



TECHNICAL UNIVERSITY OF MOMBASA

**Faculty of Engineering & Technology
in Conjunction with
Kenya Institute of Highways and
Building & Technology (KIHBT)**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING ECONOMICS

EBE 3107: SITE SURVEYING & SETTING OUT I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: APRIL 2015

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions
Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required
This paper consists of **THREE** printed pages

Question One

- a) Define the following terms as used in chain surveying:
- (i) Ranging a line
 - (ii) Chainage
 - (iii) Offset
 - (iv) Tie line
 - (v) Survey station
 - (vi) Base line
- (6 marks)**
- b) Give the classes in which chain surveying equipment are divided into and name TWO examples in each category **(6 marks)**
- c) With the aid of sketches, describe the following types of surveying equipment **(8 marks)**
- (i) Drop arrow
 - (ii) Ranging rod

Question Two

- a) State FIVE factors which should be considered before selecting survey stations **(5 marks)**
- b) (i) Briefly describe the main sources of errors in chain surveying.
- (ii) A steel band of nominal length 100m was used to measure 850m chain line. The actual measured length was found to be 849.650m. Determine the actual length of the steel band **(6 marks)**
- c) With the aid of sketches, outline the procedure of overcoming the following obstacles in chain surveying.
- (i) Measuring a line across a pond without setting out right angles
 - (ii) Measuring a line passing over a wide river setting out right angles
- (9 marks)**

Question Three

- a) Define the following terms:
- (i) Contour interval
 - (ii) Horizontal equivalent
 - (iii) Contour line
 - (iv) Spot height
- (4 marks)**
- b) State FOUR uses of contour maps **(4 marks)**
- c) Briefly explain the direct method of contouring **(12 marks)**

Question Four

- a) Define the following terms:
- (i) Shrinkage
 - (ii) Haul
 - (iii) Average haul distance

(iv) Free haul distance

(v) Haul distance

(5 marks)

b) State any FIVE characteristics of Masshaul diagrams

(5 marks)

c) Define the following terms:

(i) Back sight

(ii) Foresight

(iii) Change point

(iv) Bench mark

(v) Reduced level

(vi) Level line

(6 marks)

d) State the basic requirements of a dumpy level

(4 marks)

Question Five

a) Reduce the following staff readings by the rise and fall method and carry out routine arithmetical checks

(14 marks)

BS	IS	FS	REMARKS
1.420			120.000M (BM)
	0.675		Station A
2.990		0.770	Station B
0.510		2.090	Station C
	1.610		Station D
		2.050	Station E

b) Describe the procedure of leveling a dumpy level

(6 marks)