**KABARAK  UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**MAIN/NAKURU TOWN CAMPUS**

**SECOND SEMESTER, 2018/2019 ACADEMIC YEAR**

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE**

**MAT 110: BASICS MATHEMATICS**

**STREAM: Y1S2 TIME:** 2 HRS

**EXAMINATION SESSION : AUGUST YEAR:** 2019

**INSTRUCTIONS TO CANDIDATES**

1. **Answer Question 1 and any other two questions in the answer booklet provided.**
2. **Do not write on your question papers. All rough work should be done in your answer booklet.**
3. **Clearly indicate which question you are answering.**
4. **Write neatly and legibly.**
5. **Edit your work for language and grammar errors.**
6. **Follow all the instructions in the answer booklet**

**SECTION A: (Compulsory) TOTAL MARKS FOR THIS SECTION IS 30.**

1. Simplify

[3mks]

1. Find the power set of
2. Find the first four terms in the expansion of

[3mks]

1. Suppose p and q are true statements, and which r is a false statement. Determine the truth value of

[1mk]



[1mk]



[2mks]

1. Solve

[3mks]

1. The arithmetic mean between two numbers is 34 and their geometric mean is 16. Find the numbers

[3mks]

1. In how many different ways can 5boys and 4girls be arranged on a bench if;
2. There are no restriction

[1mks]

1. Boys and girls alternate

[2mks]

1. Boys and girls are arranged separately

[3mks]

1. Find the remainder when is divided by

[2mks]

1. Prove that

[4mks]

**QUESTION TWO [20MKS]**

1. Find the value of n which satisfy

[5mks]

1. Given. Find and verify

[6mks]

1. Prove that [5mks]
2. Simplify

[4mks]

**QUESTION THREE [20MKS]**

1. Given . Find;

[4mks]

[4mks]

1. The 35th term of an arithmetic progression is 69. Find the sum of its 69 terms

[6mks]

1. Solve the equation [6mks]

**QUESTION FOUR [20MKS]**

1. Fill the truth table [6mks]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q |  |  | p |
| T | T |  |  |  |
| T | F |  |  |  |
| F | T |  |  |  |
| F | F |  |  |  |

1. Use the binominal theorem to approximate the cube root of 1.03 upto 3d.p [6mks]
2. In how many ways can the letter of the word SLOGGING be arranged? [4mks]
3. Given that . Find [4mks]

**QUESTION FIVE [20MKS]**

1. Prove that [10mks]
2. The 4th and 9th term of a geometric progression are 8 and 256 respectively. Find the 20th term [6mks]
3. Find where [4mks]