

Code No: R21015/R10

Set No. 1
II B.Tech I Semester Regular Examinations, March 2014
SURVEYING
(Comm to CE,PE)
Time: 3 hours
Max Marks: 75
Answer any FIVE Questions
All Questions carry equal marks

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1. (a) a) Explain clearly the points of difference between the prismatic compass and Surveyor's compass.
- (b) What are the sources of errors in compass Surveying and what precautions are to be taken to eliminate them. [8+7]

2. (a) Explain the different methods of plotting a compass traverse.
- (b) The following are the bearings of a closed traverse. Find out which of the stations are affected by local attraction. Tabulate the corrected bearings of lines. [8+7]

<u>Line</u>	<u>F.B</u>	<u>B.B</u>
AB	N50°30'W	S47°30'E
BC	N54°00'E	S53°00'W
CD	S3°30'E	N4°00'W
DE	S41°30'E	N41°30'W
EA	S79°30'W	N78°00'E

3. (a) Describe the test for the adjustments of level tube giving neat sketches.
- (b) Give the desired relation, object and necessity of the adjustment of level tube [9+6]
4. The following observations were made with a planimeter placing the anchor point outside the fig. in both cases with the same setting of tracing arm [15]

	Area	Initial reading	Final reading	N
(a)	Known area of 600 sq cm	2.326	8.286	0
(b)	Unknown area	8.286	5.220	+1

- (a) Calculate the multiplier constant and
- (b) the unknown area.
5. What are the different errors in Theodolite work? How are they eliminated? [15]
6. (a) What is tacheometry? What are different systems of tacheometric measurements?
- (b) A tacheometer was set up at an intermediate point on a line AB and the following observations were made on a vertically held staff:

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Staff at	Vertical angle	Central hair reading (m)	Staff interval (m)
A	+9°45'	1.910	2.300
B	+5°30'	1.750	2.105

The instrument is fitted with an analytic lens and the multiplying constant is 100. Determine the length AB and R.L. of B if the R.L. of A is 150.50m. [6+9]

7. (a) What are the elements of a simple circular curve. Give their relationships.
(b) Two roads meet an angle of 127°30'. Calculate the necessary data for setting out a curve of 15 chains radius to connect two straight portions of the road if it is intended to set out the curve by chain and offsets only. Take length of chain as 30m [8+7]
8. (a) How the Geographic Information System is different from traditional cartography?
(b) What is the difference between Raster Data & Vector Data in the context of GIS? How do you convert raster data into vector data? [7+8]

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Set No. 2**II B.Tech I Semester Regular Examinations, March 2014****SURVEYING****(Comm to CE,PE)****Time: 3 hours****Max Marks: 75****Answer any FIVE Questions
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1. (a) List out the different accessories of plane table Surveying. Also explain the purpose for which they are used.
(b) State Three point problem in plane Table Surveying and describe how it is solved by Bessel's method. [8+7]

2. (a) Define Dip, Magnetic Declination, Azimuth, Isogonic Lines.
(b) The following bearings are observed with a compass. Where do you suspect local attraction. Find the correct bearings. [8+7]

<u>Line</u>	<u>F.B</u>	<u>B.B</u>
AB	74°00'	254°00'
BC	91°00'	271°00'
CD	166°00'	343°00'
DE	177°00'	0°00'
EA	189°00'	9°00'

3. (a) Describe the two peg test for the adjustment of line of collimation.
(b) What is the desired relation and necessity of the above adjustment? [9+6]
4. What is Simpsons rule? Derive an expression for it. How does it compare with other rules. [15]
5. A closed traverse was conducted round an obstacle and the following observations were made. Work out the missing quantities: [15]

Side	Length (m)	Azimuth
AB	500	98°30'
BC	620	30°20'
CD	468	298°30'
DE	?	230°0'
EA	?	150°10'

6. A tacheometer is set up on a bench mark of R.L. 60.00m. The horizontal axis of the instrument is 1.240m above the bench mark. The following observations were made with staff held vertically:

Staff station	Vertical angle	Stadia hair reading	Central hair reading
A	+3°30'	0.400 1.660	1.030
B	-8°20'	0.900 1.640	1.270
C	+9°50'	1.00 2.320	1.660

If the instrument constants k and c are 100 and 0.0m, respectively, determine the R.L. of the staff stations. [15]

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7. (a) What are the usual difficulties in ranging simple curves and how are they obviated.
- (b) Calculate the ordinates from a 150m long chord at 10m interval to set out a simple circular curve of 8° [8+7]
8. (a) What are the components of a GIS and give a brief account of them?
- (b) Give an account of sources of GIS Data.
- (c) What are the Spatial data models accounted in GIS and describe of each model? [7+4+4]

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Set No. 3
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1. (a) Draw a neat sketch of a prismatic compass and explain it in detail.
 (b) Explain bearing. What are different systems of designation of bearings. Explain. [8+7]
2. (a) Explain the procedure of chaining. How will you record the measurements of Chain Survey. Enumerate the points to be kept in view while booking the field notes.
 (b) A Survey line BAC crosses a river, A and C being on the near and opposite banks respectively. A perpendicular AD 40m long is set out at A. If the bearings of AD and DC are $38^{\circ} 45'$ and $278^{\circ} 45'$ respectively and the chainage at A is 862m. find the chainage at C. [8+7]
3. The following consecutive readings were taken on a continuously sloping ground at a common interval of 20m: .385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110, 4.485m. If the R.L of first point was 208.125. Calculate the R.L of the points by the rise and fall method. Also find the gradient of the line joining first and last points. [15]
4. The following observations were made with a planimeter placing the anchor point outside the fig. in both cases with the same setting of tracing arm [15]

	Area	Initial reading	Final reading	N
(a)	Known area of 600 sq cm	2.326	8.286	0
(b)	Unknown area	8.286	5.220	+1

 - (a) Calculate the multiplier constant and
 - (b) the unknown area.
5. Discuss various methods of traversing by fast needle. What are the merits and demerits of different methods? [15]
6. Two observations are taken upon a vertical staff by means of a Theodolite. For the first, the line of sight is directed to give a staff reading of 0.880m and an angle of elevation of $4^{\circ} 08'$. In the second case, the staff reading is 3.340m and the angle of elevation is $5^{\circ} 30'$. If the elevation of trunnion axis of the instrument is 195.60m, compute the R.L. of the staff station and its horizontal distance from the instrument. [15]
7. (a) Describe the method of setting out a simple circular curve by the method of deflection angles, using a chain and Theodolite.

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- (b) Calculate the ordinates from the long chord at 7.5m interval to set out a simple circular curve of 10° . The length of long chord is 100m. [8+7]
8. (a) How the Geographic Information System is different from traditional cartography?
- (b) What is the difference between Raster Data & Vector Data in the context of GIS? How do you convert raster data into vector data? [7+8]

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Set No. 4**II B.Tech I Semester Regular Examinations, March 2014****SURVEYING****(Comm to CE,PE)****Time: 3 hours****Max Marks: 75****Answer any FIVE Questions
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1. (a) Give a detailed classification of Surveys.
(b) A line 3.2 km long is measured with a steel tape which is 20m under no pull at 30°C. The tape in section is 1/8 cm wide and 1/20 cm thick. If one half of the line is measured at a temperature of 40°C and the other half at 50°C and the tape is attached to a pull of 200N, find the corrected total length of the line given the coefficient of expansion is 11.5×10^{-6} per degree C, weight of tape per Cubic cm of steel = 0.77504N, and $E = 2.1 \times 10^5 \text{ N/mm}^2$. [7+8]
2. (a) Explain compensating and cumulative errors in chain Surveying.
(b) What are the Survey stations. How will you select them.
(c) A Survey line CD intersects a high building. To prolong the line beyond this obstacle, a perpendicular DE, 200m long is set out at D. From E, two lines EF and EG are set out at angles of 45° and 60° with ED respectively. Determine the length of EF and EG in order that the points F and G may lie on the prolongation of CD, and also find the obstructed length DF. [6+4+5]
3. The following readings were taken with a dumpy level. If the R.L of station A = 560.500 m, find the H.I and the R.Ls of all other stations. Check your results. [15]

Section	B-S	I.S	F.S
A	0.865		
B	1.025		2.105
C		1.580	
D	2.230		1.865
E	2.355		2.825
F			1.760
4. With the help of neat sketches explain briefly the theory of “planimeter” covering zero circle, Multiplier constant and instrument constant. [15]
5. Differentiate between Bowditch’s rule and the transit rule for the adjustment of a traverse. Explain both the methods of adjustment. [15]
6. (a) What are the advantages of tacheometric surveying over other methods?
(b) Determine the distance between the instrument station P and the staff station Q from the following data:
R.L. of the instrument axis = 200.150 m
Vertical angle = -3°45'
Staff readings = 1.450; 0.900; 0.350 m

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Also determine the R.L of Q

Take $k=100$ and $C=0.0$

[6+9]

7. (a) What are the elements of a simple circular curve. Give their relationships.
(b) Two roads meet an angle of $127^{\circ}30'$. Calculate the necessary data for setting out a curve of 15 chains radius to connect two straight portions of the road if it is intended to set out the curve by chain and offsets only. Take length of chain as 30m [8+7]
8. (a) What are the components of a GIS and give a brief account of them?
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(c) What are the Spatial data models accounted in GIS and describe of each model? [7+4+4]
