KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE (GEOPHYSICS AND MINEROLOGY)

FIRST SEMESTER 2021/2022
(FEBRUARY-JUNE, 2022)

BSMN 216: GEOSPATIAL MAPPING AND DATA ANALYSIS

STREAM: Y2 S1 **TIME: 2 HOURS**

DAY: WEDNESDAY, 12.00 PM – 2.00 PM **DATE: 11/05/2022**

INSTRUCTIONS:

1. ***Do not write anything on this question paper.***
2. ***Answer Question ONE (compulsory) and any other TWO questions.***

QUESTION ONE

a) Explain the following terminologies as used in geospatial sciences.

(10 marks)

- **i.** Geoid
- **ii.** Central Meridian
- **iii.** Scale
- **iv.** Standard line
- **v.** Coordinate systems
- **vi.** Distance
- **vii.** Navigation

viii. Location

ix. Symbols

x. Space

b) What is a datum and how is it different from projections. (2 marks)

c) Cartographers use color on maps to represent certain features /objects, explain with examples the objects represented by the following color schemes.

Blue

Black

Red

Green. (4 marks)

d) State and explain at least five elements of a map? (5 marks)

e) Discuss how to reference files in vector works (2 marks)

f) What is a reference file? 1marks

g) What is the difference between CAD and GIS?3marks

h) Outline the three primary aspects of color that must be addressed in map making. (3 marks)

QUESTION TWO

a) What do you understand by map projection? (2 marks)

b) Explain three steps that are involved in creation of a map projection (3 marks)

c) Discuss the metric properties of a map in map projection (10 marks)

d) Using suitable illustrations discuss three common types of map projection. (5 marks)

QUESTION THREE

a) The Transverse Mercator projection is based on the highly successful Mercator projection. The main strength of the Mercator projection is that it is highly accurate near the Equator and the main

problem with the projection is that distortions increase away from the Equator. From the details above

i. What is a UTM? (2 marks)

ii. What are its strengths as compared to the other datum? (2 marks)

iii. Which places is it highly suitable for mapping? (2 marks)

iv. Which places is it not suitable for mapping? (2 marks)

b) State and explain the steps that are involved in editing a file (3 marks)

c) Describe the general properties of the following projectionsUniverse Transverse Mercator (UTM), State plane system, and Robinson Projection.

(5 marks)

d) Why are maps among the most compelling form of Information? (4 marks)

QUESTION FOUR

a) Write an essay on the key steps in producing a map. (10 marks)

b) Discuss at least five methods of relief representation (10 marks)

QUESTION FIVE

a) Many special projections have been developed to specifically overcome some of these distortions. Discuss those giving examples. (6 marks)

b) What is Cartography (2 marks)

c) What are the values of a map? (3 marks)

d) What do you understand by the term earth geometry and what does it deal with? (5 marks)

e) What is the primary purpose of a reference map (2 marks)

f) What are the limitations of contouring as a way of representing relief? (2 marks)