(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

(Main Exams)

FOURTH YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE INFORMATION TECHNOLOGY

COURSE CODE: BIT 417E

COURSE TITLE: GEOGRAPHICAL INFORMATION SYSTEMS

DATE: 13/12/2022 **TIME:**08:00-10:00AM

INSTRUCTIONS TO CANDIDATES

Question ONE (1) in Section A is compulsory
Answer any other 2 questions from Section B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A: ANSWER ALL QUESTIONS {30 MARKS}

QUESTION 1:

a) What is a datum? (2 Marks)

b) Differentiate between the following variations of GIS?

i. Geographic Information Science (1 Marks)

ii. Geographic Information System (1 Marks)

c) Differentiate between the following types of analysis.

i. Overlay Analysis (3 Marks)

ii. Proximity Analysis (3 Marks)

d) What is the difference between the accuracy and precision of data? Use diagrams to help illustrate your answer. Give an example relevant to spatial data collection? (4 Marks)

e) Identify ***any five*** field where GIS is widely applied and discuss some of the solutions that it provides in such sectors? (10 Marks)

f) Identify and explain ANY THREE advantages of vector data in GIS. (6 Marks)

SECTION B: ANSWER ANY THREE QUESTIONS {20 MARKS, EACH}

QUESTION 2:

a) What is geodatabases? (2 Marks)

b) List three advantages that Geographic Information Systems have over traditional paper maps. (9 Marks)

c) Describe a method for measuring spatial arrangement of points in GIS. Include the name of the method, a brief summary of how it works, a description of the output and how it would be interpreted. (9 Marks)

QUESTION 3:

a) How is spatial resolution defined in raster and vector? (2 Marks)

b) Identify and explain the key components of spatial data quality?(8 Marks)

c) A database is a repository for storing large amount of data. It comes with a number of functions. Discuss these functions in the context of a GIS. (10 Marks)

QUESTION 4:

a) What is Raster-to-vector translation? Hence describe how it's achieved? (6 Marks)

b) There are a variety of methods used to enter data into a GIS where it is stored in a digital format. Identify any four major methods used in entering data? (8 Marks)

c) Location, shape, size, and orientation are potentially relevant characteristics of a geographic object. Give examples of cases where these characteristics make sense for; (6 Marks)

i. Point of objects,

ii. Line objects, and

iii. Area objects

QUESTION 5:

a) Give the two major functions of cartographic work. (4 Marks)

b) Define the four dimensions of remotely sensed imagery and explain the trade-offs between them. (8 Marks)

c) What features make good or not so good ground control points for georeferencing? (8 Marks)