

B.E. Civil Engineering 2nd YEAR 2nd SEMESTER EXAMINATION, 2023**(1st / 2nd Semester / Repeat / Supplementary / Annual / Biannual)****SUBJECT: SURVEYING-II**

(Name in full)

Full Marks: 100

Time: ~~Two hours~~/~~Three hours~~/~~Four hours~~/~~Six hours~~

(35 marks for this part)

Use a separate Answer-Script for each part

Question No.	Part-I	Marks
Q.1) A)	<p>Answer Question-1 and any Two questions from the rest (All questions fall under CO1)</p> <p>Fill in the blanks with appropriate word(s):</p> <p>a) The distance between the vertex and the apex of a simple curve is called ---- -----.</p> <p>b) The ratio between the centrifugal force and the weight of a vehicle is called -----.</p> <p>c) The tangential angle of the long chord is called -----.</p> <p>d) A Pitot Tube is required for measurement of ----- of any waterbody.</p> <p>e) The maximum superelevation recommended under extra-ordinary condition for broad gauge railway track is ----- mm.</p> <p>f) In tunnel survey the very first step of field work comprises -----.</p> <p>g) In small-scale hydrographic survey primary horizontal control is usually established by virtue of -----.</p> <p>B) State whether the under-mentioned statements are True or False with necessary justifications:</p> <p>i. Along a transition curve the curvature gradually decreases.</p> <p>ii. Cross rope method is recommended for locating the sounding stations when they are scattered over the water body.</p> <p>iii. “Weisbach Triangle Method” eliminates the chances of inaccurate bisection while transferring the surface center line underground</p>	<p>1*7=7</p> <p>2*3=6</p>

Form A: Paper –Setting Blank

Ref No.: Ex/CE/PC/B/T/225/2023

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No. of Question	Part-I	Marks
Q.2)	a) Establish the fundamental concept behind computing the total tangential angle for nth peg on a simple circular curve in " Rankine's Method " of setting out of simple curve.	4
	b) A simple curve is to be introduced in between two straight lanes; meeting at a chainage of 779.45m . The angle of intersection for the straights is given as 22°34' . The radius of simple curve is fixed at 228.94m . Set out the simple curve by the method of " Double Theodolite Method " using a theodolite of 20" least count.	7
Q.3)	a) Deduce the expression for " Total Tangent Length " of a cubic parabola type transition curve?	5
	b) Calculate the reduced levels (RLs) of various station pegs on a vertical curve connecting two uniform grades of (0.74%) and (-0.57%) . The chainage and the reduced level at the point of intersection are 436m and 303.52m respectively. Consider the rate of change of grade as 0.1% per 30m .	6
Q.4)	a) Describe the " Three Point Method " of locating sounding stations with the help of a pertinent sketch and relevant expressions.	6
	b) A vertical shaft was excavated and two plumb wires (A & B) were suspended into it at a distance of 3.798m . A theodolite was set up at C , within the tunnel, slightly off the line AB at a distance of 6.52m from the wire B . The angle ACB was found to be 2'20" . Calculate the co-ordinates of the point C with respect to the line AB produced.	5

BACHELOR OF ENGINEERING IN CIVIL ENGINEERING EXAMINATION 2023
(Second Year, Second Semester)

SURVEYING II

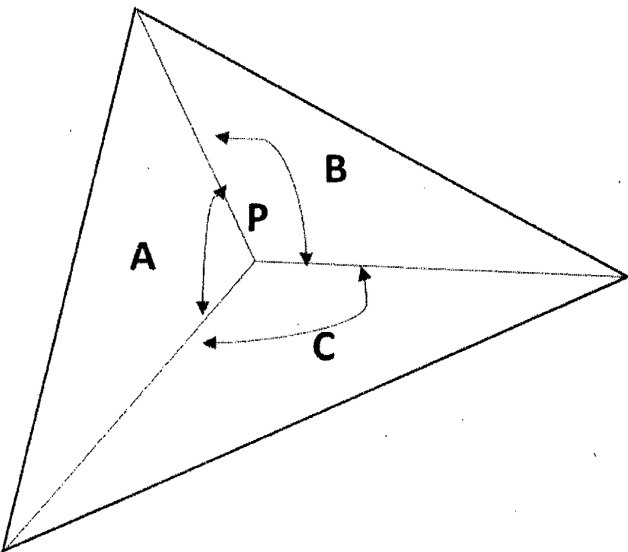
Time: Three Hours

Full Marks: 100
(PART II:35)

SL No	PART II:35 (ATTEMPT ALL QUESTIONS)		Marks
1	(a)	What are the basic information may be observed FCC?	CO5 5
	(b)	What is called reference data in remote sensing? Make a list of three reference data. Which one of these three reference data is authentic and why?	1+1+3=5
	(c)	How do you identify the natural and artificial features through satellite imageries?	3
	(d)	How do you differentiate the clouds from snow coverage in an image?	2
2	(a)	Explain fundamentals of visual image interpretation and its importance. What are the elements of visual image interpretation? Explain briefly.	CO5 3+7=10
	(b)	What is the importance of the temporal aspect of image interpretation? Explain briefly.	5
	(c)	What are the different applications of remote sensing in natural resource management? Explain briefly.	5

[Turn over

B.E. CIVIL ENGINEERING SECOND YEAR SECOND SEMESTER EXAM 2023**SUBJECT: SURVEYING II (CE/PC/B/T/225)****Time: 3 hours****Full Marks: 30****Instructions: Use Separate Answer scripts for each part.****Part - III**

Sl. No.	Question	CO	Marks
1	If four central angle in a station point of traverse is: A: $110^{\circ}20'48''$ (weight : 1) ; B: $92^{\circ}30'12''$ (weight : 4) ; C: $56^{\circ}12'00''$ (weight : 2) ; D: $100^{\circ}57'04''$ (weight : 5). Determine their corrected values.	[CO2]	[6]
2	The following three angles A, B and C observed at a station point P (P is internal point of Traverse as shown in Fig.). A: $77^{\circ}12'12'' \pm 5''$ B: $138^{\circ}48'30'' \pm 12''$ C: $143^{\circ}59'08'' \pm 13''$ Determine their corrected values.	[CO2]	[6]
			
3	Find the coordinate of the reflector station point if the coordinate of the instrument station is (550,650,150), the slope distance is 600 m, the Zenith angle at the instrument station is 60° , Physical height of instrument at instrument station is 1.75 m, Physical height of the reflector at reflector station is 2.00 m, horizontal angle of the line connecting the instrument and reflector is 45° .	[CO1]	[6]
4	Find the most probable values of angle A and B from the following observations (by forming normal equations): A = $15^{\circ}10'30''$ (weight 5); B = $25^{\circ}10'40''$ (weight 3); A + B = $40^{\circ}21'20''$ (weight 2)	[CO2]	[6]

5

In a carrying a line of levels across a river large amount of data were taken with a level under identical conditions. If the average value and standard deviation observed for a particular level is 2.32 m and 0.01 m respectively, find the chances of getting an erroneous measurement:

[CO2]

[6]

- i. in between 2.3 m and 2.31 m.
- ii. in between 2.29 m and 2.33 m.
- iii. more than 2.35 m.
- iv. less than 2.30 m.

