

**CONTINUOUS INTERNAL EVALUATION- 1**

Dept: Civil	Sem / Div: 4 <sup>th</sup> A	Sub: ADVANCED SURVEYING	S Code: 18CV45
Date: 6/07/2022	Time: 9.30-11.00AM	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

QN	Questions	Marks	RBT	COs									
<b>PART A</b>													
1	a Explain the repetition method of measuring the horizontal angle using Transit Theodolite and errors eliminated by that method.	8	L2	CO1									
	b Differentiate between i) Transiting and swinging the telescope. ii) Face left and face right observation. iii) Clamp screw and Tangent Screw.	9	L2	CO1									
	c Explain the relations with neat sketch among fundamental lines or axis.	8	L2	CO1									
<b>OR</b>													
2	a Derive the expression for horizontal distances, height and RL of an elevated object by double plane method, when the base is inaccessible.	8	L2	CO1									
	b Derive the expression for horizontal distances, height and RL of an elevated object when instrument stations in the same vertical plane with the elevated object and base is inaccessible. ( $S_1 > S_2$ )	8	L2	CO1									
	c In order to ascertain the elevation of the top (Q) of signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 100 metres apart, the station P and R being in the line with Q. The angles of elevation of Q at P and R were $28^{\circ}42'$ and $18^{\circ}6'$ respectively. The staff reading upon the bench mark of elevation 287.28 were respectively 2.870 and 3.750 when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3 metres.	9	L3	CO1									
<b>PART B</b>													
3	a Explain different Systems of Tacheometer.	8	L2	CO1									
	b Derive the expressions for distance and elevation when the staff held normal and line of sight inclined.	8	L3	CO1									
	c To determine the gradient between two points A and B, a tacheometer was set up at another station C and the following observations were made, keeping the staff vertical.	9	L2	CO1									
		<table border="1" style="width: 100%;"> <thead> <tr> <th>Staff at</th> <th>Vertical Angle</th> <th>Stadia readings</th> </tr> </thead> <tbody> <tr> <td>A</td> <td><math>4^{\circ}20'0''</math></td> <td>1.300, 1.610, 1.920</td> </tr> <tr> <td>B</td> <td><math>0^{\circ}10'40''</math></td> <td>1.100, 1.410, 1.720</td> </tr> </tbody> </table>			Staff at	Vertical Angle	Stadia readings	A	$4^{\circ}20'0''$	1.300, 1.610, 1.920	B	$0^{\circ}10'40''$	1.100, 1.410, 1.720
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	The horizontal angle ACB is $35^{\circ}20'$ . Determine the average gradient between A and B. Given $k=100m$ , $C=0$ .																						
OR																							
4	a	Explain two peg method with neat sketch.			8	L2 CO1																	
	b	Derive the expressions for distance and elevation when the staff held vertical and angle of depression.			8	L2 CO1																	
	c	The elevation of a point P is to be determined by observations from two adjacent stations of a tacheometric survey. The staff was held vertically upon the point, & the instrument is fitted within an anallactic lens, the constant of the instrument being 100. Compute the elevation of the point P from the following data, taking both observations as equally trustworthy.			9	L2 CO1																	
		<table border="1"> <thead> <tr> <th>Inst. Station</th> <th>Ht. of Axis in 'm'</th> <th>Staff Point</th> <th>Vertical Angle</th> <th>Stadia readings in 'm'</th> <th>Elevation of station in 'm'</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1.42</td> <td>P</td> <td><math>+2^{\circ}24'00''</math></td> <td>1.230,2.055,2.880</td> <td>77.750</td> </tr> <tr> <td>B</td> <td>1.40</td> <td>P</td> <td><math>-3^{\circ}36'00''</math></td> <td>0.785,1.800,2.815</td> <td>97.135</td> </tr> </tbody> </table>				Inst. Station	Ht. of Axis in 'm'	Staff Point	Vertical Angle	Stadia readings in 'm'	Elevation of station in 'm'	A	1.42	P	$+2^{\circ}24'00''$	1.230,2.055,2.880	77.750	B	1.40	P	$-3^{\circ}36'00''$	0.785,1.800,2.815	97.135
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		Also calculate the distance of A and B from P.																					

Prepared by: Surekha T  
Prof. Surekha T

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