JULIUS NYERERE SCHOOL OF SOCIAL SCIENCES

DEPARTMENT OF RURAL AND URBAN DEVELOPMENT

MASTER OF SCIENCE DEGREE IN URBAN AND REGIONAL PLANNING

LEVEL 1 SEMESTER 1

EXAMINATION QUESTION PAPER

MODULE CODE : **MURP 115**

MODULE NARRATION : **GIS IN CITY AND REGIONAL PLANNING**

DATE : **2024**

DURATION : **3 HOURS**

INSTRUCTIONS TO CANDIDATES:

1. **Answer Question 1 and three other questions.**
2. **Each question carries 25 marks.**

SECTION A

1.Table 1 shows the distribution of different Bands recorded at 3 different sites within an Urban Landscape. Use the information to calculate the following in Computer based GIS;

Band	Site A	Site B	Site C
GREEN	0.54 nm	0.5 nm	0.58 nm
RED	0.68 nm	0.61 nm	0.64 nm
NEAR INFRARED	0.8 1nm	0.89 nm	0.83 nm
SHORTWAVE INFRARED	1..65 nm	1.2 nm	1.60 nm

(i)Normalized Difference built Up Index [5]

(ii) Normalized Difference Vegetation Index [5]

(iii)Normalized Difference Water Index [5]

(iv) Using the results generated from table 1 explain the application of spectral indices in City Planning. [10]

SECTION B

2. With reference to calculated examples explain the application of the multi-criteria evaluation in land suitability analysis.

3. With reference to practical examples, explain the processes involved in the execution of a GIS based land use change detection.

4. Using examples, discuss the different types of Boolean, Arithmetic and Relational operators and how they are useful GIS based spatial analysis.

5. With reference to practical examples, explain the utility of a DEM of your choice in modelling urban risk flooding.

6. Using calculated examples, explain the utility of spectral indices in detecting urban sprawl.

END OF PAPER