EGERTON UNIVERSITY

UNIVERSITY EXAMINATIONS
NJORO CAMPUS

ACADEMIC YEAR 2013/2014
SECOND YEAR EXAMINATION FOR DEGREE OF BACHERLOR OF SCIENCE IN WATER AND ENVIRONMENTAL ENGINEERING

WEEN 211: ENGINEERING SURVEYING I

STREAM: Y4S4 **TIME:** 2 HRS

DAY: WEDNESDAY, 8.30 – 11.30 A.M. **DATE:** 21/05/2014

INSTRUCTIONS
Answer Question **ONE** and any other **TWO** questions.

Question 1 (20 mrks)

a) State and briefly discuss three (3) branches of land surveying (10 mrks)
b) Discuss three types of errors in survey measurement. (10 mrks)

Question 2 (20 Marks)

a) Apart from ordinary leveling, state FOUR other techniques of heighting. (4 mrks)
b) State at least FOUR general purpose of heighting in surveying. (4 mrks)
c) State FOUR types of levels used in ordinary leveling. (4 mrks)
d) Define the following terms as used in ordinary leveling (4 mrks)
   i) Bench Mark
   ii) Change Point
   iii) Backsight
   iv) Foresight
e) State the FOUR procedures involved in ordinary leveling. (4 mrks)

Question 3 (20 Marks)

a) Using both the RISE and FALL and the Height of Collimation Methods of reducing levels, reduce the following bookings recorded during an ordinary leveling exercise, showing all the necessary checks.

STN	BS	IS	FS	RL	REMARKS
BM1	1.143			34.223	BM (RL 34.223)
1		1.765			
2		2.566			
3	1.390		3.819		CP
4		2.262			
5		0.664			
6	3.722		0.433		CP
7		2.866			
8		1.618			
BM2			0.616		BM (RL 35.610)

Question 4 (20 Marks)

a) Define the term traversing as used in surveying. (2 mrks)

b) The following readings were observed during a traversing exercise. Compute the traverse and use the Bowditch method to adjust the traverse. (18 mrks)

Traverse SK1 – SK2

Station	Final Bearing	Distance
At SK 1		
P1	117° 59' 50"	1228.10m
At P1		
P2	250° 17' 50"	1052.03m
At P2		
P3	164° 12' 50"	774.07m

At P3		
P4	190^0 18' 40"	1133.54m
At P4		
SK2	293^0 40' 20"	1123.63m

The co-ordinates of SK1 and SK2 are:

	Northing	Easting
SK 1	-404,852.70	+343,306.30
SK2	-407,192.81	+342,378.81

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