**S475/1**

**Subsidiary**

**mathematics**

**Paper 1**

**August**

**2 Hours**



**ELITE EXAMINATION BUREAU MOCK 2019**

**Uganda Advanced Certificate of Education**

SUBSIDIARY MATHEMATICS

**PAPER 1**

**2 Hours 45Minutes**

**INSTRUCTIONS TO CANDIDATES**

* *Answer all the* ***eight*** *(8) questions in section* ***A*** *and any* ***four*** *questions in section* ***B****.*
* *Each question in section* ***A*** *carries* ***5******marks*** *while each question in section B carries 15 marks.*
* *A graph paper is provided.*
* *Begin each answer on a fresh sheet of paper.*
* *A mathematical table with a list of formulae and a silent non-programmable scientific calculators may be used.*
* *For numerical work, assume acceleration due to gravity* ***g = 10ms-2****.*
* *No paper is provided for rough work.*

**Turn Over**

**SECTION A (40 MARKS)**

**Answer all questions in this section**

1. The heights (in cm) of a sample in a certain school were recorded as follows.

120, 132, 118, 141, 128, 134, 127, 138, 128, 145, 130. Calculate the inter quartile range. (5marks)

2. Find the expression for Q given that Given that q = 10 when P = 0. (5marks)

3. Given the events A and B such that and

(i) Find P(AnB) if A and B are independent events. (3marks)

(ii) Find if A and B are mutually exclusive events or disjoint events. (2marks)

4. The first and last terms of an arithmetic progression are -3 and 58 respectively. The sum of all the terms of the progression is 5060. Find the number of terms and the common difference. (5marks)

5. Given the matrix m = and I is a identity matrix, determine the values of λ for which (5marks)

6. Given that and , find the angle between and . (5marks)

7. Solve the simultaneous equations

(5marks)

8. The table below shows the average termly marks scored in mathematics tests by a certain student from his/her SI in 1989 to his/her S.4 in 1992.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Termly marks (%)** | | |
| 1989 | 36 | 50 | 54 |
| 1990 | 40 | 45 | 60 |
| 1991 | 39 | 46 | 70 |
| 1992 | 49 | 50 | 48 |

Calculate the three point moving averages for the date. (5marks)

**SECTION B (60MARKS)**

**Answer only for questions in this section.**

9. a) Solve where

b) P and q are vectors such that P =2i – 3j and q = 6i + 4j, find

(i) the angle between P and Q

(ii) find |2p + 4q| (5marks)

10. Solve for x in the equations

a) (5marks)

b) (7marks)

11. The height and masses of ten students are given in the table below.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Height (cm) | 156 | 151 | 152 | 146 | 160 | 157 | 149 | 142 | 158 | 141 |
| Mass (kg) | 62 | 58 | 63 | 58 | 71 | 60 | 55 | 57 | 68 | 56 |

a(i) plot the data on a scatter diagram. (6marks)

(ii) Draw the line of best fit. Hence estimate the mass corresponding to a height of 155cm. (3marks)

b) Calculate the rank correlation co-efficient for the data and comment on your results. (6marks)

12. a) A random variable X has the following distribution.

P(X =0) = P(X = 1) = 0.1, P(X=2) = 0.2, P(X = 3) = P(X = 4) = 0.3. Find the mean and variance of X. (6marks)

b) The probability that a bakery will have sold all of his loaves X hours after baking is given by the p.d.f

1. Determine the value of K (4amrks)
2. Calculate the mean value (5marks)

13. The table below shows the prices (in Ug shs) of some food items in January, June and December together with the corresponding weights.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | **Price (in Ug shs)** | | | |
|  | Jan | June | December | Weight |
| Matooke (1bunch) | 15,000 | 13000 | 18000 | 4 |
| Meat (1kg) | 6500 | 6000 | 7150 | 1 |
| Posho (1kg) | 2000 | 1800 | 1600 | 3 |
| Beans (1Kg) | 2200 | 2000 | 2860 | 2 |

Taking January as the base month, calculate the

1. Simple aggregate price index for June comment on your result.
2. Weighted aggregate price index for December comment on your result.

14. The roots of the equation are determine the

a) Values of and . (12marks)

b) Quadratic equation with integral coefficient whose roots are . (3marks)

**END**