



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

BSC IN CIVIL ENGINEERING

ECE 2517 : GEOSPATIAL INFORMATION SYSTEMS (GIS)

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 13 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, Drawing Instruments, Scientific calculator, examination pass and student ID

This paper consists of five questions.

Attempt question ONE (Compulsory) and any other TWO questions.

Question One (30 Marks)

- (a) Define DBMS (2 marks)

- (b) Differentiate between *Geographic Information Science* and *Geographic Information Systems* (4 marks)

- (c) Outline the components of a GIS (6 marks)

- (d) Outline GIS, GNSS, and RS technologies (6 marks)

- (e) Describe the four (4) GIS Sub-systems (6 marks)

- (f) With the aid of illustrative diagrams explain the realization of both horizontal and vertical datum as used in geospatial science (10 Marks)

Question Two (20 Marks)

- a) GIS has been referred to as an 'enabling technology' or an 'integrating technology'. Explain and justify this statement using at LEAST FIVE contributing disciplines (10 Marks)

- b) Compare and contrast the GIS data models (10 Marks)

Question Three (20 Marks)

- a) In GIS analysis, we are concerned with data and information, how are they different? **(2 Marks)**
- b) Compare and contrast the TWO methods of geospatial data acquisition in GIS. **(6 Marks)**
- c) Briefly explain the TWO methods of digitizing. **(4 Marks)**
- d) Outline the types of errors that occur in practice when working with GIS data. **(8 Marks)**

Question Four (20 Marks)

- a) The realization of positive results and benefits of GIS will be not achieved overnight. A properly structured and systematic implementation plan is required for a successful operation. Briefly discuss the technical, financial, and institutional considerations in GIS implementation plan **(8marks)**.
- b) Despite the anticipated benefits of GIS after successful implementation. As consultants contracted to set up the GIS lab discuss the implementation challenges likely to be encountered **(12 marks)**.

Question Five (20 Marks)

- a) Using descriptive diagram where necessary discuss the main database models as used in GIS **(10 Marks)**
- b) Outline FIVE functions of DBMS **(10 Marks)**