



The Co-operative University of Kenya

END OF SEMESTER EXAMINATIONS

EXAMINATION FOR DIPLOMAS IN YR 1 SEM 1

COURSE CODE: DUCU 1104

UNIT TITLE: FOUNDATIONS OF MATHEMATICS

DATE: February, 2021

Time: 2 Hours

INSTRUCTIONS

1. Attempt all questions
2. Scientific Calculators and non-programmable calculators may be used

1. Define the following terms as used in Set theory. (6 marks)
 - (a) Set
 - (b) Subset
 - (c) Union
 - (d) Compliment
 - (e) Intersection
 - (f) Difference of set A and B.
2. List all the subsets of the set (4 marks)

$$A = \{1, 2, 3\}$$
3. Define Permutation and Combination. (2 marks)
4. Define the following terms as used in sequence and series. (6 marks)
 - (a) Sequence
 - (b) Series
 - (c) Arithmetic Progression
 - (d) Geometric Progression
5. Define a derivative. (2 marks)
6. In a survey of 60 people it was found that 25 read Newsweek magazine, 26 read Time, and 25 read Fortune. Also 9 read both Newsweek and Fortune, 11 read both Newsweek and Time, 8 read both Time and Fortune, and 8 read none of these three magazines. (14 marks)
 - (a) Find the number of people who read all three magazines.

- (b) Read Newsweek and Time but not all the three.
 - (c) Read Newsweek and Fortune but not all the three
 - (d) Read the Fortune but not all the three magazines
 - (e) Read no magazine at all.
 - (f) Determine the number of people who read exactly on magazine.
7. A military carriage has four sets on each side. How many ways can six men and two women sit if; (6 marks)
- (a) the women sit opposite each other
 - (b) the women do not sit next to each other
8. A shelf contain five western and four romance books, in how many ways can they be arranged; (10 marks)
- (a) without any restrictions
 - (b) if all western are together and all romance are together
 - (c) if all western are together
 - (d) if all romance are together