JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS & ECONOMICS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION WITH IT

3rd YEAR 1st SEMESTER 2018/2019 ACADEMIC YEAR

KISII CAMPUS-PART TIME

COURSE CODE: ABA 315

COURSE TITLE: QUANTITATIVE METHODS IN BUSINESS I

EXAM VENUE: **STREAM: (BBA)**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer Question ONE (COMPULSORY) and ANY other 2 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

a) Manman limited has been awarded a contract to fabricate water treatment equipment. Since it was a new design, activity duration were only estimates and are presented in the table below

Activity	immediate predecessor	optimistic	Time in days most likely	pessimistic
A	-	1	3	5
B	-	1	2	3
C	A	1	2	3
D	A	2	3	4
E	B	3	4	11

F	C,D	2	3	4
G	D,E	2	4	6
H	F,G	2	4	5

i) How long will the project take?   (5marks)

ii) What is the probability that the project will be completed in 16 days?   (5marks)

b) Calculate the first and second derivatives of the following functions

    i) $Y=5x^2-2x+4$ (3marks)

    ii) $Y=12-10x+6x^2-2x^3$ (3marks)

c) Explain the merits of moving averages.   (5marks)

d) I) explain the types of inventory costs.   (6marks)

    iii)   The probability that a contractor will get plumbing contract is 2/3 and the probability that he will not get an electric contract is 5/9.if the probability f getting at least one contract is 4/5 what is the probability that he will get both?   (3marks)

Question two

    i)   A firm has analysed its operation conditions as far as prices and costs are concerned. It has come up with the following functions

$P=400-4Q$

$C=Q^2+10Q+30$

Where P is price charged

        C is cost

        Q is level of output

Required

a) What is the revenue function.(3marks)

b) What quantity should a firm produce?(2marks)

c) At what price should that quantity be sold.(3marks)

d) What profit levels will the firm make?(2marks)

    ii)   Write short notes on the following:-

        a)   Seasonal variations

        b)   Cyclical variations

        c)   Method of least squares

        d)   Method of moving averages

Question three.

a) The purchase department has analysed the number of orders placed by each of the 5 departments in the company by type for this financial year as given in the table below.

Department

Order type	sales	purchases	production	accounts	maintenance	total
Consumables	10	12	4	8	4	38
Equipment	1	3	9	1	1	15

Special	0	0	4	1	2	7
Total	11	15	17	10	7	60

An error has been found in one of these orders. What is the probability that the incorrect order:

a) Was for consumables? (2marks)
b) Was not for consumables? (2marks)
c) Came from maintance? (2marks)
d) Came from production? (2marks)
e) Came from production or maintance? (2marks)
f) Came from neither maintenance nor production? (2marks)
g) Was an equipment order from purchase? (2marks)
b) Explain the assumptions of the economic order quantity. (6marks)

Question four

a) Below are given the figures of production (in thousands quintals) of sugar factory:

Year	1989	1990	1991	1992	1993	1994	1995
Production	80	90	92	83	94	99	92

a) Fit a straight line trend to these figures. (6marks)
b) Plot these figures on graph and show the trend line. (4marks)
c) Estimate the likely sales of the company during 1996. (4marks)
b) Use the product rue to differentiate the function

F(x) =(4x³+2)(1-3x). (6marks)

Question five

i) A manufacturing process requires a continuous supply of 3000 items per year from store, which is replenished by production runs, each of which operate at a constant rate of 5000 item per year. Each production run has a setup cost of 18 and the holding cost per item per annum is 5%

Calculate the EBQ and use it to find the number of

a) Runs per year. (3marks)
b) Length of cycle. (2marks)
c) Run time . (3marks)
d) Peak inventory level and average inventory level. (2marks)
ii)   Find $\lim_{x-2} x^2-2x +3$ (5marks)

Ii) A firms demand function is given by P=100-2x and its cost function C(x)=20x+3000 determine the optimum level of output for profit maximization. (5marks)