THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

DCC 09, DBC 09, CA 09

SEMESTER EXAMINATIONS

APRIL/MAY 2010 SERIES

ENGINEERING SURVEY I

TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination:

- Answer booklet
- Writing materials
- Calculator

This paper consists of **FIVE** Questions.
Question **ONE** is compulsory.
Answer any other **TWO** questions.
The maximum marks to each part of a question are all shown.

Question ONE

(a). Define the following terms as used in surveying:

(i). Survey line
(ii). Check line
(iii). Datum surface
(iv). Flying levels
(v). Contour interval **(5 Marks)**

(b). Briefly describe **FIVE** features that must be contained in the field book during the chain survey. **(5 Marks)**

(c). In order to plot a longitudinal section of a proposed road, the following staff readings were taken at regular intervals along the centre line of the proposed road:
0.80, 0.97, 1.21, 2.05, 2.31, 1.25, 1.87, 2.66, 0.72, 1.66, 1.59, 2.21, 2.65 and 3.00. The staff was changed at the 2^{nd}, 5^{th} , 9^{th} and 11^{th} readings.
Reduce the levels by Height of collimation and show all the arithmetical checks. **(20 Marks)**

Question TWO

(a). With aid of a sketch describe the operation of a titling level. **(10 Marks)**

(c). Define the "TWO PEG TEST", outlining its application in surveying. **(10 Marks)**

Question THREE

(a). State **THREE** differences between the dumpy level and the tilting level. **(5 Marks)**

(b). In testing for adjustment of a level, the instrument was set up at mid way between two points A and B, 100meters apart after centering the bubble, staff readings were taken at the points A – 3.521 and B – 2.762. The level was then moved to a point 5 meters from B in line A-B produced. Staff readings from this position at A and B was 3.982 and 3.121 respectively. Check whether the level is in adjustment, if not; calculate the staff readings from the second position of the level. **(10 Marks)**

(c). Briefly describe the Geographical (Global) positioning system. **(5 Marks)**

Question FOUR

(a). Outline **TWO** methods of dropping a perpendicular from a known point P to the chain line. **(8 marks)**

(b). Describe **FOUR** errors caused by natural causes in leveling and give **ONE** way of minimizing each. **(6 Marks)**

(c). Briefing outline the method of direct contouring. **(6 Marks)**

Question FIVE

(a). Outline the 'Reciprocal Leveling" process and indicate one situation where it is used in surveying. **(10 Marks)**

(b). Describe the procedure for temporary adjustment of a dumpy level. **(5 Marks)**

(c). Using a sketch describes the conventional symbols in chain survey used to identify:

(i). Im high hedge
(ii). 0.58m tree girth
(iii). Picket fence
(iv). 225mm wall 2m high **(4 Marks)**