THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN BUILDING AND CIVIL WITH CAD
HIGHER DIPLOMA BRIDGING

SEMESTER EXAMINATIONS

APRIL/MAY 2010 SERIES

SURVEY III

TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination:

- Answer booklet
- Pocket Calculator
- Pencil
- Eraser

This paper consists of **EIGHT** Questions.
Answer **THREE** Questions only.
Maximum marks for each part of a question are as shown.

Question ONE

(a). State the **THREE** basic ways by which circular curves may be set out. **(3 Marks)**

(b). A road kerb line 15m radius and defecting at 90º is to be set out by the off sets from long chord method. Derive data for setting out the kerb line given that off-sets are required at 2.5, interval. **(17 Marks)**

(c). In road excavation scheme, three consecutive cross sections 20m apart were run. If the ground was level about the centerline but falling longitudinally between the respective cross-sections such that centre heights are 1.8m, 1.6m. Compute the volume for the section; given that the side slopes are 1:1:5 and formation width is 9.0m. Using the prismoidal formula. **(10 Marks)**

Question TWO

Table 1 is an abstract from a traverse sheet for a closed traverse.

LINE	BEARING	LENGTH (m)
AB	69º 42′ 47′′	134.11
BC	145º 30′ 14′′	82.60
CD	200º 37′ 09′′	102.94
DE	277º 59′ 58′′	168.68
EA	17º 43′ 10′′	98.76

Adjust the traverse by Bowditch's method rule given co-ordinates of A as:- 200.00mE and 500.00mN. **(20 Marks)**

Question THREE

(a). State **FOUR** points to be considered in the selection of stations for a theodolite Traverse. **(4 Marks)**

(b). (i). Define **TWO** types of traverses.
(ii). State any **TWO** purposes of Theodolite traversing **(6 Marks)**

(c). The figure1 shows the lines and the angles of a link traverse ABCDEFG and H. Given the whole circle bearings of line AB and GH as 119º 11′ 20′′, 101º 13′ 10′′ respectively, calculate the corrected whole circle bearing of other lines. **(10 Marks)**

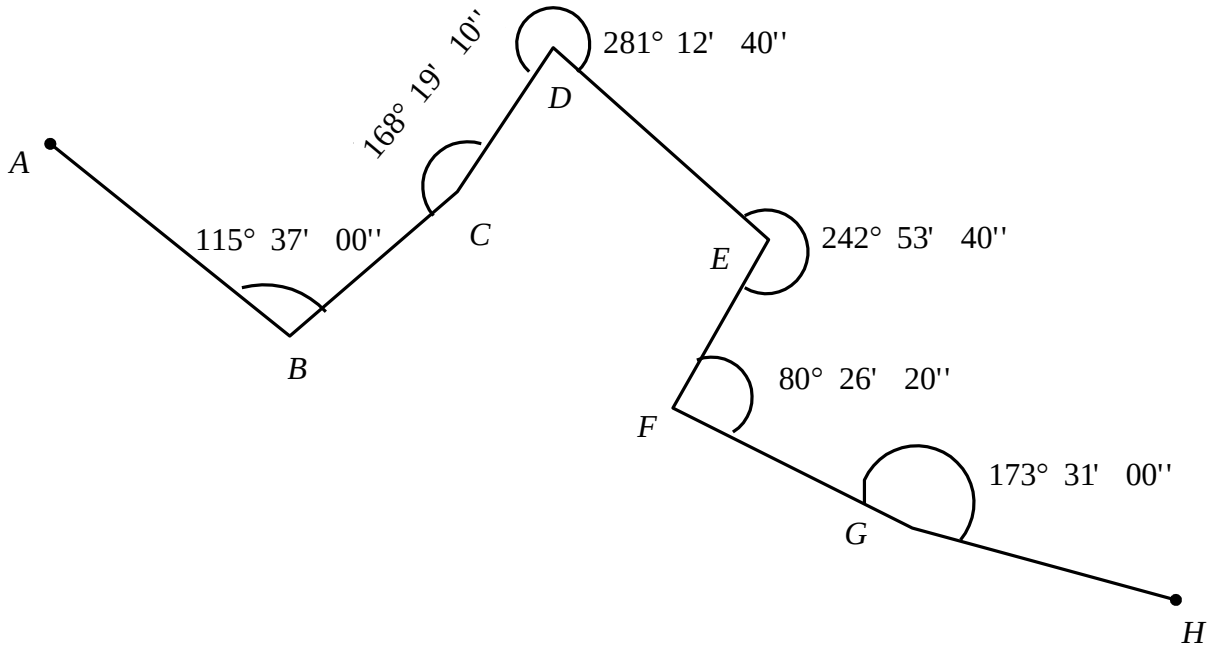

Fig. 1

Question FOUR

(a). Define the following terms as used in mass haul diagrams:

(i). Haul
(ii). Borrow
(iii). Shrinkage
(iv). Waste
(vi). Haul distance **(9 Marks)**

(b). Calculate the area in m^2 between the line and the irregular boundary using the observed data shown in table 2. Use Trapezoidal method.

Table 2

Distance	0	8	16	24	32	40	48
Off set (m).	2.5	4.8	4.8	5.6	4.2	3.8	2.2

(6 Marks)

(c). List **FIVE** parts of a planimeter. **(5 Marks)**

Question FIVE

(a). The data shown in table 3 refers to the horizontal internal angles of a closed theodolite traverse.

Table 3

Station Angle	Angle
A	102º 45` 07``
B	51º 38` 30``
C	96º 43` 12``
D	108°54`10``

Given that the whole circle bearing of AB is 171º 58´ 04´´, calculate:

(i). The corrected internal angles
(ii). The whole circle bearing of the lines **(12 Marks)**

(b). Explain the method of setting out curves by off sets from the long chord. **(8 Marks)**