Form A: Paper –Setting Blank

Ref No. –Ex/CE/T/213/2017(S)

B.CIVIL ENGG. 2nd YEAR 1st SEMESTER (SUPPLEMENTARY) EXAMINATION, 2017

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

SUBJECT: SURVEYING-I (OLD)

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

Full Marks: 100
(50 marks for each part)

Use a separate Answer-Script for each part

No. of Question	Part-I	Marks
	Answer Question-1 and any *three* from the rest	
Q.1)	**Fill in the blanks with appropriate word(s):**	**8*1=8**
a)	A representation is called a map when the scale is	
b)	Invar tape is made of an alloy of steel (64%) and	
c)	In revenue chain standard length of each link is	
d)	A perpendicular can be erected to a chain line at a point on it by ..... method.	
e)	True bearing of a line is also called	
f)	The bearing observed with a surveyor's compass is called ..... bearing.	
g)	The coordinates of any point with reference to the preceding point are called	
h)	..... method of plane table surveying involves drawing of ray from the preceding station to the station to be occupied by the instrument.	
Q.2) a)	Explain the fundamental principles to be observed while surveying an area.	**5**
b)	Discuss with the help of pertinent expression on the Slope Correction in connection with distance measurement.	**4**
c)	A plan was plotted to a scale of **1:2000**.The paper has shrunk over a period of time so that the line originally **15cm** long now measures only **14.79cm**. 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 **99.73sq. cm**, find the true area of the land represented by the plot.	**5**
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	**(3+2+2)**
b)	Discuss with the help of a neat sketches the methods followed to measure horizontal distance across a river.	**5**
c)	Examine whether a triangle having sides 153m, 122m and 243m is well-conditioned or not.	**2**

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B.CIVIL ENGG. 2nd YEAR 1st SEMESTER (SUPPLEMENTARY) EXAMINATION, 2017

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

SUBJECT: SURVEYING-I (OLD)

(Name in full)

Time: ~~Two hours~~/Three hours/~~Four hours~~/ ~~Six hours~~ Full Marks:
(50 marks for each p

No. of Question	Part-I	Mark
Q.4) a)	Differentiate between **"Whole Circle System"** and **"Quadrantal System"** of designating bearings.	4
b)	What do you mean by **"Relative Error of Closure"**? How do you detect the presence of local attraction in the field?	(2+2)
c)	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.	6
Q.5) a)	State the **major advantages** of Plane Table Surveying.	5
b)	State the **"Three Point Problem"** of establishing the position of instrument station. Explain with neat sketches the solution of the problem	2+7

Ref. No.EX/CE/T/213/2017 (OLD)(S)

B.CIVIL ENGG 2ND YEAR 1ST SEM. Supplementary EXAM. 2017

Subject: SURVEYING I (OLD) **Time: Three Hours** **Full Marks: 100 (50 for Each Part)**

PART - II

Use a Separate Answer-Script for Each Part
Answer any 3 (three) questions (Two Marks for Neatness)

Mark	1. (a)	With a neat diagram briefly explain the following terms in relation to 'Levelling': Level Surface, Horizontal Plane, Datum and Benchmark.	4
4	1. (b)	The following readings are taken for 8 stations from an old level book (readings in brackets indicate respective station no.): BS Readings: 3.125 (1), 1.620 (6); IS Readings: 2.320 (3), 3.625 (7); FS Readings: 2.655 (5), 3.205 (6); Rise: 1.325 (2); Fall: 0.055 (3), 2.165 (6); RL: 125.005 (2), 125.350 (4), 122.590 (8); Remarks: BM (1), TP (2), TP (5), TP (6), TBM (8). Reconstruct the page, enter the missing readings and apply usual checks.	12
	2. (a)	With the help of a neat diagram explain the errors due to 'Curvature' and 'Refraction' and write down the equations to express them.	3
6	2. (b)	Station P and Q are 1600m apart. A level was set up very near to P. The readings taken on P and Q were 0.785m and 2.735m, respectively. Find the true difference of elevation between P and Q applying the correction due to 'Curvature' and 'Refraction'.	7
	2. (c)	With neat diagrams wherever necessary, describe different characteristics of contours.	6
5	3. (a)	With neat diagrams deduce the expressions for calculating areas using regular interval offsets to a baseline using (a) Trapezoidal Rule and (b) Simpson's One-Third Rule.	6
2+7	3. (b)	A series of offsets were taken from a chain line to a curved boundary line at intervals of 15 meters in the following order: 0, 2.55, 3.70, 3.85, 5.65, 3.65, 4.95, 5.85m. Compute the area between the chain-line, the curved boundary and the end offsets by (a) Mid-ordinate Rule, (b) Average-ordinate Rule, (c) Trapezoidal Rule and (d) Simpson's One-Third Rule.	10
	4. (a)	With neat diagrams deduce the expressions for calculating cross-sectional areas for (a) Two- Level Section and (b) Side Hill Two-Level Section	8
	4. (b)	A railway embankment 350m long is 12m wide at the formation level and has the side slope 2:1. The ground levels (RL) at every 100m along the centre line is as follows (reading in brackets denotes distances): 194.8 (0), 196.2 (100), 197.5 (200), 197.2 (300), 198.3 (400). The formation level at zero chainage is 196.00 and the embankment has a rising gradient of 1 in 100. The ground is level across the centre line. Calculate the volume of earthwork using 'Trapezoidal Rule' and 'Prismoidal Rule'.	8