Mansoura University Faculty of Engineering	مليوفدايتا	1st Semester Academic Year 2009/2010
Course Name :(Topographic Survey **)**		**Time Allowed : (3) Hours**
Course Code : (08214 **)**		**Level: (2nd Year Civil)**
Date of Exam : 26-1-2010		**Department : (Public works)**

Answer all questions	**Max. Grads = 85 degrees**

Q1	Idea (30) %	Steps (20)%	Calculations (30)%	Finall Result (20)%	Marks(15)

1. What is the Datum? What is the geodetic datum? [3 marks]

2. Compute the geodetic coordinates of Point P1 (X= 5026120 m, Y= 3094880 m, and Z = 2409180m) from known cartesian coordinates when all data are observed in WGS84 (**a** = 6378137 **m** and b= 6356752.3142 m).
  [4 marks]

3. Plot the following points approximately on sphere where the coordinates are defined in the form of latitudes , longitudes and ellipsoidal height:
A ($30°$, $20°$,10), B ($20°$, $30°$,10), C ($45°$, $30°$ .10), D ($30°$, $45°$,10)
Which is going to be the:

    a. Shortest distance diagonally.
    b. Longest distance diagonally. (What is its value?)
    c. Shortest distance in the easting direction.
    d. Longest distance in the northing direction. [8 marks]

Q2	Idea (30) %	Steps (30)%	Calculations (10)%	Final Result (30)%	Marks(15)

1. Give a short notes of the following:
a. Geoid b. Deflection of the Vertical c. Control Station
  [3 marks]

2. In order to survey the building ABCD the following observations were taken
APQ = 80° 40' 30", AQP = 30° 40' 30", BPQ = 20° 40' 30", and
BQP = 70° 40' 30", m. If the co-ordinates of two points P and Q are (30.00, 86.59) and (309.10, 0.00) respectively, calculate the length and bearing of building side AB . [5marks]

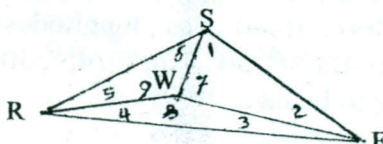3. In the shown figure, determine The number and type of condition equations, and write down condition equations.
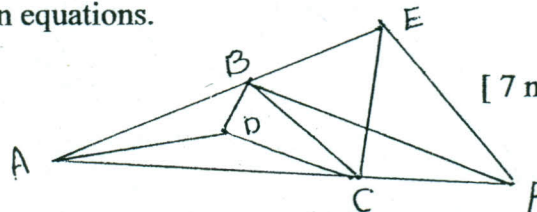
[7 marks]

First examiner: Prof. Dr. Mahmoud El Mewafi
Second examiner: Dr. Abd El- Menam Bakr

Q3	Idea (30) %	Steps (30)%	Calculations (10)%	Final Result (30)%	Marks(15)

a) For an ellipsoid, a = 6378.2 km, and f= 1/297.3, It is required to find the other parameters of size and shape of the ellipsoid. [3marks]

b) The astronomic coordinates of point A is ($\Phi = 24^\circ$, $\Lambda = 32^\circ$, H=20.0 m). If the Geoid undulation an deflection components are (N= 10.0 m, $\xi = 12''$, $\eta = -16''$) and The ellipsoid parameters of WGS84 are (a = 6378137 m, f= 1/297). Calculate The geodetic and Cartesian coordinates of point A with respect to WGS 84. [5 marks]

c) Compute the adjusted angles of the observed angles in the shown figures by using equal shifts adjustment method. [7 marks]

Angle	Observed value			Station	Coordinates	
					E	' N
1	26°	10'	48"	F	719.37	250.00
2	27	37	16	B	250.00	447.15
3	35	46	10	N		
4	32	57	52			
5	28	23	12			
6	29	04	37			
7	126	11	59			
8	111	15	52			
9	122	32	02			

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Faculty Of Engineering
Public Works Department

Final exam
2nd Year civil Eng.
Time : Allowed 90 Min

First question (70 % of max. Ceredit)

Balance the following interior angles-to-the-right for a polygon traverse to the near est $1'$. Compute the azimuths assuming a fixed azimuth of $245°\ 16'\ 24''$ for line AB . A = $151°\ 14'\ 41''$; B = $81°\ 50'\ 16''$; C = $128°\ 26'\ 46''$; D = $108°\ 12'\ 04''$; E = $70°\ 16'\ 28''$.

Determine departures and latitudes, linear misclosure, and relative precision for the traverse if lengths of the sides (in meters) are as follows :

AB = 1352.562 ; BC = 1999.670 ; CD = 1329.127 ; DE = 2427.328 ; EA = 2163.325

Using the compass (Bowditch) rule adjust the departures and latitudes of the traverse . If the coordinates of station A are X = 706,495.671 m and Y = 119,115.199m , calculate coordinates for the other stations and , from them, the lengths and bearings of lines CA and BD .

(3 0 Degrees)

Second, question (30 % of max. Ceredit)

Tabulate data needed to set out by theodolite and chain a circular curve of