2 marks)