TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN BUILDING AND CIVIL ENGINEERING

EBC 1204: CIVIL ENGINEERING SURVEY 11

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: Pick Date August 2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt any THREE questions.

Do not write on the question paper.

Question One

1(a). Define the following terms

i. Local attraction
ii. Isogonal
iii. Angle of declination
iv. True bearing
v. Magnectic meridian (**10 marks)**

(b). Convert the following whole circle bearings into quadrantial bearings

i. 65^0 40’
ii. 105^0 26’
iii. 191^0 50’
iv. 255^0 16’ **(4 marks)**

(c). Compute the following quadrantal bearings into the whole circle bearings

i. N 89^0 50’ E
ii. S 42^0 30’ W
iii. N 33^0 45’ E **(6 Marks)**

Question Two

2 (a). Calculate the Back Bearing of the following Forward Bearing

i. 56^0 10’
ii. 123^0 30’
iii. 220^0 30’
iv. 310^0 15’ **(4 marks)**

(b). Differentiate between the following

i. Bearing and angle
ii. Whole circle bearing and reduced bearing **(4 marks)**

(d). The data shown in table 1 refers to the horizontal internal angles of a closed theodolite traverse

Station Angle	Angle
A	102^0 45’ 07’’
B	51^0 38’ 30’’
C	96^0 43’ 12’’
D	108^0 54’ 10’’

Table 1

Give that the whole circle bearing of AB is 171^0 58’ 04’’, calculate:

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

Question Three

3(a). Describe the stages of temporary adjustment of a theodolite **(12 marks)**

(b). State FOUR permanent adjustment to a theodolite **(4 marks)**

(c). State any FOUR uses of a theodolite **(4 marks)**

Question Four

4(a). Define tacheometry **(2 marks)**

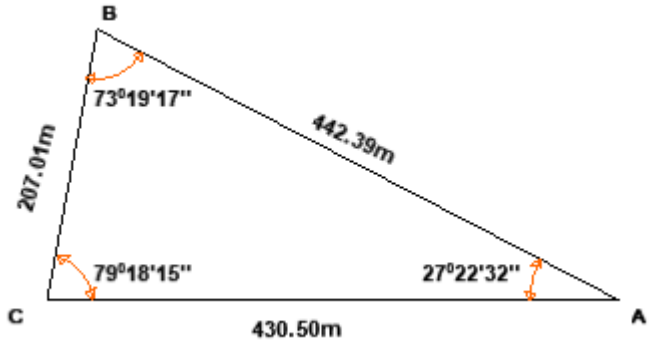
(b). Briefly define TWO types of traverses **(4 marks)**

(c). Outline FIVE advantages of tracheometric survey **(5 marks)**

(d). With aid of a sketch, describe the principle of tacheometry **(9 marks)**

Question Five

5(a). The figure 2 shows the internal angle and the lengths of the closed polygonal traverse ABCA. Given that the WCB of the line AB is 290^0 30' 00'' and that the coordinates of A are 200.00mE, 420.00mN. Calculate the coordinates B and C by the Bowditch method.



(20 marks)