GEO INFORMATICS

FIFTH SEMESTER – (REGULATION 2008)

GI 9301 – SURVEYING- III

Time: 3 hrs   Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is accidental error of measurement?

2. Draw a neat sketch of an astronomical triangle.

3. Define sidereal time.

4. What information is normally required in reconnaissance of a Route Survey?

5. What is Spiralling a compound curve?

6. How would you find out whether the vertical curve will have convexity upwards or downwards if the gradients on the two sides of the apex are given?

7. Distinguish mining Surveying and Surface Surveying?

8. Define Shaft.

9. Differentiate Laser Theodolite and Optical Theodolite?

10. What is DTM?

Part – B (5 x 16 = 80 Marks)

11. (i) Find the GAT on a particular day when GMT is 18 h 30 min. Given that ET at GMN on that day is 1 m 25.4 s, subtractive from GAT and decreasing at the rate of 0.67 sec per hour   (10 Marks)

(ii) What is spherical triangle? Write salient properties of a spherical triangle.

(6 marks)

12. (a) At a place (latitude 32°15'N, longitude 75° E) the following observations were made on a star in the eastern hemisphere.

Closkwise angle between reference object and star	= 135°15'20"
R.A. of the star	= 12h 25m 18.35s
Declination of the star	= 22°06'32".5
G.M.T. of the observation	= 15h 45m 25.3s
G.S.T of G.M.M.	= 11h 40m 32.4s

Determine the true bearing of the line.   (16 marks)

(OR)

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(b) (i) Discuss the methods for the determination of azimuth by solar observations

(10 marks)

(ii) How would you conduct Route Survey? Explain in brief.   (6 marks)

13.(a) The centerline of a proposed railway consists of two straight lines joined by a curve of 700m radius. The angle of deflection between the two straights is 25°, and the chainage, increasing from left to right, of the point of intersection is 4300m. Calculate the chaingage of the points of curvature and tangency. Also compute the deflection angles for a chord length of 30m.   (16 marks)

(OR)

(b) (i) Explain the method of setting out a compound curve in the field.(8 marks)

(ii) How would you decide the length of a transition curve? Discuss the various methods. Which method is preferred and why?   (8 marks)

14. (a) (i) Explain about mine plan preparation and its types   (8 marks)
    (ii) Discuss about the duties of a mine surveyor   (8 marks)

(OR)

(b) The centre line of a tunnel is represented by two plum bob lines A and B, 4.5 m apart, hanging vertically in the shaft. A theodolite is set up underground at point C at a distance of 3.42 m from B and roughly east of it and the observed value of the angle ACB is found to be 15'22". If the bearing of AB is 85 ° 32'21", calculate the bearing of the line AC and the perpendicular distance of C from the centre line of the tunnel.

(16 marks)

15. (a) (i) What are the different types of EDM instruments? Give a brief description of each.   (10 marks)

(ii) Discuss the effect of atmospheric condition on the measurement of distance by Total Station.   (6 marks)

(OR)

(b) (i) An electro optical instrument used infrared waves with a wavelength of 0.85µm and a modulation frequency of24 MHz. Determine the modulated wavelength under the atmospheric conditions with a temperature of 30°C and a pressure of 752.4 mm of mercury. Take c = 299792.5 km/sec.   (8 marks)

(ii) Write in detail about Global Positioning System   (8 marks)

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