**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS**

**SCHOOL OF HEALTH SCIENCES**

**CERTIFICATE IN COMMUNITY HEALTH AND DEVELOPMENT**

**SMA1111: MATHEMATICS 1**

**MAIN CAMPUS**

**AUGUST 2014 TIME 1HR 30MIN**

**This paper consists of FIVE Questions. Answer QUESTION ONE and any other TWO Questions.**

**QUESTION ONE (Compulsory) (30 Marks)**

1. Three Sets X, Y and Z are defined as

X= {100,500,400,600,700,1100,1200,1300} Y={100,200,300,400,500,600,700,800,900,1100} and Z = {200,300,600,900,1000}. Determine X∩(YUZ) (3 marks)

b. Solve the following quadratic equations using the factorization method ( 3marks)



c. Use the completing square method to solve  (3 Marks)

d. Simplify  (3Marks)

e. The second term of an A.P is11 and the fifth term is 26. Determine the last term if there are 100 terms in the series.. (3 Marks)

f. Use the laws of logarithms to rewrite  (3 Marks)



g. Using the definition of the logarithm, Evaluate

|  |  |  |
| --- | --- | --- |
| log2 | 1 16 |  |

h. Expand (x+2y)8 (3 marks)

1. Determine the mean and median of the following numbers

12, 14, 29, 16, 11, 37, 18, 22, 28 (3 marks)

**QUESTION TWO (15 MARKS)**

1. A universal set U is a set of all alphabets. The set V is the set of all the vowels while the set C is the of all consonants.

Determine

1. U∩C ii. CcUVc iii.(CcUVc) ∩(Cc∩Vc) (10 marks)
2. A set T is defined as T={1,2,3,4)

Determine the power set of set T (5 marks)

**QUESTION THREE (15 MARKS)**

1. A function is given as where a, b and c are constants. Show that its general solution is given as

 (8marks)

1. Using the general solution in (a) above solve the equation

 (3 Marks)

1. Expand  (4 marks)

**QUESTION FOUR (15 MARKS)**

1. The fourth term of an AP is 9 while the sixth term is 15. Find the 20th term and the sum of the first 50 terms. (6 marks)
2. The second term of an A.P is11 and the fifth term is 26. Determine the last term if there are 100 terms in the series. (5 marks)
3. In a GP, the first term is 3 while the common ratio is 4, determine the sum of the first 10 terms. (4 marks)

**QUESTION FIVE (15 MARKS)**

1. A health body conducted a survey to establish the obesity prevalence in a certain group in a community. It measured the weights of a sample of 40 members of the community and tabled the following results. The measurements are in kilograms.

32 ; 56 ; 45 ; 38 ; 77 ; 59 ; 65 ; 54

54 ; 39 ; 45 ; 44 ; 52 ; 47 ; 50 ; 52

51 ; 40 ; 69 ; 72 ; 36 ; 57 ; 55 ; 47

33 ; 39 ; 66 ; 61 ; 48 ; 45 ; 53 ; 57

56 ; 55 ; 71 ; 63 ; 62 ; 65 ; 58 ; 55

1. Using classes of 30-39, 40-49,…… up to 70-79 Construct a frequency distribution table. (5 marks)
2. From the frequency distribution table made in a. (i) above, determine the mean and the median height. (10 marks)