



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 417: GEOGRAPHIC INFORMATION SYSTEMS

DATE: 18/12/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question ONE and Any Other TWO Questions.

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in Geographic Information system.
 - i. Geo- visualization (2 marks)
 - ii. Geo-processing (2 marks)
 - iii. Attributes (2 marks)
 - iv. Layers (2 marks)
- b) GIS databases are normally conceptualized as series of layers containing geographic information. These data layers can be broadly grouped. List the groups and give examples of each. (4 marks)
- c) Briefly differentiate between the raster and vector data structures of representing geographical phenomena in GIS. (4 marks)
- d) Discuss the two types of data used to represent geographic features in GIS. (4 marks)

- e) Differentiate between the following:
 - i. vector and raster (2 marks)
 - ii. Data frame and Map document (2 marks)
- f) Describe the **two** categories of geographic information system analysis functions. (6 marks)

QUESTION TWO (20 MARKS)

- a) Discuss common pitfalls that contribute to the failure of GIS implementation (6 marks)
- b) Discuss the different data capturing methods from various sources commonly used in a GIS (8 marks)
- c) Define the following Geodatabase elements as used in Arcgis. (6 marks)
 - i. Feature classes
 - ii. Relationships
 - iii. Geometric network

QUESTION THREE (20 MARKS)

- a) State three merits and three demerits of the vector data models as encountered in GIS. (6 marks)
- b) State the Four major components of GPS (4 marks)
- c) Discuss any five benefits of geographical information systems (10 marks)

QUESTION FOUR (20 MARKS)

- a) Explain vector data formats and raster formats giving examples pertinent to each in the development of GIS applications (6 marks)
- b) Discuss five components of geographical information systems. (10 marks)
- c) Explain the four types of resolutions for remote sensing systems (4 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the parts of Arc map geographical interface using a diagram. (8 marks)
- b) Discuss the application of GIS in power grid management. (5 marks)
- c) List the steps to follow while implementing a GIS systems. (5 marks)
- d) Explain how Meta data is used to solve problems in GIS (2 marks)