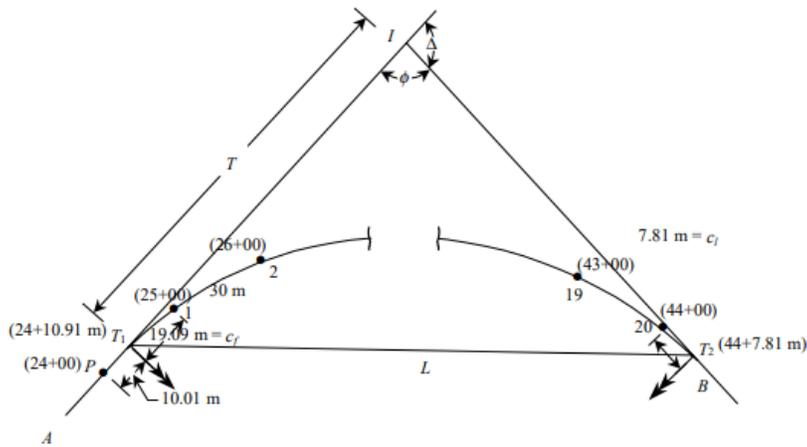


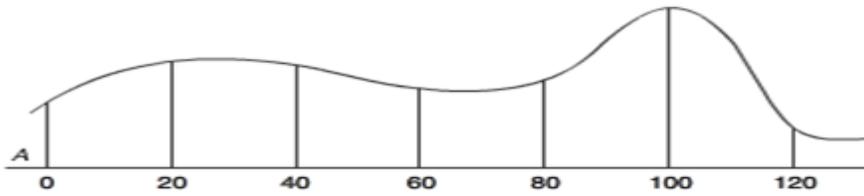
Name:			
Enrolment No:			
UPES End Semester Examination, December 2023			
Course: Engineering Survey Program: B.Tech in Civil Engineering Course Code: CIVL 2022		Semester: III Time : 03 hrs Max. Marks: 100	
Instructions: 1. Use pencil and scale to draw neat sketches wherever required. 2. Do step-by-step detailed calculations while solving the numericals.			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Mention the correct option in the below questions:		
a)	A tacheometer is setup at A and the readings on the staff at B are 1.77m, 2.12m, 2.34m and the inclination of line of sight is + 1° 9'. Calculate the vertical distance between A and B. Take k = 100, c = 0.3. a) 1.51 m b) 2.51 m c) 2.15 m d) 1.15 m	1	CO 3
b)	The BB of a line is S 30° E, its FB is a) N 30° E b) N 30° W c) S 30° W d) S 30° E	1	CO 2
c)	Which of the following is the first principle of surveying? (a) Whole to whole (b) Part to part (c) Part to whole (d) Whole to part	1	CO 1
d)	The volume of earth work was computed to be 5000 m ³ when measured with a tape of 30 m nominal length. If the tape was 0.15 m too long, the correct volume in 'm' is a) 5025 b) 4975 c) 5075 d) 4925	1	CO 1
Q 2	Enumerate the differences between the following:		
a)	Transit and non-transit theodolites	2	CO 3
b)	Reverse and spiral curves	2	CO 4
Q 3	What do you understand by the following terms?		
a)	Line of collimation	2	CO 3
b)	Contour interval	2	CO 2

Q 4	In an old survey made when the declination was 4° W, the magnetic bearing of a given line was 210° . The declination in the same locality is now 10° E. What are the true and present magnetic bearings of the line?	4	CO 3
Q 5	If a sphere's radius is measured as 10.00 ± 0.08 m, the calculated volume is 4188.8 m^3 , find the error.	4	CO 1
SECTION B (4Qx10M= 40 Marks)			
Q 6	Assess the step-by-step procedure of measuring horizontal angles in a vernier theodolite using reiteration method.	10	CO 3
Q 7	A levelling staff is held vertical at distances of 100 m and 300 m from the axis of a tacheometer and the staff intercept for horizontal sights are 0.99 m and 3.00 m, respectively. Find the constants of the instrument.	10	CO 3
Q 8	(a) A circular curve has a 200 m radius and 65° deflection angle. Calculate: i. Tangent Length, and ii. Degree of curve. (Assume chord length of 30 m)	5	CO 4
	(b) Find out the bearing of the lines of an equilateral triangle ABC running clockwise if the bearing of the line AB is $60^{\circ}30'$.	5	CO 1
Q 9	Explain the need of reciprocal levelling and explain its procedure. Drive the necessary equation for the true elevation.	10	CO 3
SECTION-C (2Qx20M=40 Marks)			
Q 10	The chainage of the intersection point of two straights is 1060 m, and the angle of intersection is 120° . If radius of a circular curve to be set out is 570 m, and peg interval is 30 m, determine the tangent length, the length of the curve, the chainage at the beginning and end of the curve, the length of the long chord, the lengths of the sub-chords, and the total number of chords.	20	CO4



Q 11

Determine the area in hectares between line AB and a meandering stream for offsets taken at a regular interval of 20 m along line AB as shown in the fig. Use both the trapezoidal rule and Simpson's rule.



Point	A								B
Distance (m)	0	20	40	60	80	100	120	140	160
Offset Length (m)	23	40	42	30	32	60	10	14	22

20

CO3