THE CO-OPERATIVE UNIVERSITY OF KENYA

SPECIAL / SUPPLEMENTARY EXAMINATION OCTOBER -2023

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN DISASTER RISK MANAGEMENT AND SUSTAINABLE DEVELOPMENT
(YR III SEM I)
UNIT CODE: BETC 3102

UNIT TITLE: GIS & REMOTE SENSING

DATE: THURSDAY, 19TH OCTOBER, 2023
TIME: 11:00 AM – 1:00 PM

INSTRUCTIONS:

- **Answer question ONE (compulsory) and any other TWO questions**

QUESTION ONE

(a) Define the following terms:

i. Remote sensing (3 marks)
ii. Resolution (3 marks)
iii. Black body (3 marks)

(b) List the three types of RS platforms used in the 21st century giving an example for each (3 marks)

(c) List any GIS systems with relevance to:

i. GIS Software (2 marks)
ii. GIS Hardware (2 marks)

(d) One of the basic principles of GIS analysis is that the data collected must be georeferenced! Explain? (2 marks)

(e) Differentiate between

i. Spatial and Aspatial data (3 marks)
ii. Raster and vector data (3 marks)

(f) Convert the following into degrees only giving appropriate positive or negative signs (6 marks)

i. $18^0 12'22''E$
ii. $0^0 25'S$
iii. $24^0 13'45''N$

QUESTION TWO

(a) With the help of a diagram, explain the concept of atmospheric window (8marks)

a) With an illustration, describe the stratification of the atmosphere and the effects on RS? (12marks)

QUESTION THREE

(a) Describe and explain the applications of GIS and RS in navigation (10marks)
(b) Explain four sources of errors that affect the accuracy of GPS and how some of those errors can be eliminated during a simple survey exercise (10marks)

QUESTION FOUR

(a) Clearly and with illustration, elaborate how GPS receiver computes its elevation above sea level (8marks)
(b) In simple terms, describe and explain how a GPS receiver computes its positional geometry with reference to latitude and longitude (12marks)