THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

DIPLOMA IN CIVIL ENGINEERING

DIPLOMA IN ARCHITECTURE

SEMESTER EXAMINATIONS

MAY 2010 SERIES

EB 2129 : SURVEY II

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 **THREE** questions **ONLY**.
Question **ONE** is **COMPULSORY.**
Maximum marks to each part of a question are all shown.

Question ONE

(a).   Define the following terms as applied in theodolite work.

    (i).   Transitting
    (ii).   Swing
    (iii).   Line of collimation
    (iv).   Vertical axis
    (v).   Face right reading
    (iv).   Change face

(6 Marks)

(b).   State **FOUR** permanent adjustment to a theodolite.

(4 Marks)

(c).   Out line the procedure of the following horizontal angular measurement methods by use of a theodolite.

    (i).   Repetition
    (ii).   Reiteration

(10 Marks)

(d).   The observation shown in table 1 were made on a vertically held staff with a techeometer set up on a intermediate point along a straight line CD.

Table 1

Staff Station	Vertical Angle	Staff Intercept	Middle Hair Reading	Height of Instrument
C	+8° 36′	2.880	2.505	1.30
D	-8° 36′	1.655	2.850	1.50

The instrument was fitted with an anallatic lense and had a multiplying constant of 100. Calculate:-

    (i).   Length of CD
    (ii).   Reduced level of D.

Take the reduced level of point C to be 527.63cm.

(10 Marks)

Question TWO

(a).   (i).   Define tacheometry.
      (ii).   State **TWO** tacheometric systems.

(3 Marks)

(b). Explain briefly the determination of tacheometric constants by field measurements. **(7 Marks)**

(c). Define the following terms as used in compass traversing:

    (i)   Local attraction
    (ii)   Isogonal
    (iii)   Angle of declination
    (iv)   Magnetic bearing
    (v)   Magnetic meridian

(10 Marks)

Question THREE

(a). The reading shown in table 2 refers to theodolite observations in measurement of horizontal angle. Calculate the angle and hence illustrate the angular configuration of the point in plan.

Instrument	To station	Face left o ′ ″	Face right o ′ ″
A	B	00° 00′ 00″	180° 00′ 10″
	C	50° 28′ 50″	123° 28′ 40″
	D	80° 17′ 20″	260° 17′ 30″
	E	150° 40′ 10″	330° 40′ 20″
	F	210° 14′ 40″	30° 14′ 40″

(8 Marks)

(b). (i). State **TWO** merits and **TWO** demerits of a compass traverse as compared to other methods of surveying.

    (ii). State any **TWO** uses of a compass.

(6 Marks)

(c). Convert the following whole circle bearings into quadrantal bearings:

    (i).   69° 30′
    (ii).   100° 37′
    (iii). 192° 40′
    (iv). 260° 12′

(4 Marks)

(d). Compute the following quandrantal bearings into the whole circle bearings:

    (i).   N 45° 30′ E
    (ii).   S 30° 40′ E

(4 Marks)

Question FOUR

(a) Calculate the following the back bearing of the following bearings forward bearings.

   (i)   60° 10´
   (ii). 120° 30´
   (iii). 220° 30´
   (iv). 306° 10´   **(4 Marks)**

(b).   Differentiate between the following:

     (i).   Bearing and angle
     (ii).   Whole circle bearing and Reduced bearing
                                                    (4 Marks)

(c).   Table 3 shows the reading in stadia tacheometry with staff held vertically. The instrument had a multiplying and additive constants of 100 and Zero respectively. Calculate the following:

     (i).   The horizontal distance AB, AC and BC.
     (ii).   The difference in height BC.
                                                (12 Marks)

Table 3

Inst sta	To station	Stadia Readings	Mid Reading	Vertical Angle	Whole Circle Bearing	Height of Instrument
A	B	4.150 2.730	3.440	+2° 30´	320° 00´	1.65m
	C	2.570 1.540	2.060	-1° 40´	20° 30´	1.65m

Question FIVE

(a).   Describe the stages of temporary adjustment of a theodolite.
                                                      (13 Marks)

(b).   Explain the difference between temporary and permanent adjustments of a theodolite giving **THREE** examples in each.   **(7 Marks)**