

18/11/13

Reg.No.

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**B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013**

**GEOINFORMATICS**

Fifth Semester

**GI 9304 GEODESY**

(Regulation 2008)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. What is Geodesy? How is it different from Engineering geodesy?
2. Establish the relationship between geodetic and geocentric latitudes.
3. How is the area of a trapezium on the spheroid computed?
4. Compute the spherical excess of an equilateral triangle of side 200km if the mean geodetic latitude of the place is  $13^{\circ}00'30''$  N.
5. Define the following: Telluroid and Isostasy.
6. Deduce an expression for the physical geodesy.
7. Draw a neat sketch of the celestial Co-ordinate system used to prepare the star catalogues.
8. State the reasons for the irregularities in Rotational time systems.
9. Tabulate the relationship between rectangular and polar co-ordinates if the points are in the different quadrant.
10. Distinguish between intersection and Arc section.

**Part – B ( 5 x 16 = 80 marks)**

11. Write a brief note on the following:
  - (i) Geodesy of the modern era. (6)
  - (ii) Reference surfaces used in Geodesy. (5)
  - (iii) Planetary Geodesy. (5)
12. (a) Derive the relationship for computing the mean radius at any azimuth. (16)

**OR**

12. (b) (i) Bring out the step by step produces involved in Trilateration surveying. (6)  
(ii) Given the following on triangulation,  
Geodetic latitude of A =  $27^{\circ}22'2.57''$ N  
Geodetic longitude of A =  $87^{\circ}27'31.86''$ E  
Geodetic latitude of B =  $27^{\circ}28'38.3''$ N  
Geodetic longitude of B =  $87^{\circ}29'36.0''$ E  
Compute the distance AB on Everest spheroid. (10)

13. a) (i) Compute the normal gravity of a point whose geodesic latitude is  $13^{\circ}00'30''$  N. (4)  
(ii) How will you measure the absolute gravity and also mention its reduction to geoid? (12)

OR

13. b) (i) Define the following terms: Geoid and deflection of vertical. (4)  
(ii) Explain the gravimetric method of determining geoid and deflection of vertical. (12)

14. a) Discuss in detail, about the transformation of celestial Co-ordinates. (16)

OR

14. b) (i) How is astronomical latitude of the place is determined by observing stars? (6)  
(ii) It is proposed to investigate the possible use of two stars for an observation program in our campus. Their declinations are  $10^{\circ}$  and  $20^{\circ}$ . If the stars use said to be on elongation, compute their azimuth, zenith distance and hour angle. (10)

15. (a) (i) What is second geodetic problem?. Also mention the various methods of computing distance and Azimuth. (4)  
(ii) Given the following 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 into the x,y system. Give your values and apply the usual checks. (12)

Point	X (m)	Y(m)	x(m)	y (m)
A	96935.27	8922.55	97319.35	8802.06
B	98511.77	9772.69	98858.81	9717.54
C	97944.99	8664.62	?	?
D	97564.56	9632.75	?	?

OR

15. (b) (i) Bring out the steps by step procedures involved in resection with over determinations and Arc section with over determinations with the help of method of least squares. (6)  
(ii) 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. Find out the Co-ordinate of 'N' with the help of Co-ordinates given below: (10)

Point	X (m)	Y (m)
A	24681.92	90831.87
A'	23231.58	91422.92
B	24877.72	89251.09
B'	22526.65	89150.52

Apply the usual checks.