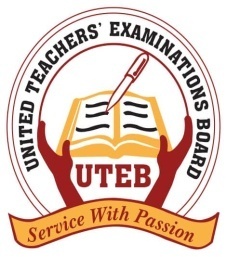
456/1

Mathematics

**Paper 1**

Jul. /Aug. 2019

**2 ½ Hours**

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**JOINT MOCK EXAMINATIONS, 2019**

**Uganda Certificate of Education**

MATHEMATICS

**Paper 1**

2 Hours 30 minutes

**INSTRUCTIONS TO CANDIDATES**

* Answer **ALL** questions in section **A** and **NOT** more than five questions from section **B.**
* Any additional question(s) answered will not be marked
* All necessary calculations **MUST** be done on the answer booklet provided. Therefore, no paper should be given for rough work.
* Only silent non-programmable scientific calculators may be used.
* Mathematical tables, graph papers are provided.
* No paper should be given for rough work
* State the degree of accuracy at the end of each answer attempted using a calculator or tables; and indicate **Cal** for calculator, **Tab** for mathematical table

**Turn Over**

**SECTION A: COMPULSORY (40 MARKS)**

Attempt **all** questions in this section

1. If , find . **(04 Marks)**
2. Solve for x on the equation . **(04 Marks)**
3. Simplify **(04 Marks)**
4. In the figure , find the size of angles ACB and EBC

**240**

**D**

**720**

**E**

**C**

**B**

**A**

**(04 Marks)**

1. Given that the matrix is singular, find the value of x. **(04 Marks)**
2. Given = -0.56 an that, find x. **(04 Marks)**
3. Solve for x and y given that 5x -2y = 25 and 32x. **(04 Marks)**
4. Make x the subject of the formula . **(04 Marks)**
5. Triangle ABC has vertices A(1,4) B(3,4) C(3,1) . Find the coordinates of the image of

ABC under a quarter turn of 900 about the origin. **(04 Marks)**

1. The probability that it will rain on a certain morning is . If it rains, the probability that

Martha misses her bus is . If it does not rain, the probability that she catches the bus is. Draw a tree diagram for this information and use it to find the probability that it rains and Martha catches the bus. **(04 Marks)**

**SECTION B: (60 MARKS)**

**Attempt only 5 questions from this section**

1. Draw a cumulative frequency curve for the following grouped frequency distribution of life

span in a dynasty

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class | 20 – 29 | 30 – 39 | 40 – 49 | 50 – 59 | 60 – 69 | 70 – 79 |
| Frequency | 15 | 15 | 20 | 17 | 10 | 6 |

1. Use your curve to estimate the median life span.
2. Calculate the mean of the life span.

**(12 marks)**

**E**

**C**

**D**

**B**

**A**

**5cm**

Triangles ABC and ADE are similar, with BC parallel to DE.

, and

1. Write an equation in x and show that = 0
2. Factorize
3. Solve = 0
4. For the larger value of x, find the fraction in the simplest form. **(12 marks)**
5. In this question using a ruler, a pencil and a pair of compasses only, construct
6. A quadrilateral ABCD in which = 6cm. angle CBA = 750 and angle DAB = 1050
7. Bisect angle ACB, let the bisector meet at E and produced at F. construct a circum-circle to triangle AEF
8. Measure the distance from the centre of the circle O to the vertex B. What is the radius of the circle? **(12 marks)**
9. Wandera and Musoke take a driving test. The probability that Wandera will pass is

and the probability that Musoke will pass is .

1. Calculate the probability that they will both fail.
2. Calculate the probability that only one of them will pass
3. If Musoke fails, he will take the test again. The probability that he will pass at any

further attempt is .

1. Draw a tree diagram to show the probabilities of Musoke passing or failing on each of

these three attempts.

1. Calculate the probability that he will not need more than 3 attempts.

**(12 marks)**

1. Triangle ABC with vertices A(1,-1) B(1,-4) and C(3,-2) s mapped onto A1B1C1 with vertices

A’(1,1), B’(x,y), C’(3,4) by a transformation represented by matrix T=

1. Find vales of a, b, c, d
2. Find coordinates of point B1.
3. Triangle A2B2C2 is the image of triangle A1B1C1 under a rotation of 900 about the origin. Find the coordinates of A2B2C2
4. Determine the single matrix that maps ABC onto A2B2C2
5. What matrix maps A2B2C2 back to ABC? **(12 marks)**
6. An export company is to transport 300 tonnes of pineapples. Two cargo planes are available.

A Boeing which can carry 30 tonnes of pineapples per flight and an Airbus which can carry 20 tonnes of pineapples per flight. The airbus has to make more, flights than the Boeing. The Boeing has to make at least 3 flights. The company has 150,000 US dollars for transport costs. The cost per flight is 12,000 dollars for Boeing and 9,000 dollars for Airbus.

If x is the number of flight made by the Boeing and y is the number of flight made by the Airbus.

1. Write down four inequalities for the given conditions
2. Plot graphs of the inequalities you have formed on the same axes and shade the unwanted regions.
3. Find the number of flights each plane should make if the cost of transport is to be minimized. **(12 marks)**
4. Given y= 3x2 – 5x – 7, copy and complete the table below an use it to answer the

questions that follows

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| **y** | 35 |  |  | -7 |  |  |  |  | 43 |

1. Draw a graph of y = 3x2 – 5x – 7
2. Use your graph to solve 3x2 -5x -7= 0
3. Use your graph to solve 3x2 – 2x -12 =0. **(12 marks)**

**End**