Department of Surveying and Geoinformatics
School of Environmental Technology
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Minna, Nigeria

First Semester Examination, 2017/2018 Academics Session

Course code: SVG211   **Course title**: Basic Surveying III

Instructions: 1. Answer any four (4) questions

2. Question one (1) is compulsory

3. Question 1 is 24marks; Questions 2 to 6 is 12marks each

Time allowed: 2hours 20minutes

1. Observations, using a 6'' theodolite, were taken in the field for anti-clockwise polygon traverse, P, Q, R and S and distances with a 50m steel tape, with the results below:

Traverse Station	Observed Clockwise Horizontal Angle	Line	Horizontal Distance (m)
P	132^0 15' 30''	PQ	638.57
Q	126^0 12' 54''	QR	1576.20
R	069^0 41' 18''	RS	3824.10
S	031^0 50' 30''	SP	3133.72

a. Compute for the angular misclosure, distribute the error and get the true correct horizontal angle.

b. Compute for the whole circle-bearing; when the bearing of line PQ is assumed to be 0^0 00' 00''. Use the whole circle- bearing computed and the Horizontal Distance to obtain adjusted coordinates for Q, R, and S when the coordinates of station P are (3000.00mE; 4000.00mN).

2a. What is topographic surveying? What are its main uses?

2b. Describe the major steps involved in carrying out a topographic survey.

2c. Define contour and state (3) uses and (3) characteristics of contours.

3a. Give a detailed description of the procedure you would follow in deriving a digital map from analogue map and analogue aerial photographs.

3b. C and D are two stations whose coordinates are given below:

Station	Departure(m)	Latitude(m)
C	+ 380.00	+ 835.00
D	- 680.00	+ 1350.50

From station C is run a line CB of 220m length with a bearing of 130^0. From B is run a line BA of length 640m and parallel to CD. Find the length and bearing of AD?

4a. You are given the following data: Coordinates A = 432.4mE, 611.5mN; length of AB = 217.2m, Bearing of AB = $311^0\ 36'\ 00''$. Calculate the coordinates of B.

4b. Three points A, B and C lie on a straight line with B between A and C. The distance BC = 211.00m. The coordinates of A and B in meters are the following: A = 610.00mE, 497.00mN; B = 331.00mE, 350.00mN. Calculate the coordinates of C and give the distance AC.

4c. Explain with the aid of sketches how you would measure a line where a rise in the ground prevents you from seeing from one station to another.

5a. What is setting out?

5b. State the two main aims when undertaking setting out operations.

5c. Explain the two main factors need to be taken into account when establishing horizontal control points during setting out operations.

6a. A contract has been awarded to your department by the Niger State Government to carry out the route survey of a road estimated to be 115km from Bida to Mokwa in Niger State. Use chainage of 25m for the center line and 15 - 20m for the cross-section. A bench mark of 500m interval is to be established along the traverse line. (i) What would be your source of data? (ii) Explain in detail how to execute the project. (iii) Explain clearly how to set out the data you acquired.

6b. State the importance of Bench Mark (BM) you established along the traverse line.

END OF EXAM