

**MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS 2016/2017 ACADEMIC YEAR**

**FIRST YEAR FIRST SEMESTER**

**SCHOOL OF BUSINESS AND ECONOMICS**

**BACHELOR OF COMMERCE/BACHELOR OF SCIENCE IN ETREPRENUERSHIP**

**COURSE CODE: BCM 1108**

**COURSE TITLE: BUSINESS MATHEMATICS I**

**DATE: 30TH JANUARY 2017 TIME: 1430 – 1630HRS**

**INSTRUCTIONS TO CANDIDATES**

**Answer question one and any other three.**

***This paper consists of 4 printed pages. Please turn over***

**QUESTION ONE (25 MARKS)**

1. a) A German tourist arrived in Kenya with Euros 4500.He changed all his Euros to Kenyan Shillings paying a bank charge of 1%.He spent Shs 130,000 during his stay in Kenya and changed his stay in Kenya and changed his remaining cash to Euros again. How many Euros did he receive?

 BUY SELL

 1 EURO 97.6779 97.9372 (5 Marks)

b) Find out the value of machinery costing 125,000 at the end of 5 years if depreciation is charged at 15% p.a on reducing basis (4 Marks)

c) Plot the graph of y=x2+3x+1 -5≤ x ≤ 2 describe the turning point

 (4 Marks)

d) Given A = ($\begin{matrix}1&2&3\\0&1&2\end{matrix}$) and B =$\begin{matrix}3&4&3\\0&2&9\\4&1&1\end{matrix}$ Find matrix of AB (3 Marks)

e) Find the unknown $\begin{matrix}1&-2&3\\0&4&-7\\0&0&2\end{matrix}\begin{matrix}x\\y\\z\end{matrix}$ = $\begin{matrix}1\\2\\4\end{matrix}$ (4 Marks)

f) differentiate with respect to x

 1) y=$\frac{x^{2} (x+2)(x-2 )}{x}$

 2) y=$\frac{x^{4}-x^{2}}{x}$

 (5 Marks)

**QUESTION TWO ( 15 MARKS )**

2) Solve simultaneously

 4x+y-5z=8

 -2+3y+z=12

 3x-y+4z=5

**QUESTION THREE (15 MARKS)**

A firm has analyzed the operating conditions, prices and costs and came up with the following functions

 Revenue (r)= 400Q- 4Q2

Costs (c)= Q2+10Q +30

Where Q is the number of units sold .The firm wishes to maximize profits.

a) What quantity should be sold? (4Marks)

b) At what price should they sell? (4 Marks)

c) What would be the amount of profit? (4 Marks)

d) Find the point of maximum value of the revenue function. (4 Marks)

**QUESTION FOUR (15 MARKS)**

4a) Discuss the main reasons for holding stock in an organization (5 Marks)

 b) Enumerate the various costs associated with holding stock. (5 Marks)

 c) Giving examples discuss the costs associated with running out of stock

 (5 Marks)

**QUESTION FIVE (15 MARKS)**

5a) Find and investigate the stationery points of

 Y=x3-5x2-8x+10

 b) The height of 30 broad bean plants were measured correct to the nearest

Centimeter ,6 weeks after planting .The frequency distribution is given

below. Construct the cumulative frequency curve and use it to estimate the

number of plants that were less than 10cm tall.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Height | 3-5 | 6-8 | 9-11 | 12-14 | 15-17 | 18-20 |
| Frequency |  1 |  2 |  11 |  10 |  5 |  1 |