THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

CONSTRUCTION TECHNICIAN CERTIFICATE (CT I)

CERTIFICATE IN BUILDING & CIVIL ENGINEERING (CBC)

EBC 1116: CHAIN SURVEYING I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 3 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Scientific calculator*

This paper consists of **FIVE** questions
Answer any **THREE** questions
Maximum marks for each part of a question are clearly shown
This paper consists of **THREE** printed pages

Question 1

a) State any **FIVE** points to be considered in the selection of stations in chain surveying (5 marks)

b) Define the **THREE** types of errors in chain surveying (7 ½ marks)

c) A line AB was measured with a tape believed to be 100.00am and found to be 1300.025m long. However, on re-examination the tape was found to measure 100.002m long. Given the following:
- The day temperature was 34oc
- The standard temperature = 20oc
- Difference in height between the pints = 2.855m
- The coefficient of linear expansion of the tape as 0.00001m per oc.

Calculate the correct length of line (8 ½ marks)

Question 2

a) Define the following categories of surveying:
(i) Engineering
(ii) Cadastral (3 marks)

b) With the aid of sketches, describe the following chain surveying instruments:
(i) The steel band
(ii) Abney level (12 marks)

c) Describe the step chaining procedure in chain surveying (5 marks)

Question 3

a) List the **THREE** categories of obstacles in chain surveying (1 ½ marks)

b) With the aid of a sketch describe the following chain surveying procedures:

(i) Measuring a line across a wide river without setting out right angles (7 ½ marks)
(ii) Measuring a line across a pond ground by setting out right angles (4 marks)
(iii) Measuring a line over a small hill by the repeated alignment technique (7 marks)

Question 4

a) Differentiate between Geodetic and plane surveying (3 marks)

b) Define the following terms as used in chain surveying:
(i) Check line
(ii) Chainage
(iii) Oblique offset
(iv) Survey line (5 marks)

c) Sketch and label any **FIVE** conventional symbols for representing features in chain surveying

d) With the aid of sketches, explain the following procedures:
   (i) Setting out a right angle by the 3:4:4 method
   (ii) Measuring a right angle with an optical square (8 marks)

Question 5

With the aid of sketches, explain the following chain surveying procedures

a) Measuring a line across a wide river by setting out right angles (7 marks)
b) Measuring an angle of slope with an abney level (5 marks)
c) Measuring a line across a tall building (8 marks)