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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012

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 are the uses of geodesy?
2. On Everest spheroid, compute the mean radius of curvature of an area if the mean geodetic latitude of the place is $13^{\circ} 00' 30''N$.
3. Draw a neat sketch to show the geodetic co-ordinates.
4. Compute the spherical excess for an equilateral triangle of side 100km if the mean geodetic latitude of the place is $13^{\circ} 00' 30''N$.
5. Write down the equation of an equipotential surface and explain.
6. State about the isostasy and terrain correction to be considered for gravity reduction.
7. How the stars are classified?
8. Draw a neat sketch to define the zone time adopted in our country
9. Tabulate the relationship between rectangular and polar co-ordinates if the points are located in the different quadrants.
10. Distinguish between similarity and Hemert's transformation.

Part – B (5 x 16 = 80 marks)

11. Write a brief note on the following:
 - a. Engineering geodesy (6)
 - b. Lunar geodesy and (5)
 - c. Planetary geodesy (5)
12. a) On Everest spheroid, compute the following:
 - (i) Geocentric latitude (2)
 - (ii) Reduced latitude (2)
 - (iii) Rectangle co-ordinates in terms of geodetic latitude (4)
 - (iv) Rectangle co-ordinates in terms of geocentric latitude and (4)
 - (v) Rectangle co-ordinates in terms of reduced latitude (4)Please note that the geodetic latitude of the place is $13^{\circ} 00' 30''N$.

OR

12. b) (i) How will you compute the length of the meridional area, prime vertical arc and the area of the trapezium on the Spheroid? (10)
(ii) Write about the curves on the spheroid and also mention the properties of a geodesic. (6)

13. a) (i) Draw a neat sketch to define the deflection of vertical in different means. (6)
(ii) Explain the Astro – geodetic method of determining the deflection of vertical and the reference spheroid. (10)

OR

13. b) (i) Explain the gravimetric method of determining the geoid. (6)
(ii) Levelling from A to F has got five sections. The mean normal gravities (onward) computed at this 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 if the gravity there is 979.8 gal and
3. The orthometric height of F if the gravity there is 980.1 gal (10)

14. a) (i) Draw a neat sketch of the star constellations useful for an astronomical observation in our country. (6)
(ii) It is proposed to investigate the possible use of two stars for an observation program in our campus. Their declinations are 70° and 80° . compute the hour angle and azimuth at the time of rising and setting of stars. (10)

OR

14. b) (i) It is proposed to investigate the possible use of two stars for an observation program in our campus. Their declinations are 10° and 20° . If the stars are said to be elongated, compute the azimuth, zenith distance and hour angle. (10)
(ii) Write about the star almanac for land surveyors. (6)
15. a) Given the following on co-ordinate transformation with several identical points, compute the co-ordinate of D in X, Y systems and apply the usual checks. (16)

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	98338.99	8586.69
D	?	?	97918.31	9538.01

OR

15. b) Given the following on resection, compute the adjusted co-ordinate of "N" and apply the usual checks. (16)

Point	X (m)	Y (m)	Observed direction
A	46867.94	5537.00	$60^\circ 07' 50''$
B	51293.86	6365.89	$265^\circ 18' 22''$
M	49666.56	4448.58	$326^\circ 33' 59''$
N	$48613 = x_0$	$6361 = y_0$	-