



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE (DA 12S)

EBC 2301: SURVEY I

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2014
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions of the **FIVE** questions

All questions carry equal marks

Maximum marks for each part of a question are as shown

Use neat, large and well labeled diagrams where required.

This paper consists of **THREE** printed pages

Question One

- a) Define the following terms as applied in chain surveying:
- (i) Chainage
 - (ii) Ranging
 - (iii) Trilateration
- (4 ½ marks)**
- b) Show the symbols use to indicate the following features:
- (i) Permanent building
 - (ii) Bridge
 - (iii) North point
 - (iv) Hedge
- (8 marks)**
- c) With the aid of a sketch, explain the procedure for ranging a line between two points which are not visible to each other due to a small hill in between.
- (7 ½ marks)**

Question Two

- a) Define the following terms used in chain surveying:
- (i) Base line
 - (ii) Survey station
 - (iii) Survey line
 - (iv) Tie line
 - (v) Check line
- (5 marks)**
- b) State FOUR factors governing the selection of chain lines for a chain survey
- (4 marks)**
- c) State THREE categories of equipment used in chain surveying and for each category give two examples.
- (6 marks)**
- d) Differentiate the following:
- (i) Geodetic surveying and plane surveying
 - (ii) Perpendicular offset and oblique offset
- (5 marks)**

Question Three

- a) Define the following terms as applied in leveling.
- (i) Level line
 - (ii) Horizontal line
 - (iii) Bench mark
 - (iv) Reduced level
 - (v) Foresight
 - (vi) Change point
- (6 marks)**
- b) Explain with the aid of sketches the direct method of contouring
- (8 marks)**
- c) When checking a dumpy level the following readings were obtained in ‘two peg test’

- Level set-up midway between two staff station A and B 100m apart, staff reading on A is 2.103m and on B is 1.664m
- Level set-up 10m behind B and in line AB, staff reading on A is 1.859m and on B is 1.389m. Calculate the expected staff reading on staff at A and B **(6 marks)**

Question Four

- a) Reduce the levels shown below by the height of collimation method and apply arithmetical checks. **(14 marks)**

Back sight	Intermediate Sight	Fore Sight	Remarks
3.200			BM 150.000M
	2.010		STATION A
	1.050		B
3.250		0.650	C
	2.980		D
	1.500		E
	2.200		F
		0.680	G

- b) State the procedure of leveling a dumpy level **(6 marks)**

Question Five

- a) Define the following terms as used in theodolite work: **(6 marks)**

- (i) Trunnion axis
- (ii) Vertical axis
- (iii) Transiting
- (iv) Swing
- (v) Face left
- (vi) Centering

- b) Briefly explain the collimation adjustment of a theodolite **(8 marks)**

- c) State the functions of each of the following parts of a theodolite:

- (i) The telescope
- (ii) Plate bubble
- (iii) Attitude bubble
- (iv) Plumb clamp
- (v) Vertical circle

(6 marks)