

Code No: RT21015

R13
SET - 1
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**

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° 30' E	N 37° 30' W
BC	S 43° 15' W	N 44° 15' E
CD	N 73° 00' W	S 72° 15' E
DE	N 12° 45' E	S 13° 15' W
EA	N 60° 00' E	S 59° 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 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. 16
- 7 a) A railway embankment is 10m wide with side slopes $1\frac{1}{2}$ to 1 .Assuming the 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 10
- b) How do you determine the capacity of reservoir? 6

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SET - 2

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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° 30' E	N 47° 30' W
BC	S 53° 15' W	N 54° 15' E
CD	N 63° 00' W	S 62° 15' E
DE	N 12° 45' E	S 13° 15' W
EA	N 70° 00' E	S 69° 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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R13**SET - 2**

- 5 a) Write the difference between simple curves, compound curves and transition curves. 12
- b) Write short notes on geodetic surveying. 4
- 6 The following staff readings were taken with a level which was shifted after 4th, 7th 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. 16
- 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 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 10
- b) How do you determine the earth work for a borrow pit? 6

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SET - 3
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 2. Answer **ALL** the question in **Part-A**

 3. Answer any **THREE** Questions from **Part-B**

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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 the base of the object is accessible. 10

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**R13****SET - 3**

- 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 of 10m 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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 3. Answer any **THREE** Questions from **Part-B**

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PART -A

- 1 a) Convert the following Q.B into W.C.B (i) $N14^{\circ} 30' E$ (ii) $S7^{\circ} 24' W$ 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 declination. 8
 - 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 declination (iv) Local attraction 8
 - 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 intercepts on the staff between the outer stadia wires were 0.626 and 0.926 respectively. Calculate the tachometric constants 4
 - 6 a) Describe the method of setting out a simple circular curve with help of a chain and tape only. 16
 - 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