TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 12S)

EBC 2211: ENGINEERING SURVEYING III

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2013
TIME ALLOWED: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*
This paper consists of **FIVE** questions. Answer any **THREE** questions

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Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One

A simple circular curve is to be set out to connect two intersecting straights deflecting at an angle of 22º. Given that the curve is to be set out by the theodolite and tape method and that the chainage is to be continuous and the chainage of the interaction point being 272.175, calculate:

a) The tangent length
b) The curve length
c) The chainages of the tangent points
d) The length of the sub-chords
e) The tangential angles
f) The setting out data

Take the radius of the curve to be 402.5m   **(20 marks)**

Question Two

a) Name FIVE methods of calculating areas of figure bounded by irregular boundaries.   **(2 ½ marks)**

b) The information shown in table 1 is for a plot A, B, C, D, E, F, A. Calculate the area of the plot.
                                                                                          (6 marks)

Point	E (m)	N(m)
A	200.00	727.00
B	415.00	987.52
C	670.50	830.00
D	610.80	515.78
E	522.11	313.15
A	173.00	101.56

c) Figure 1 shows the x-sectional area of an embankment with three levels. Calculate the following for the cross-section:

(i)   Side widths W1 and W2
(ii)   The x-sectional area

Use the rate of approach method   **(12 ½ marks)**

C

Question Three

The information shown in figure 2 is for a closed polygonal traverse PQRP. Given the whole circle bearing of line PQ 122° 20° 28", and the total coordinates of point P as 1250.00mE, 1000.00mN, calculate the total coordinates of the other points, adjusting for any misclosure by the transit rule.

(20 marks)

Question Four

a) State any FIVE characteristics of mass-haul diagrams.   **(5 marks)**

b) With the aid of a sketch, explain the setting out procedure of a circular curve when the whole curve cannot be set out from the same instrument station.   **(7 marks)**

c) A portion of a proposed road 40m long set out on a ground level traverse to the centerline of the road by rising at 1:10 along the centerline. The formation is to be 10m wide and uniform throughout and the centre height of the first section is to be 5.00m. Calculate:
    (i)   The x-section areas of three section 20m apart given that the formation is level and the side are constant at 1:2
    (ii)   The volume of the portion by the primoidal formular   **(8 marks)**

Question Five

The data shown in table 2 is for a polygonal traverse ABCDA. Calculate the total coordinates of points B, C and D by the transit method, given the coordinates of point A as 3000.00mE, 1000.00mN

(20 marks)

Line	Uncorrected Partial Coordinates	Length (m)

	Eastings	Northings	
AB	+28.50	+201.18	203.18
BC	-516.22	-190.02	550.10
CD	+100.13	-36.45	106.57
DA	+387.56	+25.29	388.38