



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING
BCECD 205 SURVEYING II

DATE: 13/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

1. a) Explain any three types of a theodolite (6 marks)
- b) Explain the following terms used in theodolite surveying
- i. Centering
 - ii. Transiting
 - iii. Swinging
 - iv. Face left
 - v. Face right
 - vi. Changing face (12 marks)
- c) The following bearings were observed during a compass traverse exercise where local attraction was suspected.
- | Line | FB | BB |
|------|----------|----------|
| AB | 124° 31' | 304° 30' |
| BC | 68° 15' | 246° 00' |
| CD | 310° 30' | 135° 15' |
| DA | 200° 15' | 17° 45' |
- i. At which station did local attraction occur (12 marks)
 - ii. Calculate the corrected bearing and the included angles

2. a) Explain the following methods of measuring horizontal angle
- Single Compensated measure
 - Reiteration method
 - Repetition method (12 marks)
- b) Convert the following whole circle bearing to quadrantal bearing (8 marks)

W.C.B	Q.B
72° 15 ¹¹	N 72° 15 ¹¹ E
115° 30 ¹	S 64° 30 ¹ E
205° 45 ¹	S 25° 45 ¹ W
312° 41 ¹	N 47° 19 ¹ W

3. a) Describe with a sketch, two types of traverse (4 marks)
- b) Explain temporary adjustments done to a theodolite (16 marks)
4. The following observations were made using a tachometric fitted with internal lens which had a multiplying Constant K=100

Instruments	Height of instrument H.I.(M)	Staff station	W.C.B	Vertical angle	Hair reading	remarks
0	1.550	A	30° 30 ¹	4° 30 ¹	1.55, 1.755, 2.355	RL= 150.00M
		B	75° 30 ¹	10° 15 ¹	1.250, 2.00 2.75	

Calculate

- Distance AB
 - Find RLs of A and AB
 - Gradient/fall of the line AB
5. a) Give seven functions of a theodolite (7 marks)
- b) Explain the three main parts of a theodolite (10 marks)
- c) Give three types of compass (3 marks)