MACHAKOS UNIVERSITY

University Examinations for 2017/2018 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF BUSINESS ADMINISTRATION

FIRST & SECOND SEMESTER SUPPLEMENTARY EXAMINATION FOR DIPLOMA IN SUPPLY CHAIN MANAGEMENT

QUANTITATIVE TECHNIQUES

DATE: 19/10/2017 **DATE: 2HRS**

INSTRUCTIONS.

Answer question ONE (1) compulsory and any other two questions

All phones should be switched off

No writing on the question paper

Additional instructions are contained in the answer booklet

QUESTION ONE (30 MARKS)

a) State four rules for construction of a network (4 marks)

b) Explain four applications of quantitative techniques in the modern world of business. (4 marks)

c) What are the uses of statistics in today's business world (4 marks)

d) From the following data, draw a network, establish the critical path and estimate the minimum time for the project completion. (18 marks)

Activity.	Predecessor.	Time (days)
A	NONE	3
B	A	4
C	A	7

D	A	6
E	B	2
F	C	3
G	C	2
H	C, D	4
I	E, F	8
J	G, H	4
K	I, J	3

QUESTION TWO (20 MARKS)

a) state five reasons why organizations hold stock (5 marks)

b) Mukato ltd uses material ZED in its production. The cost 0f making an order is shs.1100 per order and the carrying costs are shs. 12 per order.

Determine.

i) Economic order quantity
ii) Annual stock holding cost
iii) Annual stock ordering cost
iv) Total annual stock cost
v) Ordering cycle (15 marks)

QUESTION THREE (20 MARKS)

ZEKA ltd produces two models of filing cabinets. Model Z and Model X. The following information relates to one unit of each of the two models.

	Model Z	model X	Availability
Selling price (shs)	5,000	4,500	-
Material 1 (units)	120	150	12,000
Material 2 (units)	60	50	4,500
Labour (hours)	17.50	10	1,050

a) Formulate a linear programming model from the above information
b) Determine the optimal number of cabinets of each model the company should produce and sale using the graphical method
c) Determine the optimal sales value (20 marks)

QUESTION FOUR (20 MARKS)

a) Explain briefly four types of data classifications. (8 marks)

b) The following set of data represents a frequency distribution of customer inquiry in a bank.

No of inquiries	frequency
0-4	5
5-9	55
10-14	150
15-19	18
20-24	12
25-29	7
30-34	3

Calculate:

i) Mean.
ii) Standard deviation
iii) Co-efficient of variation (12 marks)

QUESTION FIVE (20 MARKS)

a) State the advantages of standard deviation (5 marks)

b) Medical aid company manufactures a special product, the following information relates to the product.

Annual demand	2600 units
Cost of placing an order	shs 100
Annual carrying cost per unit	shs 15
Normal usage per week	50 units
Minimum usage per week	25 units
Maximum usage per week	75 units
Reorder period	4-6 weeks

Compute:

i. Reorder quantity
ii. Reorder level
iii. Minimum stock level
iv. Maximum stock level
v. Average stock level (15 marks)