Form A: Paper –Setting Blank

Ref No. –Ex/CE/T/125/2019(Old)

B. E. (CIVIL ENGG.) 1st YEAR 2nd SEMESTER EXAMINATION, 2019 (OLD)

(1st / 2nd Semester / ~~Repeat~~ / ~~Supplementary~~ / ~~Annual~~ / ~~Biannual~~)

SUBJECT: SURVEYING-I

(Name in full)

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

Full Marks: 100

(40 marks for this part)

Use a separate Answer-Script for each part

No. of Question	Part-I	Marks
	Answer Question-1 and any *two* from the rest	
Q.1)	**Fill in the blanks with appropriate word(s):**	8*1=8
a)	A representation is called a plan when the scale is	
b)	Geodetic Surveying is usually carried out over an area exceeding ..... sq. km.	
c)	An arrow has a standard length of .....cm.	
d)	Slope correction is always	
e)	Cross staff and optical square are used for setting out	
f)	The bearing observed with a prismatic compass is called ..... bearing.	
g)	The coordinates of any point with reference to a common origin are called	
h)	True bearing of a line is also called	
Q.2) a)	State the essential features of Geodetic Surveying.	4
b)	Discuss with the help of pertinent expression on the **'Slope Correction'** in connection with distance measurement.	5
c)	A plan was plotted to a scale of **1:2500**.The paper has shrunk over a period of time so that the line originally **15cm** long now measures only **14.83cm**. It is also mentioned that the data used in plotting was measured with a **30m** chain **13 cm** too long. If the area of the plotted plan now measures **97.62sq. cm**, find the true area of the land represented by the plot.	7

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No. of Question	Part-I	Marks
Q.3) a)	Discuss with the help of a neat sketch the following terms in the context of Chain Surveying: **i) Base Line ii) Check Line iii) Tie Line**	6
b)	Discuss with the help of a neat sketches the methods followed to measure **horizontal distance across a river.**	6
c)	Examine whether a triangle having sides **151m, 112m** and **253m** is **well-conditioned** or not.	4
Q.4) a)	State the **Bowditch Rule** of adjustment of closing error in a closed traverse. Explain the method of graphical adjustment of closing error with the help of a neat sketch.	2+6
b)	The following were the interior angles of a closed traverse ABCD: **A= 78°36′, B= 101°24′, C= 96°45′,** and **D= 83°15′** If the fore bearing of the line BC is **131°15′**, find the bearings of all the remaining sides, assuming the work done in a clock-wise direction.	8

B.E. CIVIL ENGINEERING FIRST YEAR SECOND SEMESTER (Old) - 2019

SURVEYING-I

(PART-II)

Time: Three Hours | Full Marks 100 (60 marks for this part)

No. of questions	(Answer any three of the following questions.)	Marks (3X20=60)
1 (a)	Define the following terms with the help of neat sketches if required in connection with 'Levelling': (i) Reduced Level (ii) Horizontal surface (iii) Height of instrument (iv) Back sight and Fore sight	[4]
(b)	Derive an expression for the combined effect of curvature and refraction in levelling.	[6]
(c)	A level is set up at a station A. The reading on the staff held at B which is at a distance 540m is 3.625m. The same staff when held at C, 360m away from A reads 2.376m. Calculate the true difference of level of B and C allowing for curvature and refraction.	[5]
(d)	Discuss different sources of error in levelling.	[5]
2 (a)	What do you understand by 'Equalizing back sight and fore sight'?	[2]
(b)	Write short notes on: (i) Reciprocal levelling (ii) Fly levelling	[5x2 = 10]
(c)	The following staff readings were taken with a level: 0.355, 0.485, 0.625, 1.755, 1.895, 2.350, 1.780, 0.345, 0.685, 1.230 and 2.150. The first reading was taken on a Bench Mark (B.M.) of R.L. 255.50. The instrument was shifted after fourth and seventh readings. Work out the RLs. of all stations using Rise and Fall method and also apply arithmetical check.	[8]
3 (a)	What do you understand by contour interval and on what factors does it depend?	[1+2]
(b)	Describe one direct method of contouring.	[5]
(c)	Show with neat sketches the characteristic feature of contour lines for the following: (i) Pond (iii) Ridge (iii) Valley (iv) Vertical cliff	[6]
(d)	Describe 'the method of intersection' in connection with plane table surveying.	[6]
4 (a)	What are the methods available to calculate areas from a plan?	[2]

B.E. CIVIL ENGINEERING FIRST YEAR SECOND SEMESTER (Old) - 2019

SURVEYING-I

(PART-II)

Time: Three Hours

Full Marks 100
(60 marks for this part)

No. of questions	(Answer any three of the following questions.)	Marks (3X20=60)
(b)	The following perpendicular offsets were taken at 20m intervals from a base line to an irregular boundary line: 5.9, 12.4, 16.5, 15.3, 18.4, 20.9, 24.2, 21.8 and 19.2 metres. Calculate the area enclosed between the base line, the irregular boundary line and the first and last offsets by (i) Trapezoidal rule (ii) Simpson's rule	[6]
(c)	Derive the expression for the area of a two-level section	[6]
(d)	A two-level section has the following data. Formation Width = 12m Side slopes = 1.5:1 Transverse slope = 6:1 Depth of cutting at 20m intervals at five sections: 2m, 2.25m, 2.85m, 3.2m and 3.55m. Find the volume by the prismoidal formula and trapezoidal formula.	[6]