FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY,
DEPARTMENT OF SURVEYING AND GEOINFORMATICS
FIRST SEMESTER EXAMINATION FOR 2019/2020 SESSION
COURSE CODE/ TITLE; SVG 314 (ADJUSTMENT COMPUTATION I)
Instruction; Attempt all Questions
TIME: 2 hours 30 minutes

1a Describe when a 2×2 Matrices has no inverse and find the inverse of matrix A using the method of Adjoint

$$A = \begin{bmatrix} 3 & -1 & -1 \\ -1 & 3 & -1 \\ -1 & -1 & 3 \end{bmatrix}$$

1b Suppose that an EDM instrument is placed at a point A in the figure below and a reflector is placed successively at B, C, and D. the observed values AB, AC, and AD are shown in the Figure. Calculate the unknown X1, X2, and X_3 by matrixes method. The values observed are;

AB =125.27

AC =259.60

AD =395.27

2a what are the advantages of least Squares adjustment over other arbitrary method?
2b the three horizontal angles observed around the horizon are X= 43° 12'13'', Y= 59° 56'15'' and Z = 257°51'35''. Adjust these angles by the least Squares method.
2c Derived observation and condition equation.

3a Differentiate with detailed examples the difference between precision and accuracy.
3b the interior angle of a plane triangle X_1= 41°33', X_2=78°57', and X= 59°27'. Compute the adjusted angles using the method of least squares.
3c A distance is measured four (4) times with the following result; L_1 = 32.51m, L_2 = 32.48m, L_3 = 32.52m and L_4 =32.53m. What is the least Squares estimate of the distance?

Best wishes

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