MURANGA UNIVERSITY COLLEGE

(A constituent College of Jomo Kenyatta University of Agriculture & Technology)

MAIN CAMPUS

ORDINARY UNIVERSITY EXAMINATIONS

2014/2015 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DIPLOMA OF COMMERCE

COURSE CODE: BS1112

COURSE TITLE: QUANTITATIVE TECHNIQUE SUPP

DATE: 6TH AUGUST 2015 TIME: 9.00-11.00AM

INSTRUCTIONS TO CANDIDATES

Question ONE (1) is compulsory

Answer THREE (2) questions

SECTION A

QUESTION ONE:

a) Briefly explain the importance of functions in decision making (4 marks)
b) Describe how functions can be used in market equilibrium analysis? (4 marks)
c) List any 3 methods of sampling? (3 marks)
d) State three advantages of using random sampling? (3 marks)
e) Outline four circumstances under which a non-random sample would be preferred to a random sample. (4 marks)
f) The following information relates to M. Mutuma, a dealer in standard wooden tables:
M. Mutuma realized profits of shs.12,000 from 7 tables, sh.12,400 from 9 tables and sh. 11,300 from 4 tables sold respectively.
M. Mutuma has approached you for assistance in forecasting future profits. The profits function is believed to be quadratic in nature.
Required:
   i. Derive the profit function (8 marks)
   ii. The profit maximising output and the maximum profit (4 marks)

QUESTION TWO:

a) Company uses 100,00 units per year which cost €3 each. Carrying costs are 1% per month and ordering costs are €250 per order.

What is the EOQ? (10 marks)

b)HBC Ltd. Manufactures and sells two interdependent products: Bora and Kizuri. The demand functions for the products are given by $P_1 = 800- X- 2Y$ and

$P_2 = 1,100-X-2.5Y$.

Where P1 is the unit price of Bora and P_2 is the unit price of Kizuri.

X and Y are the number of units sold for Bora and Kizuri respectively.

The total cost of producing both products is given by the function: TC= 150X +50Y

Required:

The number of each product required to maximize total profit. (10 marks)

QUESTION THREE:

a) Define the following terms as used in input- output analysis (6 marks)
   i. Transactional table
   ii. Primary inputs
   iii. Technical coefficients
b) Briefly explain the importance of input-output analysis (4 marks)

c) A small economy has three main industries which are steel, motor vehicles and construction. The industries are interdependent. Each unit of steel output requires 0.2 units from steel,0.3 units from motor vehicles and 0.4 units from construction. A unit of motor vehicles output requires 0.2 units from steel, 0.4 units from motor vehicles and 0.2 units from construction. The final demand is 20 million units from steel, 50 million units from motor vehicles and 30 million units from construction.

QUESTION FOUR

I) A batch of 5,000 electric lamps have a mean life of 1, ooo hours and a standard deviation of 75 hours. Assume a Normal Distribution.

a) How many lamps will fail before 900 hours? (5 marks)

b) How many lamps will fail between 950 and 1,000 hours? (5 marks)

c) What proportion of lamps will fail before 925 hours? (5 marks)

d) Given the same mean life, what would the standard deviation have to be to ensure that not more than 20% of lamps fail before 916 hours? (5 marks