THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING
(BUILDING SERVICES OPTION)**

EBE 3107: SITE SURVEYING & SETTING OUT I

**END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2012
TIME: 2 HOURS**

<u>**Instructions to Candidates:**</u>
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 as shown
This paper consists of **THREE** printed pages
Question One (20 Marks)

a) Define the following terms as used in leveling:
  (i) Leveling
  (ii) Level line
  (iii) Reduced Level
  (iv) Datum Level
  (v) Bench Mark
  (vi) Change Point   **(6 marks)**

b) (i) Describe the procedure of leveling a dumpy level

   (ii) State the basic requirements of a dumpy level.   **(8 marks)**

c) Define the following types of leveling stores:

  (i) Telescopic staff
  (ii) Folding staff
  (iii) Single length staff   **(6 marks)**

Question Two (20 marks)

a) Define the following terms:
  (i) Ranging
  (ii) Chainage
  (iii) Survey station
  (iv) Base line
  (v) Off set   **(5 marks)**

b) With the aid of sketch, explain the procedure for determining the length of a chain line across each of the following obstacles by setting out right angles:
  (i) Wide river
  (ii) A pond   **(8 marks)**

c) With the aid of a sketch, describe a method of ranging a line over a small hill.   **(7 marks)**

Question Three (20 marks)

a) With the aid of a sketches, briefly describe the following chain surveying equipment:
  (i) Metric chain
  (ii) Ranging rod   **(8 marks)**

b) Briefly explain the procedure of chaining between stations.   **(8 marks)**

c) State **FOUR** factors governing the selection of chain lines for chain survey.   **(4 marks)**

Question Four (20 marks)

a) Reduce the levels shown in table 1 by rise and fall method. Apply arithmetical checks.

(14 marks)

Table 1

BS	IS	FS	Remarks
3.200			BM 500.000M
	2.010		Station R
	1.050		Station S
3.250		0.650	Station T
	2.980		Station U
	1.500		Station V
	2.200		Station W
		0.680	Station X

With the aid of a sketch, briefly explain the "inverted staff leveling" procedure. **(6 marks)**

Question Five (20 marks)

a) Define the following terms:
   (i) Sectioning
   (ii) Longitudinal section
   (iii) Cross-section **(6 marks)**

b) State any **TWO** uses of sections in (i) and (ii) above. **(4 marks)**

c) Outline the procedure of running a longitudinal section. **(10 marks)**