

B020413(020)

**B. Tech. (Fourth Semester) Examination,
April-May 2022**

(Scheme : AICTE)

(Civil Engg. Branch)

SURVEYING and GEOMATICS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from part (b), (c) and (d) of each question.

Unit-I

1. (a) What is purpose of Triangulation Survey? 4
- (b) How intervisibility and height of stations will affect the selection of station. 8

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- (c) From an eccentric station S , 12.25 m to the west of the main station B , the following angles were measured. 8

$$\angle BSC = 76^\circ 25' 32''; \angle CSA = 54^\circ 32' 20''$$

The stations S and C are to the opposite sides of the line AB . Calculate the correct angle ABC if the lengths AB and BC are 5286.5 and 4932.3 m respectively.

- (d) What is meant by extension of a base line? Explain with neat sketch, how you would extend a given base line in the field. 8

Unit-II

2. (a) What do you mean by Law of accidental error? 4
 (b) Describe on detail about law of weights. 8
 (c) How will you determine the most probable values? 8
 (d) Adjust the angle of the triangle ABC which has been reduced for spherical excess by the method of correlates. 8

$$\angle A = 87^\circ 35' 11'' \cdot 1 \quad \text{wt. 2}$$

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$$\angle B = 43^\circ 15' 17'' \cdot 0 \quad \text{wt. 1}$$

$$\angle C = 49^\circ 09' 34'' \cdot 0 \quad \text{wt. 3}$$

Unit-III

3. (a) What are the uses of tacheometry? 4
 (b) State the procedure of determining the constant of tachometer. 8
 (c) Explain the following : 8
 (i) Movable hair method
 (ii) Subtense theodolite
 (d) Two points A and B are on opposite sides of a summit. The tacheometer was set up at P on top of the summit, and the following readings were taken. 8

Inst. station	Height of inst.	Staff stations	vertical angle	Hair Readings	Remark
P	1.500	A	$-10^\circ 0'$	1.150, 2.050, 2.950	RL of P =
P	1.500	B	$-12^\circ 0'$	0.855, 1.605, 2.355	450.500 m

The tacheometer is fitted with an anallatic lens, the multiplying constant being 100. The staff was held normal to the line of sight.

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Find :

- (a) The distance between A and B, and
- (b) The gradients of line PA and PB.

Unit-IV

- 4. (a) What do you mean by datum scale and average scale? 4
- (b) Drive the scale of tilted photograph with neat sketch. 8
- (c) Derive focal length of a camera lens. 8
- (d) What are the various functions of GIS. 8

Unit-V

- 5. (a) Write the importance of hydrographic surveying. 4
- (b) Explain the method of reduction and plotting of soundings. 8
- (c) Explain the location of sounding by Range and two angles from shore. 8
- (d) Describe any two graphical methods of plotting the sounding position. 8