Benha University First Year Surveying

Shoubra Faculty of Engineering Surveying 1-A

Surveying Department 1st Semester 2017/2018

***Assignment (5)***

1. Write short notes on
* Departure and latitude.
* Linear and angular misclosures.
* Traverse methods of adjustment.
1. A six sided traverse has the following station coordinates:

|  |  |  |
| --- | --- | --- |
| Point | N (m) | E (m) |
| A | 559.319 | 207.453 |
| B | 738.562 | 666.737 |
| C | 541.742 | 688.350 |
| D | 379.861 | 839.008 |
| E | 296.099 | 604.048 |
| F | 218.330 | 323.936 |

Compute the distance and bearing of each side.

1. A four-sided closed field traverse has the following angles: A = 81° 53' 30", B = 70° 28' 30", C = 86° 09' 30", D = 121° 30' 30". The lengths of the sides are as follows: AB = 636.45 ft, BC = 654.45 ft, CD = 382.65 ft, DA = 469.38 ft. The bearing of AB is S 17° 17' W. BC is in the NE quadrant.
2. Balance the field angles.
3. Compute the bearings of the traverse sides.
4. Compute the latitudes and departures.
5. Determine the linear error and the accuracy ratio.
6. Balance the latitudes and departures by use of the compass rule.
7. Compute the coordinates of stations A, C, and D if the coordinates of station B are 1000 N, 1000 E.
8. A five-sided closed field traverse has the following distances in meters: AB = 51.766, BC = 26.947, CD = 37.070, DE = 35.292, EA = 19.192. The adjusted angles are as follows: A = 101° 03' 19", B = 101° 41' 49", C = 102° 22' 03", D = 115° 57' 20", E = 118° 55' 29". The bearing of AB is N 75° 05' 30" E. BC is in the SE quadrant.
9. Compute the azimuths of the sides.
10. Compute the departures and latitudes.
11. Determine the linear error of closure and the accuracy ratio.
12. Balance the traverse by use of the transit rule and the compass rule.
13. Determine the coordinates of the traverse stations if station B is (500 N, 800 E).
14. ABCDE is a closed field traverse having angles A= 101° 28' 26", B = 102° 10' 42", C = 104° 42' 06", D = 113° 04' 42", E = 118° 34' 04". The lengths of the sides are AB = 50.276 m, BC = 26.947 m, CD = 37.090 m, DE = 35.292 m, EA = 20.845 m. the bearing of EA is N 20° 20' 20" W, and AB is oriented northeasterly.
15. Compute the bearings of the all remaining sides.
16. Compute the latitudes and departures.
17. Determine the linear error of closure and the accuracy ratio.
18. Adjust the traverse by the use of the graphical method and transit method.
19. A four-sided traverse ABCD has the following measurements:

|  |  |  |
| --- | --- | --- |
| Side | Length (m) | Reduced Bearing |
| AB | 86.00 | S 74° 30' 00.00" E |
| BC | 195.00 | N 12° 31' 18.50” E |
| CD | 96.00 | N 74° 47' 13.00"W |
| DA | 195.00 | S 08° 44' 01.50" W |

1. Compute the departures and latitudes.
2. Find out the linear error of closure and the accuracy ratio.
3. Determine the adjusted components of departures and latitudes using the raw data method and the transit method.
4. A traverse ABCD is run and the following observations were recorded.

|  |  |  |
| --- | --- | --- |
| Line | Length (m) | Bearing |
| AB | 468 | 344° 00' |
| BC | 637 | 088° 00' |
| CD | 425 | 172° 54' |
| DA | 568 | 265° 06' |

Balance this traverse by graphical method.