Reg.No.									

B.E. DEGREE END SEMESTER EXAMINATIONS, MARCH/APRIL 2011
GEOINFORMATICS ENGINEERING BRANCH
FIFTH SEMESTER
GI 373 GEODESY
(REGULATIONS 2004)

Time : 3 Hours Maximum Marks : 100

INSTRUCTIONS:

1. *Answer ALL questions under Part-A and B respectively*
2. *Assume suitable data wherever necessary*
3. *Draw neat sketches wherever desirable*

PART - A (10 x 2 = 20 Marks)

1. What is Geodesy? How is it different from surveying?
2. State the properties of a geodesic.
3. On Everest spheroid, compute the spherical excess for an equilateral triangle of side 100km if the mean geodetic latitude is 13°00'30"N.
4. Write about the astro-geodetic method of determining the geoid.
5. Define the terms:Geops and Spherops.
6. The geopotential number at A and B are 3000 and 4000 k.gal.metre. Compute the dynamic height of B,correct up to mm. If the dynamic height of A is 3050 metres.
7. Show the transformation between hour angle and right ascension system.
8. Mention the points that are to be considered for an observation program to determine the azimuth by star hour angle method.
9. Show the relationship between rectangular and polar co-ordinates if the points are in the different quadrant.
10. Draw neat sketches to understand the different methods of point determination.

PART - B (5x16 = 80 MARKS)

11. Write brief notes on the following:
    a. Geodesy of the modern era. (4)
    b. Convergence of meridians. (4)
    c. Standard time. (4)
    d. Second geodetic problem. (4)

12. a.(i) Derive an expression for the mean radius of curvature of the spheroid at any azimuth. (10)
    (ii) On Everest spheroid, compute the mean radius of curvature for Tamil Nadu if the mean geodetic latitude is 10° 30' N azimuth is 35°. (6)

(OR)

12. b.(i)Establish the relationship between cartesian and geodetic co-ordin on the spheroid. (6)

(ii) Given the following on Triangulation:

Geodetic latitude at A = 27° 22' 02.57"N
Geodetic longitude at A = 87° 27' 31.86"E
Geodetic latitude at B = 27° 28' 38.30"N
Geodetic longitude at B = 87° 29' 36.00"E

Compute the distance between A and B on Everest spheroid. (10)

13.a.(i)Draw neat sketches and define 'deflection of vertical 'as per Helmert,Pizzetti and Molodenski. (6)

(ii)Explain the gravimetric method of determining the deflection of vertical. (10)

(OR)

13.b.(i)Explain how spirit levelled height is converted in to dynamic, orthometric and normal height. (10)

(ii) Deduce an expression for the ellipsoidal height when only one zenith angle is observed. (6)

14.a.Bring out the conversion between

(i)horizon and hour angle system, and vice versa. (8)

(ii)right ascension and ecliptic system, and vice versa. (8)

(OR)

14.b.Discuss in detail, the determination of astronomical latitude and longitude by observing a star.

15.a.Given the co-ordinates of A and B in both X, Y and x, y systems, the points C and D co-ordinated in x,y system are to be transformed in to X,Y system. Compute the co-ordinates.

Point	X,Y system		x,y system	
	X (m)	Y (m)	x (m)	y (m)
A	97944.99	8664.62	98338.99	8586.69
B	97564.56	9632.75	97918.31	9538.01
C	?	?	97319.35	8802.06
D	?	?	98858.81	9717.54

(OR)

15.b. Given the following on simple arc section:

Point	Easting,x(m)	Northing,y(m)	Observed distances (m)
A	328.76	1207.85	S_A = 294.33, S_B = 506.42 and S_{AB} = 648.08
B	925.04	954.33	

Compute the co-ordinate of the new point 'N' if it is below the line AB.