G 1617

Reg. No......................................

Name......................................

B.TECH. DEGREE EXAMINATION, MAY 2016

Fourth Semester

Civil Engineering

SURVEYING—II (C)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Maximum : 100 Marks

Time : Three Hours

Part A

Answer all questions.

Each question carries 4 marks.

1. Illustrate how triangulation is used to measure precisely the distance between two points that are quite far apart, say, between Delhi and Kochi.

2. What are the points to be remembered while selecting the site for a baseline

3. Define the terms :

    (i) Observed value.

    (ii) True value.

    (iii) Most probable value.

    (iv) Residual error, of a quantity.

4. Explain with relevant equations, Gauss's rule for figure adjustment for a triangle.

5. With the help of a sketch, explain the method of locating soundings by intersecting ranges.

6. Explain signals in hydrographic surveying.

7. How is flight planning done for obtaining stereo pairs in aerial photogrammetry ?

8. What are the factors considered for photo-interpretation of aerial photographs ?

9. Explain briefly, the altitude-azimuth co-ordinate system to locate a celestial body.

10. Explain the difference between apparent solar time and mean solar time.
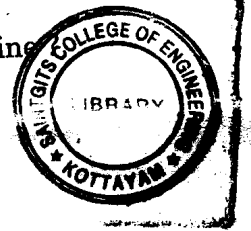
(10 × 4 = 40 marks)

Turn over

Part B

*Answer **all** questions.*
Each full question carries 12 marks.

11. (a) List the corrections applied to base line measurement along with the relevant equations.

(6 marks)

    (b) Develop the equation for correction to base line because of sag, in terms of distance between supports, unit weight of tape and applied pull.

(6 marks)

Or

12. Two triangulation stations A and B are 90 km apart. The elevation of A is 395m and that of B is 740 m. In the line of sight between A and B, there is an intervening high point P, 66 km from A. P has an elevation of 528m. Check the inter-visibility from A to B and also find the height of signal required at B for clear visibility. The line of sight must at least 2.5 m above ground at all points.

13. Following are the direct measurements of a base line.

3854. 15 m, 3854. 00 m, 3853. 95 m, 3854. 05 m, 3853. 90 m, 3854. 05 m, 3854. 00 m, 3854. 05 m.

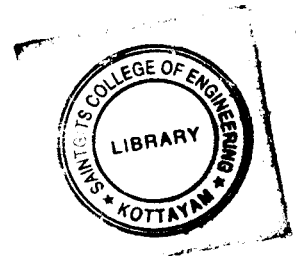Find the most probable value of the length of the base line and its probable error.

Or

14. Use the method of correlates to find the most probable values of angles P, Q and R from the following measurements

     P = 70° 31′ 18.6″ (Weight 3)

     Q = 61° 12′ 11.8″ (weight 4)

     R = 48° 16′ 36.6″ (weight 2)

     P + Q = 131° 43′ 34.6″ (Weight 4)

15. Explain the step by step procedure of the survey carried out to get the cross-section of a river along a given line.
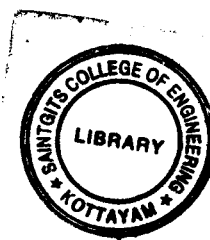
Or

16. Illustrate the concept of convergence of meridian.

(3 marks)

The latitudes and longitudes of two stations P and Q are

Point	latitude	longitude
P	40° 45′ 18.12″	100° 48′ 23.6″
Q	41° 10′ 36.24″	101° 12′ 27.54″

Obtain the convergence of meridian through A and F

(9 marks)

17. In a terrestrial photographic survey, photographs were taken from two stations 210 m apart. The focal length of the camera was 180 mm. The lines of collimation from the camera stations made angles 36°20′ and 65°52′ from the left and right stations, respectively, while observing station S. A point P appeared on the photograph from both the stations. P was 10 mm to the left and 8 mm above the cross-lines in the first photograph and 14 mm to the left and 3 mm above the cross-lines in the second photograph. The reduced level of the camera axis at the first station was found to be 182.55 m by observations to a benchmark. Find the co-ordinates and reduced level of P.

Or

18. Explain the major applications of remote sensing

19. Explain the different co-ordinate systems used to specify the position of a celestial body

Or

20. (a) Explain sidereal time. (3 marks)

(b) Find the local sidereal time at a place of longitude 68° 40′ E if the local mean time is 22h 40 m and Greenwich Sidereal Time (GST) of Greenwich Mean Noon (GMN) is 5h 38 m.

(6 marks)

(c) For the above case, find the standard time if the standard meridian is 72°E.

(3 marks)

[5 × 12 = 60 marks]