MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

THIRD YEAR SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION WITH INFORMATION TECHNOLOGY

MAIN CAMPUS – BBA GROUP

ABA 315: QUANTITATIVE METHODS I

Date: 20th June, 2017 Time: 8.30 - 11.30am

INSTRUCTIONS:

- Answer Question ONE and any other THREE
- Question one is 25 marks and the rest 15 marks each

1. **QUESTION ONE** (Compulory)

(a) Define the following terms as used in business spheres. (6 marks)

i. inventory

ii. probability

iii. network

(b) Discern between trend and variation. (3 marks)

(c) Evaluate $\int_{-1}^{4} \left(4x - \frac{1}{3}x^2\right) dx$ (3 marks)

(d) Briefly explain **two** criteria in decision theory. (4 marks)

(e) The probability that it is December and that a student is graduating is $\frac{5}{27}$. Given that there are four possible graduation monthgs in a year, determine the probability that a student is graduating given that it is in Decmber. (3 marks)

(f) List three types of inventory (3 marks)

(g) Outline the rules in drawing of networks in network analysis. (3 marks)

2. **QUESTION TWO (15 marks)**

(a) Discriminate between joint and conditional probability. (3 marks)

(b) Explain the meaning of mutually exclusive events as used in probability theory. (3 marks)

(c) Explain the advantages of drawing decision trees in decision theory. (4 marks)

(d) A manufacturing company has three production points; X, Y and Z which contibute $\frac{2}{5}$, $\frac{7}{20}$ and $\frac{1}{4}$ respectively to a total output. The following proportions of successfully processed units have been observed; X; 98%, Y; 97%

and Z; 96%. There is a final check before output is dispatched. Calculate the probability that a unit from section X is found defective. (5 marks)

3. **QUESTION THREE (15 marks)**

   (a) Distinguish between integrand and integral. (2 marks)

   (b) Given that $y = 4x + 5x^2 - 10$, determine $\frac{dy}{dx}$. (3 marks)

   (c) Evaluate $\int \left(\frac{x^2-9}{x-3} - 7x + 10\right) dx$. (4 marks)

   (d) Given the revenue function in Kshs. is $R(x) = -4x^3 + 570x^2$ and the cost function in Kshs. is $C(x) = 206x^2 + 2700x$; find the marginal profit at $x = 20$ units. (6 marks)

4. **QUESTION FOUR (15 marks)**

   (a) Discriminate between cost of holding and obtaining stock in inventory control. (2 marks)

   (b) Explain *two* objectives of time series analysis. (4 marks)

   (c) Differentiate between cyclical and seasonal variations in time series analysis. (2 marks)

   (d) From the data below compute the moving average for five years.

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value	400	398	382	415	425	394	393	381	437	480	452	443	435	492	502

(7 marks)

5. **QUESTION FIVE (15 marks)**

   (a) State the role of network analysis in project planning and management. (1 mark)

(b) Explain the meaning of dummy activity as used in network analysis. (2 marks)

(c) Explain the necessity of time analysis in network analysis as used in project planning and management. (3 marks)

(d) The table below provides a list of activities required to plan and manage a given project effectively.

Activity	Preceding activity	Activity duration(days)
A	-	9
B	-	3
C	A	8
D	A	2
E	A	3
F	C	2
G	C	6
H	C	1
J	B,D	4
K	F,J	1
L	E,H,G,K	2
M	E,H	3
N	L,M	4

Required:

i. Draw a network to represent the various activities of the project. (6 marks)

ii. Determine the critical path and minimum project time. (3 marks)