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**University Examinations 2015/2016**

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN BUSINESS ADMINISTRATION

**SMB 2200: BASIC MANAGEMENT MATHEMATICS**

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

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

**QUESTION ONE (30 MARKS)**

1. Consider the following sets:

M=Universal set







Find the following:

1.  (2 Marks)
2.  (2 Marks)
3.  (3 Marks)
4. Find the equilibrium price and the equilibrium quantity for the following market models

Qd=26-2p

Qs=-10+7p (2 Marks)

1. A shopkeeper bought two pens and three pencils at a total cost of thirty five shillings. Four pens and one pencil of same quantity costs forty five shillings.
2. Find the cost of one pencil and one pen. (3 Marks)
3. How much would the shopkeeper pay for twenty pens and thirty pencils? (2 Marks)
4. The growing value of GNP is given by

where r=1.5%.

1. If GNPO=500, find the value of GNP, 10 years from now. (2 Marks)
2. If GNPO=1000, after how many years will the GNP double (3 Marks)
3. Calculate the sum of the first ten terms of the series

 (3 Marks)

1. Use the quadratic formulae to solve the equation

 (2 Marks)

1. Find the limits of the following:
2.  (2 Marks)
3.  (2 Marks)
4.  (2 Marks)

**QUESTION TWO (15 MARKS)**

1. Define each of the following:
2. Null set (1 Mark)
3. Finite set (1 Mark)
4. Universal set (1 Mark)
5. State whether true or false in each case
6.  (1 Mark)
7.  (1 Mark)
8.  (1 Mark)
9. Given the following sets

 M is universal





Find:

1.  (2 Marks)
2.  (2 Marks)
3.  (2 Marks)
4.  (3 Marks)

**QUESTION THREE (15 MARKS)**

1. The total revenue function is given by the following:



1. Find the total revenue for:
2. An output level of Q=200. (2 Marks)
3. An output level of Q=450. (2 Marks)
4. Given the following total cost function



1. Find the corresponding profit function (2 Marks)
2. Find the level of profit corresponding to an output level of Q=100 (3 Marks)
3. A firm has the following total cost and demand function:



1. What is the total revenue function. (2 Marks)
2. Find the corresponding profit function. (2 Marks)
3. What is the level of profit when Q=6 (2 Marks)

**QUESTION FOUR (15 MARKS)**

1. (i) The first year a man is employed he saves sh.100. In each of the succeeding years, he saves shs.50 more than the year before. How much has he accumulated at the end of 20 years. (3 Marks)

 (ii) A body falls 16 fits during the first second, 48 fits during the 2nd second, 80 fits during the third second and so on, in an arithmetic progress.

1. How much does it fall during the 10th second? (2 Marks)
2. How far does it fall during the first eleven seconds? (3 Marks)
3. (i) Obtain the 12th term and the sum of the first 8 terms of the series

 (4 Marks)

 (ii) Otieno deposits shs.100 in his bank account with the understanding that at the end of 15 years, he will get all his savings together with 5% compound interest calculated annually. What amount will he receive? (3 Marks)

**QUESTION FIVE (15 MARKS)**

1. Evaluate the following limits:
2.  (3 Marks)
3.  (2 Marks)
4.  (3 Marks)
5. Solve by the method of completing the square

 (3 Marks)

1. In each of the following functions, find the y-intercept, the x-intercept and gradient
2.  (2 Marks)
3.  (2 Marks)