

B.E. DEGREE END SEMESTER EXAMINATIONS, MARCH/APRIL 2011
GEOINFORMATICS ENGINEERING BRANCH
FIFTH SEMESTER
GI 9304 GEODESY
(REGULATIONS 2008)

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

35

PART - A (10 x 2 = 20 Marks)

1. Show the relationship between the reference surfaces used in Geodesy.
2. On Everest spheroid, compute the rectangular co-ordinates of a point whose reduced latitude is $12^{\circ}57'59.5''N$.
3. Mention the data to be known before commencement of control surveying.
4. What is spherical excess? How is it adjusted?
5. Define the term 'gravity anomaly' and mention its uses.
6. Deduce an expression for 'orthometric correction'.
7. State the conditions for rising and setting of a star with respect to its declination and culmination.
8. What is rotational time system? Give the reasons for its irregularities.
9. Distinguish between similarity and Helmert's transformation.
10. Write down the procedure for computing the co-ordinates of resected point with least square adjustment.

PART - B (5x16 = 80 Marks)

11. Write brief notes on the following:
 - a. Mean radius of curvature. (4)
 - b. Deflection of vertical. (4)
 - c. Prime vertical crossing. (4)
 - d. Point determination. (4)

12. a. (i) Establish the relationship between Geodetic, Geocentric and Reduced latitude. (10)
(ii) On Everest spheroid, compute the difference between various latitudes if the geodetic latitude is $13^{\circ}00'30''N$. (6)

(OR)

12. b. Derive the expressions for the principal radii of curvatures. (16)

13. a.(i) Bring out the various methods of measurement of absolute and relative gravity. (10)
(ii) How is observed gravity reduced to geoid? (6)

(OR)

13. b. What is spheroidal height? How is it computed? (16)

14. a. Derive the expressions for converting the various celestial co-ordinates to cartesian co-ordinates and vice versa.

(OR)

14. b. Discuss in detail, the determination of position of a point by observing stars. (16)

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

(16)

(OR)

15. b If one considers the new point 'N' as the point of intersection of two straight lines AN and BN. AA' and BB' are the reference lines from which the clockwise horizontal angles to N measured as $298^{\circ} 27' 20''$ and $54^{\circ} 40' 33''$ respectively. Compute the co-ordinate of N with the help of co-ordinates given below and apply the usual checks.

Point no.	x(m)	y(m)
A	24681.92	90831.87
A'	23231.58	91422.92
B	24877.72	89251.09
B'	22526.65	89150.52

(16)