

Roll No.

3083

**B. Tech. 4th Semester (Civil)
Examination – May, 2023**

GEOMATICS & AERIAL SURVEYING

Paper : PCC-CE-208-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory. All questions carry equal marks.

1. Describe the following : 2.5 × 6 = 15

- (a) Classification of triangulation system
- (b) Applications of total station
- (c) Equation of time
- (d) EMR characteristics
- (e) Crab and drift
- (f) Different GIS Software

SECTION – A

2. (a) Describe the principle and methods of trilateration. Also explain the advantages and disadvantages of trilateration. 7

(b) Two triangulation stations A and B 100 km apart have elevations of 140 m and 406 m respectively. A point C, 60 km from A has an elevation of 150 m. Check the intervisibility of A and B and if required, determine the height of signal at B so that the line of sight clears by 3 m. 8

3. (a) What is the principle of least square? Derive the relationship of least square. 7

(b) Adjust the angles A, B and C of a triangle ABC from the following data. Use method of correlates : 8

$$A = 86035'11.1'' \quad w = 2$$

$$B = 42015'17'' \quad w = 1$$

$$C = 51009'34'' \quad w = 3$$

SECTION – B

4. (a) Explain with suitable diagram. "Napier's rules of circular parts" to solve a right angled spherical triangle. 7

(b) The altitudes of a star at upper and lower transits are $72^{\circ}40'$ and $25^{\circ}30'$. Both the transits are on the north side of zenith of the place. Find the latitude of the place of observation and declination of the star. 8

5. (a) Enumerate different time systems. Describe each in detail. 7

(b) Define the following terms with neat diagram : 8

(i) Azimuth

(ii) Hour Circle

(iii) Prime Vertical

(iv) Ecliptic circle

SECTION – C

6. (a) Derive an expression for Relief Displacement on a Vertical Photograph with neat diagram. 7

(b) What do you understand by Flight Planning for aerial photograph? Also discuss different types of overlap. 8

7. (a) A vertical photograph was taken at an altitude of 1200 m above mean sea level. Determine the scale of photograph for terrain lying at elevations of 80 m and 300 m if the focal length of camera is 15 cm. 10

- (b) Describe Stereoscopic vision and stereoscopes in detail. 5

SECTION – D

8. (a) Compare Raster and Vector model for representing geographic features. 7
- (b) Describe in detail the different parameters required to locate a satellite in space. 8
9. (a) What is electromagnetic spectrum ? Describe with neat diagram. 6
- (b) Write a short note on the following : 9
- (i) Polarisation of EMR
 - (ii) Coherent radiation
 - (iii) Sources of EMR for remote sensing