



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411

Fax: 064-30321

Website: www.must.ac.ke Email: info@must.ac.ke

University Examinations 2013/2014

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

ECV 0202: ENGINEERING SURVEY I

DATE: APRIL 2014

TIME: 1 ½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Briefly explain the following classes of survey
- (i) Geodetic survey
 - (ii) Plane survey (4 Marks)
- (b) Name and state the function of any three survey instruments. (3 Marks)
- (c) State any three roles of the following chain men
- (i) Followers
 - (ii) Leaders (3 Marks)
- (d) State the two methods of testing a chain in chaining. (2 Marks)
- (e) Differentiate the following concepts
- (i) Main station and tie stations
 - (ii) Traversing and triangulation
 - (iii) Back sight and fore sight (3 Marks)
- (f) Briefly explain any three method of determining area of an irregular area in surveying. (6 Marks)
- (g) Briefly explain the two system of working out reduced levels of points from staff readings in the field. (6 Marks)
- (h) State any three factors that determine contour intervals in survey mapping. (3 Marks)

QUESTION TWO – (15 MARKS)

- (a) State any five characteristics of contour lines. (5 Marks)
- (b) The following consecutive readings were taken with a dumpy level.
0.565, 0.758, 0.942, 1.005, 0.655, 0.880, 1.702, 0.422, 0.635, 1.128 and 1.420.

The level was shifted after the fifth and seventh reading. The first reading was taken on the bench mark of R.L of 100.565. Calculate the reduced levels of the change points and the difference of level between the first and last points. (7 Marks)

(c) State three advantages of using a chain over tape measure in surveying. (3 Marks)

QUESTION THREE – (15 MARKS)

(a) Define the following concepts:

(i) Axis of telescope

(ii) Line of collimation

(iii) Change point

(3 Marks)

(b) The following offsets were taken from a survey line to a hedge.

Distance (m)	0	5	10	15	20	30	40	55	70
Offsets (m)	2.89	4.31	2.55	7.08	5.55	4.34	6.01	22.09	1.22

Find the area between the survey line and the hedge using

(i) Trapezoidal rule

(ii) Simpson rule

(iii) Mid ordinate rule

(9 Marks)

(c) State three ways of adjusting chain found in a chaining process.

(i) Too long

(ii) Too short

(3 Marks)

QUESTION FOUR – (15 MARKS)

(a) State the procedure of plotting a survey map.

(5 Marks)

(b) With an aid of a diagram briefly describe the following types of leveling:

(i) Simple leveling

(ii) Profile leveling

(iii) Differential leveling

(6 Marks)

(c) A 20m chain was found to be 0.15m too long after chaining 1500m. It was found to be 0.5m too long after chaining 2500m. If the chain was correct before commencement of work, find the true distance. (4 Marks)