NATIONAL UNIVERSITY OF LESOTHO

BURP EXAMINATION

GES 2556 – SPATIAL ORGANIZATION

JANUARY 2024 **MARKS: 100** **3 HOURS**

Instructions: Answer any **four (4)** questions and where necessary illustrate your answer with the use of appropriate diagrams.

Question 1

The map below is a street map of a suburb in Maseru, study the map and answer the questions that follow:

Map 1.0

a) Reduce the street map into a network graph which consists of nodes and links. Label the nodes using letters of the alphabet.

(10)

b) Construct a connectivity matrix for the graph, and determine which node(s) has the highest accessibility value.

(15)
(25 Marks)

Question 2

Outline the meaning of the following concepts/terms as used in spatial organization.

a) Cascade diffusion (5)
b) Indifference curve (5)
c) Centrality (5)
d) Land rent (5)
e) Normal distribution curve (5)

(25 Marks)

Question 3

The table below contains information about the population of and distances between four settlements (A, B, C, and D)

Table 2.0

Settlement	Population	Distance			
		A	B	C	D
A	350,000	-	70	35	40
B	120,000	70	-	75	110
C	30,000	35	75	-	75
D	150,000	40	110	75	-

a) Using the information from the table above calculate the probability that a person in settlement C will travel to settlement A. (all exponents and constant are 1).

b) Explain how Huff's gravitation potential can be used in the understanding of retail patterns, use the results in a) above to illustrate your answer.

(15)
(25 Marks)

Question 4

a) Determine the break point between two urban areas X and Y given the following information:
The distance between the two urban areas is 90km, and X has a population of 250,000 and Y has population of 500,000. Show all your

workings in detail

(10)

b) Use the results of your answer in a) above to give a full explanation of why the break point is not half way between the two settlements.

(15)

(25 Marks)

Question 5

Discuss any five criticisms of the gravity model.

(25 Marks)

Question 6

Explain and illustrate with diagrams two principles identified by Christaller (K=3 and K=4).

(25 Marks)