THE KENYA POLYTECHNIC

SURVEYING & MAPPING DEPARTMENT

DIPLOMA IN LAND SURVEYING

END OF YEAR I EXAMINATIONS

NOVEMBER 2006

TOPOGRAPHICAL SURVEY

3 HOURS

INSTRUCTIONS TO CANDIDATES:

You should have the following for this examination:

Answer booklet

Calculator/Mathematical tables

Answer any FIVE of the following EIGHT questions.

All questions carry equal marks and the maximum marks for each part of a question are as shown.

This paper consists of 3 printed pages.

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1. Explain FOUR ways used to set out right angles when carrying out chain surveying. Use diagrams where applicable. (20 marks)

2. (a) Derive formulae for horizontal distances and vertical height differences for inclined sights and staff vertical. (10 marks)

   (b) Outline methods of contouring. (10 marks)

3. (a) Define each of the following terminologies as used in compass surveying:

   (i) Magnetic declination (ii) Magnetic variation

   (iii) Magnetic bearing (iv) Tone bearing

   (v) Local Attraction (vi) Agonic lines

   (vii) Isogonic lines (7 marks)

   (b) A compass traverse was run from stations ABCDEFA and the observations are as shown in table 1. Using this information, determine the corrected forward bearing for each line. (13 marks)

   Table 1:

LINE	FORWARD BEARING	BACK BEARING
AB	$125^0 30'$	$305^0 30'$
BC	70 15	253 15
CD	17 00	194 00
DE	319 45	138 45
EF	228 45	50 15
FA	278 45	98 15

4. (a) Define the term "land surveying." (1 mark)

   (b) List EIGHT methods of land surveying. (8 marks)

   (c) Draw and label a chain used in chain surveying. (11 marks)

5. (a) Outline the stages of chain surveying. (10 marks)

   (b) Using a well-labeled sketch, show how booking is done in chain surveying. (10 marks)

6. (a) Outline the principle of measuring straight lines in chain surveying.

(10 marks)

(b) List THREE uses of plane table in topographical survey.   (3 marks)

(c) List the equipments and accessories used in chain surveying. (7 marks)

7. (a) (i)   Define the term "off-set"

(ii)   With the aid of a sketch, show how offsets are made in the field

when chaining.   (5 marks)

(b) Outline FOUR methods of linear measurements.   (8 marks)

(c) By the aid of a sketch, show how resection is achieved in plane tabling.

(7 marks

8. (a) Ina chain survey exercise, a straight line was measured and its length

found to be 381.55m long. On checking the chain which was assumed to

be 100m long, it was found to be 100.68m long. Compute the correct

length of the line.   (8 marks)

(b) Outline THREE errors that are frequently inherent in a chain surveying

exercise.   (12 marks)