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**University Examinations 2015/2016**

SECOND YEAR FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BUSINESS ADMINISTRATION

**SMB 1100: BASIC BUSINESS MATHEMATICS**

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

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

**QUESTION ONE (30 MARKS)**

1. Define a set as used in set theory. (1 Mark)
2. Given that A is a set of odd numbers less than 15 and that B is a set of prime numbers less than 15. Write down the elements in:
3. A (1 Mark)
4. B (1 Mark)
5.  (1 Mark)
6.  (1 Mark)
7. Define a function (1 Mark)
8. Sketch the graph of linear function and state the and y-intercepts. (3 Marks)
9. Determine without drawing the value of the slope of the function and state whether the inclination is positive or negative. (2 Marks)
10. Solve the linear function

 (3 Marks)

1. Solve the equation by using completing square method:

 (3 Marks)

1. The fourth term of an A.P is 22 and the seventh term is 40. Determine the first term, common difference and hence the sum of the first 10 terms. (4 Marks)
2. A company invested £2000 in a business which earned simple interest at the rate of 10% per annum for a period of five years. Find the amount accrued at the end of the period. (3 Marks)
3. Find the amount on £1240 compounded at the rate of 11.5% for a period of 9 years. (3 Marks)
4. Calculate the mean of the data given below:

34,57,84,73,51,74,50,47 (3 Marks)

**QUESTION TWO (10 MARKS)**

1. Given the distribution:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **x** | 1 | 2 | 3 | 4 | 5 | 6 |
| **f** | 2 | 8 | 24 | 52 | 31 | 11 |

Calculate:

1. The mean (3 Marks)
2. The mean deviation. (2 Marks)
3. The median. (1 Mark)
4. An arithmetic progression is given by 6,11,16,21,26,31 …..

Find:

1. The value of the tenth term. (2 Marks)
2. The sum of the first twelve terms. (2 Marks)

**QUESTION THREE (10 MARKS)**

1. Solve the linear equation:

 (3 Marks)

1. Given the following sets:



Find:

1.  (1 Mark)
2.  (1 Mark)
3.  (1 Mark)
4.  (1 Mark)
5. The fourth term of a G.P is 54 and the seventh term is 1458. Find the first term of the series and the common ratio. (3 Marks)

**QUESTION FOUR (10 MARKS)**

1. Consumption C is a function of income Y, given by the function 

Find:

1. The slope of the function. (1 Mark)
2. State whether the inclination is positive or negative. (1 Mark)
3. Find the level of consumption when  (2 Marks)
4. Solve the quadratic equation using any suitable method  (3 Marks)
5. Determine the seventh term and the sum of the first seven terms of the series

1+3+9+27+ …….. (3 Marks)

**QUESTION FIVE (10 MARKS)**

The data below gives the quantities of products produced by the manufacturing company in a certain year

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
| Frequency | 2 | 14 | 29 | 43 | 33 | 9 |

1. Estimate:
2. The mean (4 Marks)
3. The median. (3 Marks)
4. Calculate the standard deviation (3 Marks)

**QUESTION SIX (10 MARKS)**

1. Solve the simultaneous equations:

 (3 Marks)

1. The quantity of coffee demanded is related to the price of coffee by the function

. Where Q is the quantity of coffee demanded and P is the price of coffee:

1. Graph the function. (3 Marks)
2. What is the quantity of coffee demanded? When the price of coffee is zero. (2 Marks)
3. What happens to the demand of coffee when the price falls? Explain (2 Marks)