



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
FIRST YEAR SECOND SEMESTER EXAMINATION FOR
DIPLOMA IN CIVIL ENGINEERING (TIVET)
SURVEYING 1

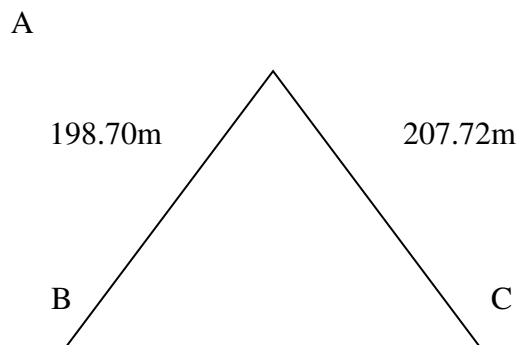
DATE: 15/4/2019

TIME: 8.30-11.30 AM

INSTRUCTIONS

Answer all FIVE questions

1.
 - a) Distinguish between plane surveying and geodetic surveying. (5 marks)
 - b) Describe FIVE types of surveying in common use. (15 marks)
2.
 - a) Define the term “ranging” as used in chain surveying. (1 mark)
 - b) Outline the ranging process when chaining a line. (6 marks)
 - c) Explain THREE classes of errors encountered in chain surveying one example in each case. (6 marks)
 - d) Fig 1 below shows the layout of chain links used in the survey of a site. If the 30m chain used was later found to be two links longer, calculate the accurate area enclosed by the chain line in hectares (one link is equal to 0.3m) (6 marks)



3. a) Define the following terms as used in leveling.
- i. Line of collimation
 - ii. Foresight
 - iii. Reduced level
 - iv. Vertical line
 - v. Staff station. (5 marks)
- b) Briefly explain the following terminologies
- i. Ordinance datum (O.D)
 - ii. Site datum (S.D)
 - iii. Ordinance bench mark (**O.B.M**)
 - iv. Temporary bench mark (**T.B.M**)
 - v. Height of instrument (**H.I**) (15 marks)
4. a) Explain the term “reduced level” (2 marks)
- b) Outline THREE errors which may be encountered in levelling. (9 marks)
- c) Briefly explain THREE obstructions which may occur in chain surveying. (9 marks)
5. Make neat sketches of the following surveying instruments:
- a) Surveyor’s band
 - b) Surveyor’s chain
 - c) Land chain arrow (20 marks)
 - d) Drop arrow