



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN ARCHITECTURE

EBC 2301: ENGINEERING SURVEYING I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2015

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

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) (i) Define the term survey.
- (ii) Differentiate between geodetic surveys and plane surveys **(5 marks)**
- b) Define the following branches of surveys:
 - (i) Topographical
 - (ii) Cadastral
 - (iii) Engineering
 - (iv) Aerial **(6 marks)**
- c) With the aid of a sketch, briefly describe the following chain surveying equipment. **(9 marks)**
 - (i) Chain
 - (ii) Hexagonal prism
 - (iii) Drop arrow

Question Two

- a) A distance on a sloping ground was chained and found to be 325.480m. If the height of points A and B above mean sea level are 1597.850m and 1613.640m respectively. Calculate the horizontal distance **(6 marks)**
- b) Define the following terms:
 - (i) Survey station
 - (ii) Base line
 - (iii) Check line
 - (iv) Tie line
 - (v) Reconnaissance **(5 marks)**
- c) State the **THREE** categories of errors in chain surveying giving **TWO** examples in each. **(9 marks)**

Question Three

- a) Reduce the levels shown below by the height of collimation method and apply all necessary arithmetical checks: **(12 marks)**

BS	IS	FS	REMARKS
0.768			OBM 220.5500m
	1.946		Station A
	1.100		Station B
2.626		1.632	Station C
	2.261		Station D
			Station E
	1.300		Station F
		0.640	Station G

- b) Define the following terms in surveying:
- (i) Level line
 - (ii) Reduced level
 - (iii) Temporary bench mark
 - (iv) Fore sight
 - (v) Height of collimation
- (5 marks)**

- c) Define the following terms:
- (i) Contour line
 - (ii) Vertical interval
 - (iii) Horizontal equivalent
- (3 marks)**

Question Four

- a) Explain with the aid of sketches, the grid method of contouring **(7 marks)**
- b) Explain the procedure for leveling a dumpy level **(6 marks)**
- c) Give FOUR uses of contour maps **(4 marks)**
- d) State THREE types of leveling staff **(3 marks)**

Question Five

- a) State any FOUR sources of errors in leveling giving ONE example of each **(8 marks)**
- b) Describe reciprocal leveling **(5 marks)**
- c) Describe the procedure of running a longitudinal section **(7 marks)**