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**University Examinations 2014/2015**

STAGE II EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

**DIT 0205: ELEMENTARY MATHEMATICS AND DECISION MAKING THEORY**

**DATE: DECEMBER 2014 TIME: 1HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define the following terms as applied in maths
2. A set (1 mark)
3. Geometric sequence (1 mark)
4. Probability (1 mark)
5. Evaluate (3 marks)
6. Kendi deposited ksh 20,000 in a bank that offered 12% compound interest p.a. Find interest after 2 years if the amount was compounded semi-annually. (3 marks)
7. Solve the quadratic equation , using quadratic formula (3 marks)
8. Solve and represent the solution on a number line,

(3 marks)

1. (i) Given y= find (2 marks)

(ii)Expand and simplify (2 marks)

1. Find the sum of 10 terms in the sequence below:

2,4,8,................ (3 marks)

1. On the grid provided, draw the graphs of and 3, hence state the co-ordinates of the point where the two equations intersect (5 marks)
2. Find the percentage error in calculating the area of a right angled triangle whose base is 8cm and height is 10cm (3 marks)

**QUESTION TWO (15 MARKS)**

1. On the grid provided, draw the graph of , , hence use your graph to solve the equations
2. (7 marks)
3. (3 marks)
4. Given sets A=, B=and C=, find
5. A (1 mark)
6. AC (2 marks)
7. A/B (2 marks)

**QUESTION THREE (15 MARKS)**

1. A bag contains 4 red, 3 white and 5 black mables of the same kind. Two mables are picked randomly from the bag without replacement.
2. Draw a decision tree to represent the above information (3 marks)
3. From your decision tree, find the probability of picking two mables of different colours and at least one black mable (6 marks)
4. Show the following sets using venn diagrams.
5.  (1 mark)
6. A (1 mark)
7. B/A (1 mark)
8. solve by factorisation method, the quadratic equation (3 marks)

**QUESTION FOUR (15 MARKS)**

1. On the grid provided, show the region that satisfies the inequalities below.

(6 marks)

1. Evaluate  (4 marks)
2. On the grid provided, draw the graph of , (5 marks)

**QUESTION FIVE (15 MARKS)**

1. Find the stationary point of the curve , distinguish between the maximum and minimum values and sketch the curve (10 marks)
2. Find the 8th term in the series below

1+ (3 marks)

1. Define the following terms
2. Linear inequality (1 mark)
3. Differentiation (1 mark)