



FreeExams.co.ke

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR FOUR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)

COURSE CODE: BIT424

COURSE TITLE: GEOGRAPHICAL INFORMATION
SYSTEM (A)

DATE: 08/08/2023 TIME: 8.00 AM. – 10.00 AM. 2 HOURS

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

- a) Differentiate between the following terminologies as used in Geographic Information
- (i) Map and Map legend [2 marks]
 - (ii) Geography and Geographical Information System [2 marks]
 - (iii) Global Positioning System (GPS) and Remote sensing (RS) [2 marks]
- b) The coordinate system may be of a variety of types. Explain three main types commonly used for natural resource applications. [6 marks]
- c) Discuss the main functional subsystems of GIS. [4 marks]
- d) An operational GIS consists of a series of components that combine to make the system work. Evaluate the components critical to a successful GIS. [5 marks]
- e) The basic data type in a GIS reflects traditional data found on a map. Describe the two basic types of data that GIS technology utilizes. [4 marks]
- f) Describe how the Global Positioning System (GPS) works. [5 marks]

QUESTION TWO [20 MARKS]

- a) A wide variety of data sources exist for both spatial and attribute data. Outline some of the most common sources for spatial data. [5 marks]
- b) The choice of data input method is governed largely by the application, the available budget, and the type and the complexity of data being input. Discuss four basic procedures for inputting spatial data into a GIS. [8 marks]
- c) Analyze the kinds of errors that occur during data input. [5 marks]
- d) Outline two main problems that occur during data input and editing. [2 marks]

QUESTION THREE [20 MARKS]

- a) Identify the Three spatial data models that have evolved for storing data digitally. [3 marks]
- b) Discuss the advantages and disadvantages of using vector and raster data model to store spatial data. [8 marks]
- c) Different data models exist for the storage and management of attribute data. Discuss any four attribute data models used to store and maintain attribute data for GIS software internally within the GIS software, or reflected in external commercial Database Management Software (DBMS). [9 marks]

QUESTION FOUR [20 MARKS]

- a) Define Quality as used in GIS. [2 marks]
- b) The recent U.S. Spatial Data Transfer Standard (SDTS) identifies five components to data quality definitions. Discuss these components. [5 marks]

- c) Distinguish between the computer assisted GIS and the conventional analog use of maps. **[4 marks]**
- d) Outline any three functions of GIS. **[3 marks]**
- e) In GIS, there are two uses of remote sensing data, either as classified data or image data. Briefly describe these data. **[6 marks]**

QUESTION FIVE [20 Marks]

- a) What is Global Positioning System (GPS)? **[1 marks]**
- b) Outline any four uses of a Global Positioning System (GPS)? **[4 marks]**
- c) Differentiate between the space segment and control segment of a Global Positioning System (GPS)? **[8 marks]**
- d) The GPS is not a perfect system. There are several different types of errors that can occur when using a GPS receiver. A common example is user mistakes that account for most GPS errors since a GPS receiver has no way to identify and correct. Discuss three of these user mistakes errors. **[3 marks]**
- e) When working on an incident with a GPS receiver it is important to put into consideration certain factors for smooth operation. Identify any four factors. **[4 marks]**