



TECHNICAL UNIVERSITY OF MOMBASA

**FACULTY OF ENGINEERING AND TECHNOLOGY IN CONJUNCTION WITH KENYA
INSTITUTE OF HIGHWAYS AND BUILDING TECHNOLOGY (KIHBT)**

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

HIGHER DIPLOMA IN BUILDING ECONOMICS

EBE 3107: SITE SURVEYING AND SETTING OUT I B

END OF SEMESTER EXAMINATIONS
SERIES: OCTOBER 2016

TIME: 2 HOURS

Instruction to candidates

You should have the following for this examination

- Answer booklet
- Pocket Calculator

This paper consist of five question.

Answer any three questions of the five questions

All question carry equal marks

Maximum marks for each part of a question are as shown

This paper consist of two printed pages

Question One

a) Define the following terms as used in chain surveying:

- i) Base line
- ii) Survey line
- iii) Tile line
- iv) Survey station
- v) Chainage
- vi) Offset

(6marks)

b) Describe the following surveys

- i) Geodetic
- ii) Cadastral
- iii) Engineering
- iv) Aerial

(6marks)

c) With the aid of a sketch, briefly describe the following chain surveying equipment

- i) Metric chain
- ii) Drop arrow

(8marks)

Question Two

a) Categorize chain surveying equipment according to the operations in which they are applied giving two examples of each. (9marks)

b) With the aid of a sketch, explain the following methods of locating positions of details in chain surveying

- i) Trilateration
- ii) Triangulation

(6marks)

c) State **FIVE** factors which should be considered before selecting survey station. (5marks)

Question Three

a) Define the following terms as applied in levelling

- i) Bench marks
- ii) Reduced level
- iii) Change point
- iv) Intermediate sight
- v) Spot height

(5marks)

b) Table 1 shows staff observation in a levelling exercise

- i) Draw up a level book and reduce the levels by the height of collimation method
- ii) Apply arithmetical checks (15marks)

BS	IS	FS	Remarks
0.683			BM 50.000M AOD
	1.109		Section A
	1.838		Section B
	3.399		Section C

0.405		3.877	Section D
	1.405		Section E
	1.896		Section F
	2.676		Section G
	3.478		Section H
1.834		3.999	Section I
	0.649		Section J
		1.706	Section K

Question Four

- a) I) State **FOUR** characteristics of contours
 II) With the aid of a neat sketch explain the grid method of contouring. **(14marks)**
- b) With the aid of neat sketches show the characteristic features of contour lines for the following.
- i) Hill
 - ii) Valley
 - iii) Hollow
- (6marks)**

Question Five

- a) Calculate the side widths and the cross-sectional area of an embankment having the following dimensions. Road width 20m, existing ground slope 1;10, side slope 1:2, center height 10m. **(10marks)**
- b) Define the following terms as used in mass hand diagrams.
- i) Mass haul diagram
 - ii) Shrinkage
 - iii) Free hand distance
 - iv) Haul distance
- (6marks)**
- c) State **FOUR** uses of mass hand diagrams **(4marks)**