Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Adm. No: \_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_

Index No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**KASSU JET EXAMINATION**

*Kenya Certificate of Secondary Education*

***121/1***

**MATHEMATICS**

**PAPER I**

**JUNE 2018**

**2 ½ HOURS**

**INSTRUCTIONS TO CANDIDATES**

1. Write your name, admission number, class and index number.

2. The paper contains two sections: Section I and II

3. Answer ALL questions in section I and ANY FIVE questions from section II.

4. All working and answers must be written on the question paper in the spaces provided below each question.

5. Marks may be awarded for correct working even if the answer is wrong.

6. Negligent and untidy work will be penalized.

7. Non-programmable silent electronic calculators and four figure mathematical tables are allowed for

 use.

8. This paper consists of printed pages. Candidates should check the question paper to ensure that all the pages are printed indicated and no questions are missing.

**FOR EXAMINER’S USE ONLY**

**SECTION 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | TOTAL |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**GRAND TOTAL**

**SECTION II**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | TOTAL |
|  |  |  |  |  |  |  |  |  |

3. Simplify the expression (3mks)

6. Find the equation of a line which passes through the point (2, 3) and is perpendicular to

 y = 3x -1. Giving your answer in the double intercepts form (3mks)

9. A line PQ = 12.5cm. By using another line, divide PQ into nine equal parts. (3mks)

12. A boy walk directly from point Q towards the foot of a vertical flag post 200m away. After conveying a distance of 140m, he observes the angle of elevation of the top of the flag post is 75. Calculate the angle of depression of point Q from the top of the flag post. (3mks)

15. Kassim has a money box containing 100 mixed shs 5 and shs 10 coins with a total value of shs 600. How many of each type of coin does the box contain. (3mks)

18.a) a bus left Kisumu at 9.30 am towards Nairobi at an average speed of 81km/hr. A matatu left Nairobi for Kisumu at 10.10 a.m at an average speed of 72km/hr. The distance between Kisumu and Nairobi is 360km. Determine:

i) The time taken before the two vehicles met. (3mks)

ii) The distance between two vehicles 40 minutes after meeting. (2mks)

iii) A car left Kisumu towards Nairobi at 9.50am at an average speed of 90km/hr. Determine the time the car caught up with the bus. (3mks)

b) The figure below shows speed time graph of a journey. If total distance travelled in 80 seconds is 920m. Find the distance travelled in the final 40 seconds. (2mks)

 16m/s

 speed

 0 15 time (seconds)

21. Given that the column vectors

Express as a column vector and hence calculate its magnitude (4mks)

b) Given that the midpoints of PQ is (-3,1) and Q (7,5), obtain the co-ordinates of P(3mks)

c) A translation T(2,1) maps triangle ABC onto triangle A1B1C1. Given the co-ordinates A(2,3) , B(2,5) and C(4,4). Find the co-ordinates of A1B1 and C1. (3mks)

24. A pilot intends to fly from A to D through B and C, B is 750km from A and on a bearing of N50 40W from B and their distance apart is 600km. D is on a bearing of S 85 W from C and at a distance of 1050km.

a) Using the scale of 1cm for 100km, show the flight route. (4mks)

b) If the pilot on its way back decides to fly directly from D to A;

i) By use of compass bearing find the direction of A from D (1mk)

ii) Find the distance from D to A in kilometers. (1mk)

c) The plane flies at 500km/h. If it leaves D at 9.00a.m at what time did it arrive at A.(2mks)

d) i)Using your diagram in (a) above, (i) find the distance between A and C (1mk)

ii) Find the compass bearing of A from point C (1mk)