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**University Examinations 2015/2016**

FIRST YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

**CIT 2155: INTRODUCTORY MATHEMATICS FOR SCIENCE**

 **DATE: DECEMBER 2015 TIME: 11/2 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. Define the following terms as applied in Mathematics:
2. A set. (1 Mark)
3. An error. (1 Mark)
4. Linear inequality. (1 Mark)
5. Find given  (2 Marks)
6. Solve: . Using any suitable method. (3 Marks)
7. Find the sum of the first 12 terms of the sequence; 1,2,4,8,….. (3 Marks)
8. Find the percentage error in calculating the area of a rectangle whose length is 10cm and width is 6cm. (4 Marks)
9. Solve and represent the solutions on a number line:

 (3 Marks)

1. Simplify  (3 Marks)
2. Kendi sold a dress for Kshs.450 after allowing 10% discount and made a 15% profit. What would be the profit if no discount allowed. (3 Marks)
3. Evaluate (3 Marks)
4. Find the 18th term in the sequence 3,5,7. …… (3 Marks)

**QUESTION TWO (15 MARKS)**

1. On the grid provided, draw the graph of hence use your graph to solve the equation . (8 Marks)
2. Given sets and , find:
3.  (1 Mark)
4.  (2 Marks)
5.  (1 Mark)
6. Discuss any three application of sets in information and technology. (3 Marks)

**QUESTION THREE (15 MARKS)**

1. On the grid provided, show the region that satisfies the following in qualities:  (5 Marks)
2. Solve graphically, the linear simultaneous equations and (4 Marks)
3. Find the time and amount invested at 12% compound interest per annum will earn Kshs.5,000 if the initial deposit was Kshs.50,000. (4 Marks)
4. Differentiate between arithmetic and geometric sequences. (2 Marks)

**QUESTION FOUR (15 MARKS)**

1. Find the stationary points of the curve distinguish between the maxima and minima and sketch the curve. (10 Marks)
2. Solve by quadratic formula  (3 Marks)
3. Use Venn diagrams to represent the following sets:
4.  (1 Mark)
5.  (1 Mark)

**QUESTION FIVE (15 MARKS)**

1. A bag contains 6 green, 4blue and 5 red pens of the same kind. Two pens are picked randomly from the bag randomly without replacement
2. Draw a free diagram to represent the above information. (3 Marks)
3. Find the probability of picking two pens of the same kind. (3 Marks)
4. Find the probability of picking at least one red pen. (3 Marks)
5. Mwenda deposited Kshs.25,000 in a bank that paid 10%compound interest. Find the amount and interest after 3 years if the amount is compounded semi-annually.(4 Marks)
6. State any two applications of probability. (4 Marks)