Roll No. | | | | | | | | |

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2014

GEOINFORMATIC ENGINEERING BRANCH

FIFTH SEMESTER (Regulation 2004/2008)

GI 373/ GI 9304 Geodesy

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. State the scientific purpose and practical purpose of Geodesy.
2. Mention the properties of an oblate spheroid.
3. Compute the spherical excess of an equilateral triangle of side 100Km if the mean geodetic latitude of the place is 13° 00' 30" N.
4. Mention the assumptions made to determine the reference spheroid by Astro Geodetic method.
5. What is normal gravity? Can it be observed or computed?
6. State the different methods of computing geoidal height
7. Draw a neat sketch to show the relationship between hour angle and right ascension system
8. What will be the azimuth of the star if (i) it is said to be on transit and (ii) it is said to cross the prime vertical at east and west?
9. Distinguish between intersection and arc section.
10. Given the following data, compute the co-ordinate of B. Northing of A = 496.72m, Easting of A = 713.64m, Distance AB = 135.25m and Azimuth of B at A = 29°40'05"

Part – B (5 x 16 = 80 marks)

11. i. Write brief notes on the following: (12)
Geodesy, Engineering Geodesy, Lunar Geodesy, Planetary Geodesy.
ii. Mention the most recent developments of Geodesy. (4)

12a. i. On Everest Spheroid, compute the rectangular co-ordinates of a point in terms of Geodetic, Geocentric and Reduced latitude if the geodetic latitude of the place is 13°00'30"N. (12)
ii. Draw a neat sketch to define the geodetic, geocentric and reduced latitude. (4)

(OR)

12b. i. Discuss about the curvilinear co-ordinates. (16)

13a. i. Discuss in detail, about the measurement of gravity and its reduction to geoid (12)
ii. What are the uses of gravity? (4)

(OR)

13b. i. .Levelling from A to F has got five sections. The mean gravities (onward) observed at these sections are 978, 979, 980, 980.5and 979 gal respectively. Height differences (onward) in these sections are 100m, 200m, -100m, 100m, and -150m respectively. Assuming the dynamic height of A as 1000m, compute the following: (12)

a. The dynamic height of F, correct up to mm.
b. The orthometric height of A if the gravity there is 979.8 gal.
c. The orthometric height of F if the gravity there is 980.1 gal.
d. The height of F if the gravity is not used at all from A to F.

ii. Deduce an expression for the spheroidal height when only one zenith angle is observed. (4)

14a. How will you determine the position of the point by observing stars? (16)

(OR)

14b. i. It is proposed to investigate the possible use of two stars for an observation program in our campus. Their declinations are 70° and 85°. Compute their hour angle and azimuth at the time of rising and setting of stars and also compute their zenith distance if the stars are said to be culminated. (12)

ii. Sketch an astronomical triangle and explain. (4)

15a. Given the following on point determination by polar method, compute the co-ordinate of the new point N and apply the usual checks. (16)

Point No.	Easting (m)	Northing (m)	Observed	
			Direction	Distance (m)
A	17,520.66	6,410.71	00°25'07"	116.42
B	17,258.15	6,435.37	171°23'20"	148.12

(OR)

15b. Given the co-ordinate of P and Q in both X, Y and x, y systems the points R and S co-ordinate in x, y system are to be transformed in to X,Y system. Give your values and apply the usual checks. (16)

Point	X,Y System		x,y system	
	X (m)	Y (m)	x (m)	y (m)
P	96935.27	8922.55	97319.35	8802.06
Q	98511.77	9772.69	98858.81	9717.54
R	?	?	98338.99	8586.69
S	?	?	97918.31	9538.01