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**University Examinations 2015/2016**

FIRST YEAR FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BRIDGING MATHEMATICS

**SMA 0001: ALGEBRA AND BUSINESS MATHEMATICS**

 **DATE: AUGUST 2016 TIME: 11/2 HOURS**

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

**QUESTION ONE (30MARKS)**

1. Factorize the quadratic equation below:

 (3 Marks)

1. (i) What is simple interest? (2 Marks)

(ii) Kimathi invested Kshs.10,000 in a saving account which earns 2% simple interest. If the amount is left in the account for 4 years, what interest does it earn? (3 Marks)

1. Solve the following expression without use of tables or calculators. (4 Marks)



1. Solve the following simultaneous equation by method of substitution. (3 Marks)



1. How many terms are in the following geometric progression

 (4 Marks)

1. James bought 3 biros and 7 exercise books at Kshs.64 while Damaris bought 5 biros and 5 exercise books at Kshs.60. Find the cost of a biro and an exercise book. (4 Marks)
2. Find the maximum absolute error and state the minimum and maximum values in  (4 Marks)
3. A group contains 8 footballers and 6 coaches. Find the number of different teams of 6 footballers and 4 coaches that can be formed from the group. (3 Marks)

**QUESTION TWO (10MARKS)**

1. The marked price of a Samsung fridge is Kshs.32,000. A seller charges 2% more on hire purchase. What amount of instalment will be paid monthly if a customer deposit Kshs.6000 and there are 12 equal instalments. (5 Marks)
2. Simplify the expression below

 (2 Marks)

1. Solve for $y$ in the expression below

 (3 Marks)

**QUESTION THREE (10 MARKS)**

1. The buying price of a camcorder video machine is Kshs.20,000. A trader buys the machine and sells it at a tax rate of 8.5% above purchase price. Calculate:
2. His profit (3 Marks)
3. His profit margin (3 Marks)
4. Rationalize the denominator in **** (4 Marks)

**QUESTION FOUR (10 MARKS)**

1. Find the value of an investment worth Kshs.50,000 after 5 years if:
2. Simple interest is paid at 10% p.a. (3 Marks)
3. Compound interest is paid at 10% p.a. (3 Marks)
4. If the sum of the first three terms of a geometric series is 26 and the common ratio is 3, find the sum of the first 6 terms. (4 Marks)

**QUESTION FIVE (10 MARKS)**

Kenya Commercial Bank offers a mortgage to purchase a house. A customer get a mortgage valued at Kshs. 5 million whose charges is compound interest at 6% p.a. He pays a cash deposit of 15% of the total amount of the mortgage and the balance is to be paid in equal monthly instalments over a period of 20 years. Calculate:

1. The total amount of the mortgage. (4 Marks)
2. Down payment. (2 Marks)
3. Balance to be paid in 20 years. (2 Marks)
4. Amount of monthly instalment. (2 Marks)

**QUESTION SIX (10 MARKS)**

1. Find the 5th term of an AP sequence whose 4th term is 35 and 10th term is 65. (5 Marks)
2. If the following expression is a perfect square, what is the value of $u$?

 (5 Marks)