

END SEMESTER EXAMINATIONS, APRIL/MAY 2013
V SEMESTER B.E. (GEOINFORMATICS)
(Regulations 2008)

GI 9304 GEODESY

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. State the problem of Geodesy.
2. On Everest spheroid, find out the difference between the geodetic latitude and the reduced latitude if the geodetic latitude of the place is $13^{\circ}00'30''N$.
3. How will you determine the radius of the parallel of latitude?
4. Mention the Puissant's formula and explain.
5. Compute the normal gravity of a point whose geodetic latitude is $13^{\circ}00'30''N$.
6. What do you understand by 'Gravity anomaly and Gravity disturbance'?
7. Draw a neat sketch to show the stars available for an observation program if observer is located at the equator.
8. Bring out the reasons for the variations in the rotational time system?
9. Distinguish between intersection and arc section.
10. Define the terms "Point determination and Over determination".

PART - B (5 x 16 = 80 Marks)

11. i. Write a brief note on the scientific beginning of Geodesy. (8)
- ii. Write about the lunar and planetary Geodesy. (8)

12. a. Write about the natural and geodetic co-ordinate systems and also establish the relationship between them. (16)

(OR)

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

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

(OR)

13. b.i. What is orthometric height? How is it computed? (6)
 ii. Levelling from A to F has got five sections. The mean normal gravities (onward) observed at these sections are 978, 979, 980, 980.5 and 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:
 1. The dynamic height of F, correct up to mm.
 2. The orthometric height of A, correct up to mm if the gravity there is 979.8 gal.
 3. The orthometric height of F, correct up to mm if the gravity there is 980.1 gal.
 4. The height of F if the gravity is not used at all from A to F. (10)

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

(OR)

14. b. It is proposed to investigate the possible use of two stars for an observation program in our campus. Their declinations are 5° and 10° .
 i. If the stars are said to cross the prime vertical, compute their zenith distance and hour angle. (6)
 ii. If the stars are said to be elongated, compute their azimuth, zenith distance and hour angle. (10)

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

Point	X,Y System		x,y system	
	X (m)	Y (m)	x (m)	y (m)
P	96935.27	8922.5	97319.35	8802.06
Q	98511.77	9772.69	98858.81	9717.54
R	?	?	98338.99	8586.69
S	?	?	97918.31	9538.01

(16)

(OR)

15. b. i. Bring out the step by step procedure for computing the co-ordinates with least square adjustment. (4)
 ii. Given the following on simple arc section:

Point	Easting, x(m)	Northing, y(m)	Observed distances (m)
P	328.76	1207.85	PN = 294.33, QN = 506.42 and PQ = 648.08
Q	925.04	954.33	

Compute the co-ordinate of the new point 'N' if it is below the line PQ. (12)