(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

(Main Campus)

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

EXAMINATION

SECOND YEAR, SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF

BACHELOR OF TECHNOLOGY IN BUILDING CONSTRUCTION

COURSE CODE: **BTB 244**

COURSE TITLE: **ENGINEERING SURVEYING II**

DATE: WEDNESDAY 27TH APRIL 2022 **TIME: 8:00 – 10:00 AM**

Instructions to Candidates

- This paper contains FOUR (4) questions
- Answer ALL questions in Section A and **ANY** TWO in Section B

Instructions to candidates: Answer Question **ONE** any other **2 questions.**

QUESTION ONE (COMPULSORY -40MKS)

a) What is plane table surveying? Discuss its advantages and its advantages over other method of surveying. (6mks)
b) Classify the common sources of errors in plane table surveying. Give an account how the board is test and adjusted during the field work activities. (6mks)
c) What is the general principle for magnetic compass? State the essential features of the magnetic compass (4mks)
d) Explain with the help of neat sketches, the graduation of a prismatic compass and a surveyor's compass. (4mks)
e) Distinguish between the total station and the theodolite (4mks)
f) What are the merits of the total station over conventional instruments of surveying? (6mks)
g) What is tacheometric surveying? Describe the conditions under which it is advantageous over other methods of surveying. (6mks)
h) Explain the aims of setting out works in surveying? (4mks)

Attempt ANY 2 Questions from this section (30MKS)

QUESTION TWO

a) Illustrate how intersection system of plane tabling is carried out (3mks)
b) In setting up the plane table at station P, the corresponding point on the plan was not accurately centred above P. If the displacement of P was 30cm in a direction at right angles to the ray, how much on the plan was the consequent displacement of a point from its true position given the following scales; 1cm=100m and 1cm=2m (4mks)
c) With the aid of a neat sketch describe the elements of a curve (4mks)
d) Given the following information $\Delta=12°51'$, R=400M, P=0 +241.782 calculate the stations on the curve BC (Beginning of Curve) and EC (End of the Curve) (4mks)

QUESTION THREE

a) Give an account for electronic theodolite (3mks)
b) After a total station has been set up over a control station, describe what actions and entries must then be completed before the beginning of topographic surveying (4mks)
c) The elevation of a point P is to be determined by observations from two adjacent stations of a tacheometric survey. The staff was held vertically upon the point and the instrument is fitted within anallactic lens, the constant of the instrument

being 100. Compute the elevation of the point P from the following data, taking both observations as equality trustworthy. (8mks)

Instr. Station	Height of axis	Staff point	Vertical angle	Staff reading	Elevation of station
A	1.42	P	+2°24'	1.230, 2.055, 2.880	77.750M
B	1.40	P	-3°36'	0.785, 1.800, 2.815	97.135M

QUESTION FOUR

a) A series of offsets were taken from a chain line to a curved boundary line at intervals of 15metres in the following order. 0, 2.65, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85 m. Compute the area between the chain line, the curved boundary and end offsets by
(i) average ordinate rule (3mks)
(ii) Trapezoidal rule (3mks)
(iii) Simpson's rule (3mks)

b) The following notes refer to three level cross-sections at two sections 50 metres apart.

Station	Cross-section		
01	$1.7/7.7$	$2.8/0$	$4.6/10.6$
02	$2.9/8.9$	$3.7/0$	$6.9/12.9$

Calculate the volume of cutting between two stations given the width of cutting at formation as 12metres. Use prismoidal rule. (6mks)