



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
**UNIVERSITY EXAMINATION FOR:**

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC2102 : ENGINEERING SURVEYING 1

END OF SEMESTER EXAMINATION

**SERIES:** AUGUST 2019

**TIME:** 2 HOURS

**DATE:** 9 Aug 2019

### **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID, Scientific Calculator*

This paper consists of five questions.

Attempt any THREE questions.

**Do not write on the question paper.**



### QUESTION ONE ( 20 Marks)

- (a) Define the following terms as used in chain surveying
- ( i ) Chain surveying
  - ( ii ) Chainage
  - ( iii ) Survey station
  - (iv ) Triangulation
  - (v ) Survey station ( 10 marks)
- (b) Explain the general principles to be observed in arranging the survey lines during chain surveying ( 10 marks)

### QUESTION TWO (20 Marks)

- (a) With the aid of a sketch, briefly explain a procedure of ranging a line over a hill (6marks )
- (b) Briefly explain THREE main types of errors in chain surveying ( 9 marks)
- (c) With the aid of a sketch, briefly explain the term “ witnessing a station” (5 marks)

### QUESTION THREE (20 Marks)

( a ) A chain of nominal length 20m measures 20.08 m when compared with standard length. This chain was used to measure a length AB and the measurement recorded was 131.65 metres. An area of 6.5 Ha was commutated for measurements taken using the chain. Determine the true length of line AB and True area (6 marks )

- (b) Define the following as used in leveling:-
- ( i) Bench mark
  - ( ii ) Line of collimation
  - ( iii ) Spot height ( 6 marks )
- c) Briefly describe the procedure of making temporary adjustments to a tilting level (8 marks )

### QUESTION FOUR (20 Marks)

- (a) Explain the errors made when carrying out leveling exercise ( 10 marks )
- b) State FOUR advantages of automatic level over other types of levels ( 4 marks )

( c ) Explain the characteristics of contours

( 6 marks )

**QUESTION FIVE (20 Marks)**

( a ) With the aid of a sketch describe the principle of leveling

( 10 marks )

( b ) A leveling instrument was used to determine ground levels at points along the line of the trench, and staff readings are as shown in the table.

B.S.	I.S.	F.S.	R.L.
1.680			114.44
	1.72		
	2.00		
	2.44		
	3.12		
	2.90		
	2.14		
0.52		2.00	
	2.26		
	2.62		
3.34		2.96	

(i) Complete the rise and fall columns and reduce the levels

(ii) Carry out the usual arithmetic checks

( 10 marks )

