

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS
RESIT/SPECIAL EXAMINATION
**EXAMINATION FOR THE AWARD OF DIPLOMA IN PROCUREMENT AND
LOGISTIC MANAGEMENT**
DPLM 0161: OPERATIONS RESEARCH**STREAMS:****TIME: 2 HOURS****DAY/DATE: FRIDAY 14/09/2018****8.30 A.M. – 10.30 P.M.****INSTRUCTION:**

- **ANSWER QUESTION ONE AND ANY OTHER TWO**

QUESTION ONE

- a) Discuss the advantages and disadvantages of Operational Research (10mks)
- b) A project consist of following activities

Activity	Predecessor activity	Duration in weeks
A	-	4
B	-	3
C	A	7
D	A	6
E	B,C	5
F	B	2
G	B	8
H	G	3
I	D	4
J	DEF	1
K	JIH	2

Required:

- Draw the network for the project (5 marks)
- Determine the expected completion time for the project (2 marks)
- Determine the critical path (2 marks)

- iv. Calculate the total floats, independent floats and free floats for the critical activities (4 marks)

c) The company's annual budget for inventory is ksh 400,000, the value of each item is ksh 2, the cost of placing an order is ksh 50 and the holding cost is 10% of value of an item.

Required:

- i. Find the E.O.Q (3 marks)
 ii. Optimal number of orders (2 marks)
 iii. Minimum total inventory cost possible (2 marks)

QUESTION TWO

- a) Discuss the principle reasons why a business may hold stock (6 marks)
 b) Highlight the limitations of network analysis (4 marks)
 c) Discuss the assumptions of Linear programming (10 marks)

QUESTION THREE

- a) A company has 5 factories and 5 distribution centers. The factory has manufactured the products which are transported to the various distribution centers for sale. The distance in Kilometers between the factories and the distribution centers is as shown in the following table.

		Distribution centers				
		I	II	III	IV	V
Factory	A	160	130	175	190	200
	B	135	120	130	160	175
	C	140	110	155	170	185
	D	50	50	80	80	110
	E	55	35	70	80	105

Required;

Determine an optimal solution that will minimize the total distance travelled between the factories and the distribution centers. (10 marks)

- b) List 5 characteristics of a good Model (5 marks)
 c) Outline the advantages of simplex method (5 marks)

QUESTION FOUR

- a) Explain 3 common errors in drawing network diagrams (6 marks)
 b) Discuss 3 methods for solving assignment problems (6 marks)
 c) Differentiate the following terms
 i. Economic Order Quantity and Re-order quantity (2 marks)
 ii. Work in progress and Raw materials (2 marks)

