



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN CIVIL
ENGINEERING (BSCE 13M)

ECE 2517: GEOGRAPHICAL INFORMATION SYSTEM

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- Answer Booklet
- Pocket calculator

This paper consists of **FIVE** questions.

Answer question **ONE (COMPULSORY)** in section **A** and any other **TWO** questions from section **B**

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

SECTION A

Question One (Compulsory)

- a) Define Geographical Information system **(2 marks)**

- b) What are the advantages of Database Management system over the convectional system **(12 marks)**

- c) What are the **SIX** parameters important in the evaluation of a scanner? **(6 marks)**

- d) Differentiate the following terms as used in a GIS system:
 - (i) Arithmetic and Geometric operations
 - (ii) Set algebra and Boolean algebra
 - (iii) Data and information

- (iv) Discrete object and continuous field views
- (v) Database and database management **(10 marks)**

SECTION B (Attempt any TWO questions)

Question Two

Compare Vector and Raster data representation in terms of:

- a) Sources of data
- b) Feature representation
- c) Geographical analysis
- d) Cartographic output
- e) Spatial storage **(20 marks)**

Question Three

- a) What are the stages involved in choosing GIS system **(4 marks)**
- b) G/S system is comprised of a set of software tools (sub-systems). What are they? **(7 marks)**
- c) How do you overcome/address the problem of operator's stress and fatigue during digitizing process? **(3 marks)**
- d) Describe the components of a GIS system **(6 marks)**

Question Four

- a) Errors can be defined as discrepancy between the representation and the real work. What are to types of errors in GIS system? How do they occur? **(6 marks)**
- b) With the aid of a flow chart, discuss data collection process in a GIS system **(6 marks)**
- c) What are the advantages and disadvantages of raster and vector representation in A GIS system? **(8 marks)**

Question Five

- a) How do you apply GIS system in precision farming (site specific crop management –SSCM) **(5 marks)**
- b) What are the advantages and disadvantages of manual digitizing process? **(5 marks)**
- c) What do you understand by the following terms:
 - (i) Point mode
 - (ii) Stream mode
 - (iii) Switch mode **(6 marks)**
- d) Why is attribute data coded? **(4 marks)**