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**University Examinations 2014/2015**

FIRST YEAR, SPECIAL/SUPPLEMENTARY EXAMINATION FOR BRIDGING MATHEMATICS

**SMB 0101: ALGEBRA AND BUSINESS MATHEMATICS**

**DATE: OCTOBER, 2015 TIME: HOURS**

**INSTRUCTIONS:** *Answer questions* ***one*** *and any other* ***three*** *questions*

**QUESTION ONE - (30 MARKS)**

1. Simplify the inequality (2 Marks)
2. Factorise. (4 Marks)
3. Solve;

(3 Marks)

1. Solve the system of equations by substitution method. (4 Marks)

2x + 3y = 13

4x + y = 11

1. Evaluate using logarithms

1. Calculate the maximum absolute error in 0.543 + 4.6281 (3 Marks)
2. The terms of a sequence are given as 2,5,8,11…….Determine the 50th term (2 Marks)
3. How many different committees of 8 people can be selected from a group of 14 people?

(3 Marks)

1. A bank offers 5% interest on deposits compounded yearly. How long will it take for a deposit to double? (3 Marks)
2. A car valued at Ksh 1,000,000 depreciates at 20% p.a. Determine its value after 5 years.

(3 Marks)

**QUESTION TWO (10 MARKS)**

1. Solve the quadratic equation;

- 13x = 10 (3 Marks)

1. Determine the value of A that makes the expression a perfect square.

+ 14yx + (3 Marks)

1. A rectangular sheet measures (x-4) and (x+6)m given that the area of the plot is Find the dimensions of the plot. (4 Marks)

**QUESTION THREE ( 10 MARKS)**

1. A total of seven pens and ten books cost 273.50 shillings. Three similar pens and thirteen similar books cost a total of 291.5 shillings. Find the total cost of eleven pens and eight books. (5 Marks)
2. A sales person receives a basic salary of ksh 10,000 and commissions as follows;

On 1st sh 1000,000 worth of sales – 0

On next sh 100,000 worth of sales 3%

On the balance of sales 5%

Determine his monthly income when he sells.

1. 120,000 shillings (2 Marks)

(ii) 400,000 shillings (3 Marks)

**QUESTION FOUR (10 MARKS)**

1. Round off 0.005263 to 3 significant figure. (1 Mark)
2. Round off 0.0072 to 2 decimal places. (1 Mark)
3. The dimensions of a cuboid are 20.0cm 10.2 cm and 5.3 cm.
4. Determine the maximum absolute error in the volume of the cuboid. (3 Marks)
5. State the maximum and minimum volume of the cuboid. (2 Marks)
6. Solve for x in;

(3 Marks)

**QUESTION FIVE (10 MARKS)**

a) The profits from an investment increase at Ksh.100, 000 annually. If the profit in the first year was Ksh500, 000 determine the total profits in 10 years. (4 Marks)

b) The annual salary of an employee is Ksh.600,000 p.a .The salary is set to increase by 10% every year;

1. What will be the salary in the 5 year? (3 Marks)
2. What is the total salary earned in the 5 years? (4 Marks)

**QUESTION SIX (10 MARKS)**

1. The table below shows the rates of tax on monthly taxable pay in 2002.

|  |  |
| --- | --- |
| Monthly taxable pay (Kshs) | Rate of tax % |
| 1. 9680   9681 – 18800  18801 – 27920  27921- 37040  Over 37,040 | 10%  15%  20%  25%  30% |

1. A person earns a salary of Ksh. 84,000 per month. Determine the tax she pays per month given the tax relief is Ksh.1050. (5 Marks)
2. The US$ exchange at Kshs.95. Determine the Kenya Shillings that could give US$ 100.

(2 Marks)