



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF SPATIAL PLANNING AND NATURAL RESOURCE MANAGEMENT
2024/2025 UNIVERSITY EXAMINATIONS FOR 1ST YEAR 2ND SEMESTER
EXAMINATIONS FOR

THE DEGREE OF BACHELOR OF ARTS IN SPATIAL PLANNING; BSC IN WATER
RESOURCES AND ENVIRONMENTAL MANAGEMENT; AND BSC IN GEOGRAPHY
& NATURAL RESOURCES MANAGEMENT

MAIN CAMPUS

COURSE CODE: PPB 1104
COURSE TITLE: SURVEYING & CARTOGRAPHY
EXAM SESSION: 15.00-17.00
DATE: 24/4/2025
DURATION: 2 HOURS
EXAM VENUE: LAB 10

INSTRUCTIONS

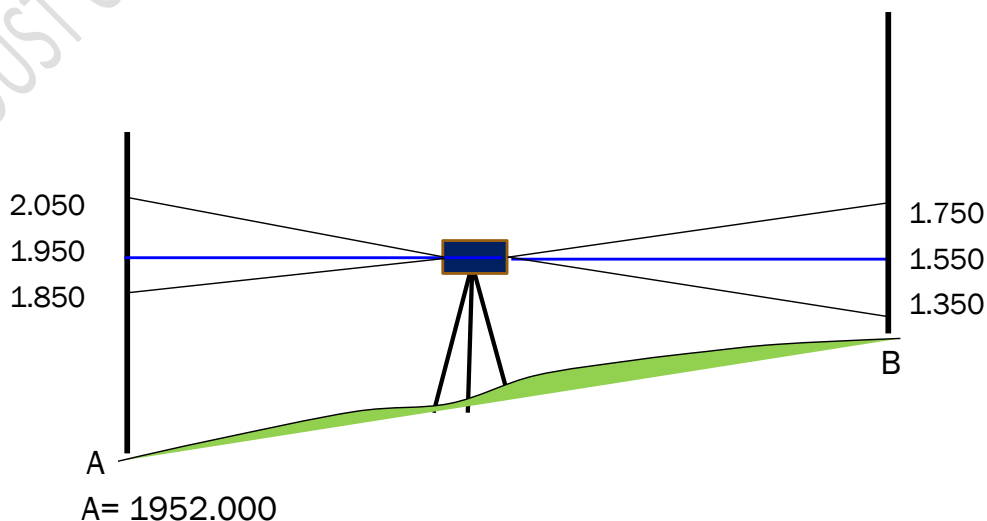
1. This paper contains FIVE (5) questions
2. Answer question 1 (Compulsory) and ANY other 2 Questions
3. Write all answers in the booklet provided

SECTION A (30 MARKS)

Answer ALL the questions in this section

Questions One

- a) Differentiate between surveying and geomatics. [2 marks]:
- b) Highlight surveying principles that should always be upheld to attain higher precision measurements. [6 marks]
- c) A rectangular parcel of land measuring 256 metres and 125 metres of land was subdivided into six equal plots. What is the area of each plot in hectares? Give your answer in 2 decimal places. [4 marks]
- d) Students were tasked with preparation of a Site Map for JOOUST Main Campus. Discuss preference of traverse surveying over tape and offset surveying in undertaking the assignment. [10 marks]
- e) A level was set up in alignment with points A and B, when the staff readings were taken as shown in the diagram below.
- Determine the horizontal distance AB. [2 marks]
 - Compute the height difference between the points A and B. [2 marks]
 - If point A is 1952.000 metres above mean sea level (amsl), what is the altitude of point B amsl? [4 marks]



SECTION B (40 MARKS)

Answer any TWO (2) questions from this section

Question Two

- a) Outline methods of determining areas of irregular parcels of land. [8 marks]
- b) Explain different ways of achieving offsets during tape and offset surveying fieldwork. [8 marks]
- c) During an angular measurement class, directions for two intersecting lines were recorded as $108^{\circ} 24' 45''$ and $195^{\circ} 37' 29''$. Determine the angle between the lines in Radian [4 Marks]

Question Three

- a) Describe different levelling methods that can be applied to determine height differences and or elevation (height of points). [8 marks]
- b) An open traverse was run between points X and Y to control setting up of a road section as per the table below

Line	WCB	Distance (m)
X-S1	65 00 00	25.707
S1-S2	338 15 50	22.861
S2-Y	72 47 00	53.221

Given the coordinate of X is 500.000mE and 500.000mN. Calculate the coordinate of S1, S2 and Y. [12 marks]

Question Four

- a) Explain why surveying of existing buildings is important in planning? [4 marks]
- b) Briefly describe the contribution of Surveying and Geomatics to Kenyan development. [6 marks]

- c) The following data was obtained during a tacheometric surveying for mapping assignment. Given that point A is 1256 metres above mean sea level (amsl), calculate the horizontal distance (H), vertical distance (V) and height or Reduced Level (RL) at point M. [10 marks]

Hi	Vertical Angle	Stadia readings			H	V	RL	Staff Stn
		Upper	Middle	Lower				
@A								
1.43	+01° 24' 23"	2.40	2.25	2.10				M

Question Five

- a) What are the benefits of using GPS for site mapping? [4 marks]
- b) Describe the working principle of GPS technology. [8 Marks]
- c) GPS receiver determined point position of point X and Y as (40982 mE & 815518 mN) and (65033 mE & 908312 mN) respectively. Determine distance and bearing of Y from X. [6 Marks]