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

EBE 3107: SITE SURVEYING & SETTING OUT

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*
- *Pocket Calculator*
- *Pencil & Eraser*

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) Differentiate geodetic surveying from plane surveying.   **(3 marks)**

b) Define the following types of surveys:
    i)   Engineering surveys
    ii) Cadastral surveys
    iii) Aerial surveys   **(4 ½ marks)**

c) Explain briefly the chain surveying principle of working from whole and to part.   **(4 ½ marks)**

d) Explain briefly the actual chain surveying procedure.   **(8 marks)**

Question Two (20 marks)

a) (i)   State **THREE** classes of errors in chain surveying giving an example of each.
    (ii) A chain believed to be 100m was used to confirm the dimensions of a 1.6 ha square plot. If the
          area of the plot calculated from the field measurement was 1.625 ha. Calculate the length of the
          chain used.   **(9 marks)**

b) With the aid of a sketch, describe the following surveying equipment.
    i)   Land chain
    ii) Ranging rod
    iii) Chain arrow   **(9 marks)**

c) Differentiate between chaining and chainage.   **(2 marks)**

Question Three (20 marks)

a) Define the following terms as used in leveling.
    i)   Datum surface
    ii) Bench mark
    iii) Level surface
    iv) Reduced level
    v)   Back sight
    vi) Change point   **(6 marks)**

b) (i) With the aid of a sketch, illustrate the construction of a dumpy level.
    (ii) State the basic requirement of a dumpy level.   **(11 marks)**

Question Four (20 marks)

a) The following readings were obtained with a leveling staff.
    i)   Draw up a level book page and reduce the levels by height of collimation method.
    ii) Apply arithmetical checks.

    0.683, 1.109, 1.838, 3.399, 3.877,

    0.451, 1.405, 1.896, 2.676 (BM 31.126m),

    3.478, 3.999, 1.834, 0.649, 1.706

The instrument was shifted after the fifth and eleventh readings. **(20 marks)**

Question Five (20 marks)

a) Define the following terms as used in chain surveying.
  i) Offset areas
  ii) Proof lines
  iii) Base line
  iv) Tie line
  v) Survey line   **(5 marks)**

b) Explain briefly the vertical control procedure in the direct method of contouring.   **(7 marks)**

c) Define the following terms:
  i) Contour line
  ii) Vertical interval
  iii) Horizontal equivalent.   **(3 marks)**

d) State FIVE sources of errors in leveling.   **(5 marks)**