TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR:

- DIPLOMA IN BUILDING AND CIVIL ENGINEERING
- DIPLOMA IN QUANTITY SURVEY

EBC 2105 SURVEY ENGINEERING II
SERIES: SEPT. 2017
TIME: 2 HOURS
DATE: SEPT. 2017

Instructions to Candidates
You should have the following for this examination
   -Answer Booklet, examination pass and student ID
   -Drawing instruments.
   -Scientific calculator
This paper consists of **FIVE** questions. Attempt any **THREE** questions
Do not write on the question paper
Mobile Phones are NOT allowed inside the examination room

 QUESTION ONE

 (a)(i) Define tacheometry

   (ii) State the TWO basic quantities measured in tacheometry to determine distance

                                                                           (6marks)

(b) A theodolite has a multiplying constant of 100 and when set up at A has a height of 1.20m.
When sighted onto a vertically held leveling staff at B, the horizontal Centre line gives a reading
of 1.40m and the upper and lower stadia lines read 2.00m and 0.80m respectively.

(i) If the angle of elevation of the instrument is 6^0 20', calculate the horizontal distance.

(ii) If the reduced level at B is 104.68m, calculate the reduced level of the

 ground at A   **(8marks)**

(c) State Personal errors in the use of telescope   **(6 marks)**

QUESTION TWO.

 (a) State SIX sources of errors in theodolite traversing   **(6marks)**

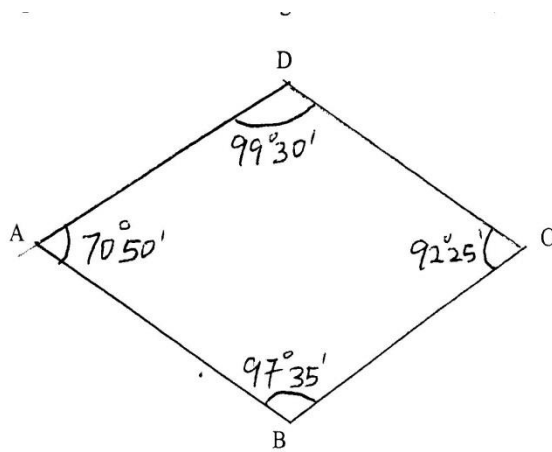(b) Figure1 shows internal angles of closed traverse.

Figure 1

Given the whole circle bearing of AB is $160^000'$, Calculate:-

(i) The correct internal angles

(ii) The whole circle bearing of all the lines   **(14 marks)**

QUESTION THREE

(a) Define the term 'curve ranging'   **(2 marks)**

(b) Using sketches, describe a method of setting out a curve using two theodolites   **(8 marks)**

(c)Two straight roads meet at an angleof$127^031'4$.If the roads are to be connected by a circular curve of 1500m radius, find:-

(i) The tangent distance

(ii) The length of the curve   **(10 marks)**

QUESTION FOUR

(a) A breakwater trapezoidal in cross-section, is 150m long. At the shore end, the section is as follows:- depth 12m, top width10 m, each sloping side being battered or sloped 1horizontalto 12 vertical (ie bottom width is 12m) At the outer end the depth is18m and the bottom width 10m. At all sections of the wall, the batter is constant as above, the top face is horizontal and the depth of the wall changes uniformly. Determine the volume of the material **(14 marks)**

(b) Explain FOUR uses of mass haul diagrams **(6 marks)**

QUESTION FIVE

a) Define the following terms used in mass haul diagrams- **(10 marks)**

(i) Balance point

(ii) Free Haul Distance

(iii)Grade point

(iv) Over Haul Distance

(v) Waste

(b) Explain a survey procedure to measure up existing buildings (**10 marks)**