

CHUKA



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CHUKA & EMBU

**SECOND YEAR EXAMINATION FOR THE AWARD OF
DIPLOMA IN PROCUREMENT AND LOGISTICS MANAGEMENT**

DPLM 0161: OPERATIONS RESEARCH**STREAMS: DPLM YIS2****TIME: 2 HOURS****DAY/DATE: MONDAY 05/08/2019****8.30 AM – 10.30 AM****INSTRUCTIONS:****Answer Question One and any other Two****Question One**

- (a) Symbolic models use symbols and functions to represent decision variables to describe the behavior of a system. Discuss five advantages of symbolic models over other models. [10 marks]
- (b) Operations research has been used to solve fairly limited number of managerial problems in Kenyan business enterprises. Discuss any five reasons for this trend. [10 marks]
- (c) A company wishes to assign its four sales persons to different sales territories. The distance for each sales person from the various sales territories is shown below

		Sales person			
		J	K	L	M
Sale territory	A	62	55	60	51
	B	75	52	90	60
	C	52	54	78	67
	D	63	65	73	66

- (i) Assign each sales person one territory in a way that minimize the total distance travelled. [8 marks]
- (ii) Calculate the total distance of the final assignment. [2 marks]

Question Two

- (a) A project has the following activities

Activity	Preceding activity	Duration
I	-	2
J	-	6
K	I	4
L	I	4
M	I	1
N	J, K	3
O	L	2
P	M N O	5

- (i) Draw a network diagram for the project. [8 marks]
- (ii) Determine the critical path and project duration. [2 marks]
- (b) Explain three common errors made in drawing network diagrams. [6 marks]
- (c) Define the following terms as used in network analysis
- (i) Critical path
- (ii) Total float [4 marks]

Question Three

- (a) ABC company produces doors and windows both of which requires welding hours and painting hours. Each door takes 6 hours in welding and 4 hours in painting. Each window takes two hours in welding and two hours in painting. Only 500 hours of welding and 200 hours of painting are available. The cost of production for each door is sh. 4000 and sh. 3000 for each window. Each door is sold at sh. 4500 and each window is sold at sh. 3300.
- (i) Formulate the problem as a linear programming problem. [6 marks]
- (ii) Express the problem in standard form. [4 marks]
- (b) Discuss five assumptions of linear programming. [10 marks]

Question Four

- (a) Discuss any five benefits of using the reorder level system of inventory management. [10 marks]
- (b) State and explain five costs incurred by an organization as a result of running out of stocks. [10 marks]

