



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
CERTIFICATE IN BUILDING & CIVIL ENGINEERING

EBC 1106: ENGINEERING SURVEY I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Calculator*

This paper consists of **FIVE** questions. Answer any **THREE** questions of the **FIVE** questions

All questions carry equal marks
 Maximum marks for each part of a question are as shown
 This paper consists of **THREE** printed pages

Question One

The information shown in table 1 was obtained in leveling exercise. Reduce the readings by the height of collimation method applying the necessary arithmetical checks. **(20 marks)**

Table 1

BS	IS	FS	REMARKS
3.670			BM I R.L 980.000m
	3.680		Point A
	4.680		“ B
	2.110		“ C
2.870		3.570	“ D
	3.650		“ E
	2.670		“ F
	2.290		“ G
4.600		3.050	“ H
	2.560		“ I
	1.090		“ J
3.410		2.610	“ K
	1.560		“ L
	2.970		“ M
		3.100	3.100

Question Two

- a) Define the following terms as used in chain survey:
- (i) Chainage
 - (ii) Offset
 - (iii) Trilateration
 - (iv) Chain surveying
- (6 marks)**
- b) A line was measured with chain believed to be 30.00m and found to be 258.075m. However, on re-examination of the chain it was found to measure only 29.75m long:
- (i) Calculate the correct length of the line
 - (ii) If the chain in b(i) above was used to measure an area and found to be 6.89 hectares calculate the correct area.
- (4 marks)**
- c) With the aid of sketch, explain the measurement procedure of a line longer than a tape length.
- (10 marks)**

Question Three

- a) State any FIVE characteristics of contours. (5 marks)
- b) State any FOUR uses of contour maps. (4 marks)
- (i) Contour line
 - (ii) Vertical interval
 - (iii) Horizontal equivalent
 - (iv) Spot height (4 marks)
- c) (i) State the basic requirement of a dumpy level.
- (ii) List FOUR sources of error in leveling exercise. (7 marks)

Question Four

- a) Explain with the aid of sketches, TWO methods of reducing slope distance to horizontal distances. (10 marks)
- b) Explain with the aid of a sketch the method of ranging a line between two points through a depression. (5 marks)
- c) Define the following terms as applied in chain surveying:
- (i) Base line
 - (ii) Survey station
 - (iii) Survey line
 - (iv) Tie line
 - (v) Check line (5 marks)

Question Five

- a) Outline the procedure of leveling up a dumpy level. (6 marks)
- b) Define the following terms used in leveling:
- (i) Levelling
 - (ii) Level line
 - (iii) Bench mark
 - (iv) Back sight
 - (v) Intermediate sight
 - (vi) Change point (6 marks)
- c) State any FOUR points to be considered in selecting of station in chain surveying. (4 marks)
- d) Give the categories in which chain surveying equipments are divided into and name TWO examples of each category. (6 marks)