FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

DEPARTMENT OF SURVEYING & GEOINFORMATICS (B. Tech. Surveying & Geoinformatics Examination)

First Semester 2019/2020, **SVG 317: Engineering Surveying 11, TIME: 2 Hours**

INSTRUCTIONS: Answer ALL Questions (All calculations with relevant formulae must be shown)

1. (a) The staff readings taken during a levelling operation are given below: 1.355, 1.605, 2.125, 0.685, 1.365, 2.015, 1.355, -1.385, 0.685, 2.105, 1.685, 1.155, 1.105, 2.015, 1.085, 1.345, 1.355, -2.015, 1.305, 1.655, 1.685, 1.455. The instrument was shifted after the 5^{th}, 10^{th}, 14^{th} and 19^{th} readings. Arrange the data in tabular form and find the reduced levels (using height of collimation method and rise and fall method) of the points if the 12^{th} reading was taken to a benchmark of RL 185.635 m above MSL.

   (b) What are the advantages and disadvantages of the two methods (height of collimation method and rise and fall method).

2. (a) From the traverse data given in the Table below, calculate the quantities required for plotting the traverse by: (i) included angles, (ii) deflection angles, (iii) tangent lengths (using a length of 10 cm), and (iv) chord lengths (using a length of 10 cm). .

Line	Length (m)	Bearing
PQ	201.54	62° 42'
QR	189.68	154° 54'
RS	231.94	202° 32'
ST	272.55	281° 44'
TP	256.83	22° 00'

   (b) What is the difference between included angle and deflection angle?

3. The following traverse is run from A to E, between which there occur certain obstacle. It is required to peg a point N midway between A and E. Calculate the length and bearing of a line from C to the required point.

Line	Distance(m)	Bearing
AB	426	38° 20'
BC	518	347° 55'
CD	606	298° 12'
DE	430	29° 46'