THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)
(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2202: ENGINEERING SURVEYING I

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

Question One (COMPULSORY - 30 Marks)

a) Briefly explain the following types of surveying.
- **i)** Geodetic surveying
- **ii)** Cadastral surveying
- **iii)** Engineering surveying   **(6 marks)**

b) A baseline known to be precisely 100m long was measured with a nominal 20m tape. The observed length of the base was found to be 99.925m.
- **i)** What is the actual length of the tape?
- **ii)** This tape was used in the measurement of an area calculated to be 3.162ha. Find the true area.   **(10 marks)**

c) Outline any **FIVE** precautions to be taken when using chain surveying instruments. **(10 marks)**

d) Define the following types of errors. **(4 marks)**
  i) Gross errors
  ii) Cumulative errors.

Question Two (20 marks)

a) Briefly explain the following terms as used in leveling:
  i) Back sight
  ii) Foresight
  iii) Change point
  iv) Height of instrument **(8 marks)**

b) The following consecutive observations on staff were taken with the help of a level. If the reduced level of the first point is 200.50m and the level was shifted after third, sixth and eighth observation. Compute the R.Ls of all points. 1.500, 1.350, 1.150, 1.850, 2.415, 2.035, 1.950, 1.250, 1.450, 2.350
(12 marks)

Question Three (20 marks)

a) Briefly explain **THREE** categories of errors in leveling. **(9 marks)**

b) Two pegs A and B were 100m apart across a river. The following readings were taken with a level instrument.

	Reading of Staff at	
Level at	A	B
A	1.743	3.047
B	1.622	2.822

The error in collimation was +0.003 per 100m. Find the true difference of level between A and B and the refraction. **(11 marks)**

Question Four (20 marks)

a) Outline **FIVE** characteristics of contours. **(10 marks)**

b) Briefly explain the following indirect methods of locating contours. **(10 marks)**
  i) By squares
  ii) By cross-sections

Question Five (20 marks)

a) Define the following terms as used in linear measurement:
  i) Slope correction
  ii) Sag correction **(5 marks)**

b) The following data was obtained from a survey along a slope. Calculate the horizontal distance given the following:
  - Measured length = 126.30

- Slope angle = 2°34'
- Difference in height between the two points = 5.65m **(15 marks)**