



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
Department of BUILDING & Civil engineering
UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING
ECV 4425 : ENGINEERING SURVEY IV

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2024
TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of five questions.

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

Do not write on the question paper.

QUESTION ONE (30 Marks)

- a) A vertical photograph contains images of three ground contains 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 were recorded as follows:

Point	x (mm)	y (mm)	Elevation (m)
a	-61.64	-100.95	2300
b	- 80.89	+60.25	1400
c	+56.56	+73.55	1600

The focal length of the taking camera was 152 mm and the flying height was 4820 m above the sea. Determine the lengths of the ground lines AB, BC and CA **(12 Marks)**

- b) Describe the following as discussed in Photogrammetry
- Blade type shutter
 - Rotating disk shutters
 - Neat Model



- iv). Crab (8 Marks)
- c). Discuss the following types of resolutions
- i). Swath
 - ii). Repeatitively
 - iii). Spectral band
 - iv). Field view
- (10 Marks).

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO

- a). Discuss how photographs are arranged so as to achieve stereoscopic visison (10 Marks)
using a stereoscope
- b). What are the basic elements of interior orientation of a camera responsible for its calbration (6 Marks)
- c). Explain the following terms as used in film processing
- i). Over exposure
 - ii). Under exposure
- (4 Marks)

QUESTION THREE

- a). Discuss the following factors that affect flight mission
- i). Ground coverage (G^2)
 - ii). Overlap (R%)
 - iii). Purpose
 - iv). Scale
 - v). Wind effect
- (10 Marks)
- b). Outline any six characteristics of a vertical photograph (6 Marks)
- c). Differentiate between monocular and binocular vision (4 Marks)

QUESTION FOUR

- a). In a pair of overlapping vertical photographs, the mean distance between the principal points is 95.90 mm. At the time of photography, the aircraft was 3000m above the terrain which was at datum level and the camera had a focal length of 250mm. A tower was observed and the difference in parallax measurements of its top and base was found to be 3.50mm. Determine the height of the tower. (6 Marks)
- b). What is rectification. A vertical photograph over a variable terrain. The minimum average and maximum heights of area were 310 m, 460 m and 610 m respectively

and that the flying height was 4000 m above sea level and the focal length of 152.4 mm. Determine the mean, minimum and maximum scale **(4 Marks)**

c). Differentiate between interpretive and metric photogrammetry **(4 Marks)**

d). Define satellite remote sensing, state ANY of its advantage **(6 Marks)**

QUESTION FIVE

a). Using a sketch, derive formula for relief displacement **(10 Marks)**

b). Discuss the following elements of visual interpretation of a photograph

i). Tone

ii). Shape

iii). Association

iv). Texture

(10 Marks)