



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of BUILDING & Civil engineering

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

TCV 4415 : GEOSPATIAL TECHNOLOGY

END OF SEMESTER EXAMINATION

SERIES: APRIL 2025

TIME: 2 HOURS

DATE:

Instructions to Candidates

You should have the following for this examination

- Answer Booklet, examination pass and student ID
- Drawing instruments.

This paper consists of five questions.

Attempt any THREE questions.

Do not write on the question paper.

QUESTION ONE (Compulsory – 20 Marks)



SGS ISO 9001:2008 Certified

- a). Define parallax. In a pair of overlapping photographs (mean photo base length of 88.95 mm), the mean ground was given as 70 m above the datum. Two nearby points were observed and the following information obtained.

Point	Height above datum	Parallax bar reading
X	55 m	7.45 mm
Y	?	9.50 mm

If the flying height was 2200 m above the datum, and the focal length of the taking camera was 151.98 mm, determine the height of point Y above the datum (assume a direct reading stereo meter) **(8 Marks).**

- b). Derive equation for relief displacement **(10 Marks).**
 c). What is a scanner **(2 Marks).**

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 Marks)

- a). Make short notes under the following
- i) Shape
 - ii) Pattern/Spatial arrangement
 - iii) Tone/Hue
 - iv) Site
 - v) Association **(10 Marks).**
- b). Explain the functions of the following camera parts
- i) Camera lens
 - ii) The filter
 - iii) Shutter and diaphragm **(6 Marks)**
- c). How is vector data represented **(4 Marks).**

QUESTION THREE (20 Marks).



- a) . Explain the following functions
 - i) Map Digitization System
 - ii) Organization, operations and data
 - iii) Registration and verification.
 - iv) Functions of Cartographic Display System **(8 Marks).**
- b) . What are tangible and non - tangible benefits **(8 Marks).**
- c). What factors that make orientation difficult in achieving stereoscopic vision **(4 Marks).**

QUESTION FOUR (20 Marks).

- a) . What are the sub -tools of Geographical Information System **(7 Marks)**
- b) . What are the factors that must be considered for the choice of a platform. Name any four platforms for the sensors **(7 Marks).**
- c). Discuss errors in vector format **(6 Marks).**

QUESTION FIVE (20 Marks).

- a) Define Digital Image Processing. Discuss the processes of image processing **(10 Marks).**
- b). A vertical photograph contains images of three ground points A, B, and C at a, b and c respectively. The elevations of these points and their coordinates measured on the photograph by using a micro rule and corrected for film shrinkage was recorded as follows:

Point	x (in)	y(in)	Elevation (ft)
a	- 1.954	-3.502	974
b	- 3.106	+2.250	146
c	+2.155	+2.775	420

The focal length of the taking camera was 8.212" and the flying height was 7810 ft above mean sea. Determine the lengths of the ground lines AB, BC and CA **(10 Marks).**

