

11/11/13

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

**GEOINFORMATICS ENGINEERING BRANCH**

**FIFTH SEMESTER**

**GI 9301 SURVEYING III**

(Regulation 2008)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

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

1. Describe the different terms of Horizon used in field astronomy.
2. What is Astronomical Triangle?
3. Find the azimuth of star and azimuth of line, if the horizontal angle measured from line to star at culmination is  $118^{\circ} 32' 58''$ , the latitude of observer  $48^{\circ} 00' 15''$  N and declination of star is  $25^{\circ} 21' 30''$  N.
4. Find the LMT of the place having longitude of  $165^{\circ} 28' 38''$  E, if IST is  $20^{\text{h}} 28^{\text{m}} 34^{\text{s}}$  on 28.02.2013.
5. What is corridor mapping?
6. Compare floor station and roof station in mine surveying.
7. What is transition curve?
8. Find the length of vertical curve, if  $g_1 = -0.8\%$  and  $g_2 = 1.2\%$  and  $r = 0.1\%$  per 20m chain.
9. Differentiate Auto level instrument and Digital level instrument.
10. Find the horizontal distance, If the EDM measures slope distance as 4652.568m and Digital theodolite measure zenith angle of  $92^{\circ} 48' 57''$ .

**Part – B ( 5 x 16 = 80 marks)**

11. i. The China aircraft departs from Honk Kong Chek Lap Kok International Airport at  $9^{\text{h}} 30^{\text{m}} 45^{\text{s}}$  AM in the direction of  $142^{\circ} 05' 35.40''$  E. The aircraft starting point latitude and longitude in Hong Kong Airport is  $22^{\circ} 18' 31.56''$  N and  $113^{\circ} 55' 11.51''$  E. The average speed of the aircraft is 640km/h. The communication between Radar and Aircraft link was lost at  $11^{\text{h}} 14^{\text{m}} 25^{\text{s}}$  AM. Find the latitude and longitude of the Aircraft and radar link lost location. (12)  
ii. Discuss the solution of right-angled spherical triangle from Napier's rule of circular parts. (4)
12. a) i. Find the error of the chronometer with the help of the following data: (10)  
Latitude of place =  $36^{\circ} 30' 30''$  N, Mean observed altitude of the star =  $30^{\circ} 12' 10''$ , R.A of star =  $5^{\text{h}} 18^{\text{m}} 12.45^{\text{s}}$ , Declination of star =  $16^{\circ} 12' 18.4''$  N, Mean sidereal time observed by sidereal chronometer =  $1^{\text{h}} 2^{\text{m}} 5.25^{\text{s}}$ , This star is to the east of the meridian.  
ii. What is equation of time? Illustrate the reasons for its variation. (6)  
**OR**  
b) i. What are different methods adopted in determination of Azimuth? Explain any two methods in detail. (Note: One method from sun observation and another method from star observation) (12)  
ii. Discuss about Sidereal time system. (4)

13. a) i. Explain how Geomatic techniques employed in Reconnaissance and Preliminary survey in Route Surveying. (12)  
ii. Discuss the correction to be applied to the measured angle, when the auxiliary telescope is fitted (a) at the top (b) on the side. (4)

**OR**

- b) i. Explain the Weisbach method for transferring a surface line. (12)  
ii. Discuss about location survey in Route Surveying. (4)

14. a) Compute the coordinates by deflection method ( $2^\circ$  deflection angles) to set the simple right handed curve using Total station. Degree of curve is  $20^\circ$ . The coordinate (X, Y) of point of curve is 5623.584m, 9014.763m and the coordinate (X, Y) of point of intersection is 5619.982m, 9039.142m. (16)

**OR**

- b) i. What are the different methods used to set a simple curve? Explain any to three methods in detail. (12)  
ii. Discuss elements of compound curve? (4)

15. a) i. What is Digital terrain Model? How it is generated? (6)  
ii. Discuss the principle of LIDAR measurements. (6)  
iii. Discuss the different methods used for offset measurement in Total station. (4)

**OR**

- b) i. Explain COGO functions in Total station. (10)  
ii. Explain the principles of INS. (6)