

**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF MATHEMATICS AND ACTURIAL SCIENCES**

**UNIVERSITY EXAMINATION FOR CERTIFICATE IN BRIDGING IN MATHEMATICS**

**NAIROBI CITY CAMPUS**

**SENESTER1 2015/2016**

**COURSE TITLE: BUSINESS MATHEMATICS**

**COURSE CODE: SMA 0105**

**TIME 1 HOUR 30 MINUTES**

**EXAM VENUE: 9TH FLOOR**

**DATE: 16/12/2016**

**TIME: 2 HOURS**

**EXAM SESSION: 11:30 AM – 1:00 PM**

**INSTRUCTIONS**

1. Answer question **one** (compulsory) and any other **two questions**
2. Candidates are advised not to write on the question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room.

**Question One**

1. A company estimates that the demand for its product fluctuates with price it changes demand function is $q=280000-40p$. Where q equals the number of units demanded and p equals the price in dollars. The total cost of producing q units of the product is estimated by function $c=350000+300q+0.0015q^{2}$
2. Determine how many units q should be produced in order to maximize annual profit (10 marks)
3. What price should be charged? (5 marks)
4. What is the annual expected profit? (5 marks)
5. Total cost and total revenue function for product are $C\left(q\right)=500+100q+0.5q^{2}$ and $R\left(q\right)=500q$
6. Using the marginal approach, determine the profit-maximizing level of output. (7 marks)
7. What is the maximum profit (3 marks)

**Question Two**

1. Using relevant example, discus the relevance of studying matrix in a business set up (10 marks)
2. Discus advantages of sampling in data analysis (10 marks)

**Question Three**

Discuss any four methods used in collecting business data (20 marks)

**Question Four**

Brenda walks on a bearing of $120^{o}$ for 5 km then on a bearing of $200^{o}$ for 7km. calculate how far she is from her starting point and the bearing of her starting position from her final position (20 marks)