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Reg. No. :

Question Paper Code : 30095

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Third Semester

Civil Engineering

CE 3351 – SURVEYING AND LEVELLING

(Common to : Environmental Engineering/Agricultural Engineering)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write few words on orientation in plane table survey.
2. Write few words about magnetic declination.
3. Classify check levelling from fly levelling.
4. Write the purpose of levelling.
5. List the temporary adjustments in levelling.
6. Define trigonometric levelling.
7. List out various types of errors.
8. Write few words about trilateration.
9. Write any two applications of GIS.
10. Name some modern instrument used in land survey.

PART B — (5 × 13 = 65 marks)

11. (a) List and explain the uses of various accessories used in plane table survey and also mention the advantages and disadvantages of plane table.

Or

- (b) Explain with neat diagram, the working principle of a prismatic compass. Compare prismatic compass with surveyor's compass in all aspects.

12. (a) Define reciprocal levelling. Explain the process of reciprocal levelling in detail.

Or

- (b) Describe various methods of locating contours. Discuss the merits and demerits of each method.

13. (a) Explain the importance of temporary adjustment in the field. Explain the various temporary adjustments to be made before taking the reading.

Or

- (b) Explain the tangential method of survey of finding the elevation of the given point with respect to the following cases.

- (i) Both angles are angles of elevation
- (ii) Both angles are angles of depression
- (iii) One angle of elevation and the other angle of depression

14. (a) Explain briefly about the types of triangulations system with its specifications.

Or

- (b) List out the various sources of error in levelling. Explain briefly, how to overcome all the errors.

15. (a) Discuss the importance of GPS and total station in modern method of survey.

Or

- (b) Discuss briefly the advantages and disadvantages of total station.

PART C — (1 × 15 = 15 marks)

16. (a) The following bearings were observed with a prismatic compass. Calculate the interior angles.

Line	Fore Bearing
PQ	74°
QR	142° 30'
RS	60°
ST	212° 30'
TP	307°

Or

- (b) The following observation refers to a tachometric survey. Compute the reduced levels of *P*, *Q* and *R* and the horizontal distances *PQ* and *QR*. Assume the tacheometer fitted with anallatic lens.

InstStn	Height of axis	Staff at	Vertical angle	Staff readings			Remarks
				Bottom	Middle	Top	
P	1.500	BM	-3° 30'	1.250	1.850	2.450	= 100.000
P	1.500	Q	+6° 30'	1.300	1.800	2.200	m. staff being held vertically.
Q	1.400	R	+8° 30'	0.750	1.850	2.000	