

III SEMESTER B.TECH. (CIVIL ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2017

SUBJECT: BASICS OF SURVEYING [CIE 2104]

REVISED CREDIT SYSTEM (/ 11/ 2017)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data may be suitably assumed.

Qno.	Question						
1A.	With a neat sketch explain reciprocal ranging.						
1 B .	A base line measured with a steel tape gives an approximate length of 990m. Compute the correct length of the base line when the pull at the standardization equals to 16 kg. The applied pull is 24 kg. The cross sectional area of the tape is 0.0654 cm^2 and $E = 2.11 \times 10^6 \text{ kg/cm}^2$. Temperature T_m and T_o are 35°C and 15°C, respectively. The coefficient of thermal expansion of the material of the tape per °C is 11.5×10^{-6} . The difference in level of the two ends of base line is 2m.						
1C	Explain with a neat sketch the construction and working principle of an optical square.						
2A.	Distinguish between (i) True Meridian and Magnetic Meridian (ii) Azimuthal and Reduced Bearing Systems						
2B.	Calculate the corrected survey.	d bear Line AB BC CD DE EA	ings of the follo Fore Bearing 191°30' 69°30' 32°15' 262°45' 230°15'	bwing traverse t Back Bearing 13°00' 246°30' 210°30' 80°45' 53°00'	aken from a compass	7M	
3A.	List out any four differences between plain and telescopic alidades.						
3B.	Determination of inter visibility is an application of contour maps. Justify the statement with the help of figures.						

g. No.

4A.	Two stations I ₁ and I ₂ , 180m apart, were selected for making observations to find the elevation of a point P on a hillock. The horizontal angles measured were $\Box PI_1I_2 = 58^0 30^\circ$ and $\Box PI_2I_1 = 50^0 50^\circ$. The vertical angles at the staff held at point P to 3m mark were $10^0 50^\circ$ and $9^0 27^\circ$ from stations I ₁ and I ₂ , respectively. To find the RL of the instrument axis, readings were taken to a BM of RL 1085.65m. The readings from stations I ₁ and I ₂ were 1.65m and 2.85m, respectively. Find the RL and distance from I ₁ to point P. Check the RL of P from the other instrument station						
4B.	Define the following terminologies w.r.t theodolite survey. a)Transiting, b) Swinging, c) Trunnion axis.						
5A.	The following observations were taken in reciprocal levelling :						
	Instrument at	Staff rea	ding on	Remark			
		А	В		6M		
	A	1.545	2.565	Dist: AB=1420m			
	В	0.725	1.935	RL of A= 108.36			
	Find True RL of B, the combined correction for curvature and refraction, the angular						
	error in the collimation adjustment of the instrument.						
5B.	What is collimation correction? With neat sketch explain balancing of back sights &						
	foresights in elimination of error due to curvature and refraction.						