



WI-2-60-1-6  
**JOMO KENYATTA UNIVERSITY**  
**OF**  
**AGRICULTURE AND TECHNOLOGY**  
 University Examinations 2017/2018  
**FOURTH YEAR FIRST SEMESTER EXAMINATION FOR**  
**THE DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE**  
**ALP 2409: GIS APPLICATIONS**

**DATE: JULY/AUGUST 2018**

**TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS**

**Question One (30 Marks)**

- a) Explain the meaning of the following terms: (5 Marks)
- (i) GIS
  - (ii) Remote sensing
  - (iii) Spatial resolution *-how much detail*
  - (iv) Data layering
  - (v) Georeferencing *Giving images real life coordinates*
- b) Name and explain four (4) functional elements of GIS. (4 Marks)  
*Hardware, software, data, people, methods*
- c) Mention the data types in GIS, give examples. (4 Marks)  
*Raster, Vector*
- d) Describe the GIS components. (8 Marks)
- e) (i) How is GIS data stored? (2 Marks)
- (ii) Data analysis functions are one of the powerful GIS tools. Mention and explain four (4) types of GIS analysis tools. (4 Marks)

① Why is GIS one of the fastest growing technologies? (3 Marks)

**Question Two (20 Marks)**

- a) What is ArcGIS? (2 Marks)
- b) Give three (3) examples of ArcGIS extensions. (3 Marks)
- c) Explain the meaning of GUI and list down the five ArcGIS documents contained in the project window. (6 Marks)
- d) With simple illustrations, state the functions of at least four (4) commonly used ArcGIS buttons or toolbars. (6 Marks)
- \*e) In Arc Catalog, in what ways can you view data? (3 Marks)

f) **Question Three (20 Marks)**

- a) List three (3) international environmental issues that could be addressed using GIS.  
 - climate change - urban sprawl  
 - wildlife endangerment (3 Marks)
- b) A crime has occurred in the city centre. The police have not been able to track a hijacking gang in the city to the Eastlands area. How can they use GIS to narrow their search? (4 Marks)
- c) List four (4) advantages of GIS. (2 Marks)
- d) (i) ✗ Briefly explain the term buffering. (3 Marks)  
 property analysis
- (ii) Explain how buffering can be used to protect our natural resources. (8 Marks)

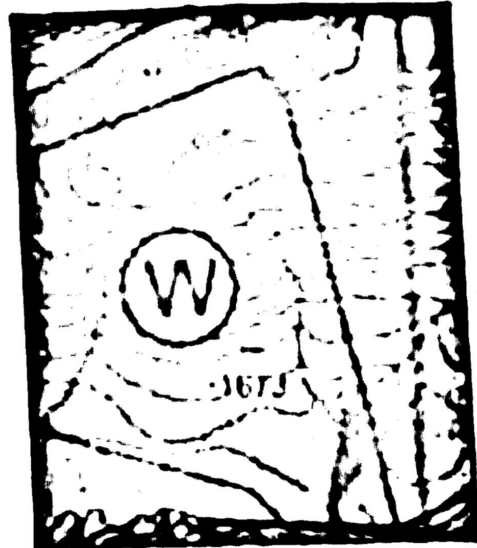
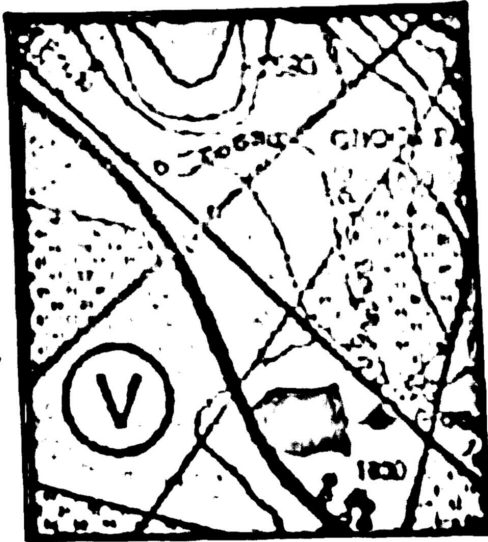
**Question Four (20 Marks)**

Explain the application of GIS and remote sensing in land use planning and management. (20 Marks)

**Question Five (20 Marks)**

- a) You want to build a heavy industry and you are given a choice between area V in Block B3 and area W in Block F4.
- (i) Which area would you choose? (1 Mark)

- (ii) State three (3) data layers you would use to make your decision. (3 Marks)
- (iii) Suggest three (3) ways in which GIS can be used to assist site selection of the industry. (6 Marks)



- b) Heavy rainfall as witnessed in the last few months have resulted in extensive flooding along the Tana River and its environs. How could the national or county government use GIS and remote sensing to manage this disaster? (10 Marks)