R13

II B. Tech I Semester Supplementary Examinations, June - 2015
SURVEYING
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What are the different sources of errors in chain surveying?	4
	b)	Distinguish between closed traverse and open traverse.	4
	c)	What are the different types of leveling staff? State merits and demerits of each.	4
	d)	Write the principle of theodolite.	3
	e)	Write about geodetic surveying	3
	f)	Write about Trapezoidal method	4

PART -B

2	a)	Differentiate between prismatic compass and surveyors compass	8
	b)	What are the different tape corrections and how are they applied?	8
3	a)	The following bearings are taken on a closed compass traverse.	12

Line	F.B	B.B
AB	S $37^0 30$' E	N $37^0 30$' W
BC	S $43^0 15$' W	N $44^0 15$' E
CD	N $73^0 00$' W	S $72^0 15$' E
DE	N $12^0 45$' E	S $13^0 15$' W
EA	N $60^0 00$' E	S $59^0 00$' W

Compute the interior angles and correct them for observational errors.
Assuming the observed bearing of the line AB to be correct, adjust the bearing of the remaining sides.

	b)	Write about EDM.	4
4	a)	Write the temporary adjustments of a theodolite	8
	b)	Find the horizontal and vertical distances by tangential method when both angles are angles of elevation.	8
5	a)	Write the steps of setting of a simple curve by Rankine's method.	12
	b)	Write about G.P.S	4

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6 The following staff readings were observed successively with a level the 16
instrument being moved after third and eighth readings :2.248,1.616,0.966,
2.060,2.464,1.362,0.602,1.982,1,044,2.684 meters. Enter the above readings in
a page of a level book and calculate the R.L of points if the first reading was
taken with a staff held on a benchmark of 332.384 m.

7 a) A railway embankment is 10m wide with side slopes $1\frac{1}{2}$ to 1 .Assuming the 10
ground to be level in a direction transverse to the centre line ,calculate the
volume contained in a length of 120m ,the centre heights at 20m intervals
being in meters 2.2,3.7,3.8,4.0,3.8,2.8,2.5

 b) How do you determine the capacity of reservoir? 6

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PART –A

1	a)	List the accessories of plane table.	3
	b)	Define latitude and departure.	4
	c)	Define contour interval and contour gradient.	4
	d)	Write the instrumental errors in stadia surveying.	4
	e)	Write in detail about GPS.	3
	f)	What is a prismoid? Derive prismoidal formula	4

PART -B

2	a)	What are the permanent adjustments of surveyors compass?	8
	b)	Write in detail about reciprocal ranging.	8

3	a)	Explain how do you measure horizontal angle by reiteration method using a theodolite.	8
	b)	Find the difference in elevation between the instrument station and the object if the base of the object is inaccessible.	8

4 a) The following bearings are taken on a closed compass traverse. 8

Line	F.B	B.B
AB	S $47^0 30'$ E	N $47^0 30'$ W
BC	S $53^0 15'$ W	N $54^0 15'$ E
CD	N $63^0 00'$ W	S $62^0 15'$ E
DE	N $12^0 45'$ E	S $13^0 15'$ W
EA	N $70^0 00'$ E	S $69^0 00'$ W

Compute the interior angles and correct them for observational errors.
Assuming the observed bearing of the line AB to be correct, adjust the bearing of the remaining sides.

b) Write about traverse adjustments. 8

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5   a)   Write the difference between simple curves, compound curves and transition   12
       curves.

    b)   Write short notes on geodetic surveying.   4

6   The following staff readings were taken with a level which was shifted after   16
      $4^{th}, 7^{th}$ and 10th readings:2.235,100.5,2.865,0.86,1.38, 0.64,2.64,1.55, 1.92,
      2.15,1.37 and 2.46.
      Assuming the R.L of starting point as 200.00m, enter the readings in the form
      of a level book page and determine the rise and fall at all points.

7   a)   A railway embankment is 12m wide with side slopes $1\frac{1}{2}$ to 1 .Assuming the   10
       ground to be level in a direction transverse to the centre line ,calculate the
       volume contained in a length of 140m ,the centre heights at 20m intervals
       being in meters 2.4,3.6,3.4,3.0,4.8,2.8,3.5

    b)   How do you determine the earth work for a borrow pit?   6

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PART –A

1   a) Convert the following W.C.B into Q.B (i) 24^0 30' (ii) 327^0 24'   2

    b) Distinguish between chain surveying and traverse surveying.   4

    c) Distinguish between horizontal plane and level surface.   4

    d) Define tachometry and write briefly about stadia system   5

    e) Write about Total station   4

    f) Write about mid-ordinate rule   3

PART -B

2   a) Write about different types errors in chaining   8

    b) Write the advantages and disadvantages of plane table surveying.   8

3   a) What are the checks in open traverse and closed traverse?   6

    b) At

Line	F.B	B.B
AB	66^0-20'	246^0-20'
BC	139^0-30'	318^0-50'
CD	189^0-40'	11^0-20'
DA	300^0- 30'	119^0-30'

what stations do you suspect local attraction? Find the correct bearings of lines
and also compute the included angles

4   a) Explain the parts of the theodolite.   6

    b) Find the difference in elevation between the instrument station and the object if   10
       the base of the object is accessible.

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5 a) Write the steps of setting of a simple curve by Rankine's method.   12

    b) Write about G.P.S   4

6   Describe the height of instrument and rise and fall methods of computing the levels .Discuss the merits and demerits of each.   16

7   A series of offsets were taken from a chain line to a curved boundary line at intervals of10m in the following order   16
            0, 2.65,3.80,3.75,4.65,3.60,4.95,5.85 m
Compute the area between the chain line, the curved boundary and the end offsets by
(i)Simpson's rule (ii) Trapezoidal rule (ii) Average ordinate rule

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PART –A

1 a) Convert the following Q.B into W.C.B (i) $N14^0 30'$ E (ii) $S7^0 24'W$ 2

   b) What is a error of closure?   3

   c) Distinguish between line of sight and line of collimation.   4

   d) Mention the temporary adjustment of a theodolite   5

   e) Write about simple curves and compound curves   4

   f) How is the area computed by sub-division into triangles?   4

PART -B

2 a) Define the terms True bearing, magnetic bearing, back bearing and magnetic   8
       declination.
   b) Write the resection method of plane table surveying.   8

3 a) Define the terms (i) True and magnetic bearing (ii) Back bearings (iii) Magnetic   8
       declination (iv) Local attraction
   b) Distinguish between closed traverse and open traverse   8

4 a) What are the temporary adjustments of a leveling   8

   b) What are the indirect methods of locating a contour? Write about any one method.   8

5 a) Explain how you would measure, the vertical angle with a theodolite   12

   b) Two horizontal distances of 40m and 80m were accurately measured, and the   4
       intercepts on the staff between the outer stadia wires were 0.626 and 0.926
       respectively. Calculate the tachometric constants

6 a) Describe the method of setting out a simple circular curve with help of a chain and 16
       tape only.

7   The following offsets were taken from a chain line to a hedge: 16

Distance in m	0	20	40	60	80	120	160	200	240	270
Offsets in m	34.2	26.0	14	8	10	14	15	20	22	26

   Calculate the area enclosed between the chain line, the hedge and the end offsets
   by (i)Simpson's rule (ii) Trapezoidal rule

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