

R16

Code No: 133BU

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, November/December - 2017

SURVEYING
(Common to CE, CEE)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1. a) What is the principle of surveying? Explain it in detail. [2]
- b) What is local attraction? How will you determine it in a closed traverse? [3]
- c) What do you understand by contour interval and on what factors does it depend? [2]
- d) How a horizontal surface is different from a level surface? [3]
- e) What are the different types of sources of errors in a Theodolite work? [2]
- f) What are the advantages of Trigonometric leveling over direct leveling? [3]
- g) What is meant by Degree of curve? Give relation with the radius of curve. [2]
- h) Explain the functions of the following curves: [3]
 - i) simple circular curve
 - ii) reverse curve.
- i) What are the various applications of GPS in Civil Engineering field? [2]
- j) What are the various types of EDM instruments? [3]

PART-B

(50 Marks)

2. a) Define surveying. Discuss briefly the classification of surveying based on: [5]
 - i) Purpose
 - ii) Instruments.
- b) Differentiate between plane surveying and geodetic surveying. [6+4]

OR

3. a) What is the limit of accuracy in compass surveying?
- b) Below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local attractions was suspected?

Line	F.B	B.B
PQ	124°30'	304°30'
QR	68°15'	246°0'
RS	310°30'	135°15'
SP	200°15'	17°45'

At what stations do you suspect local attraction? Find the corrected bearings of the lines and also calculate the included angles. [7+3]

4. a) The following staff readings were taken with a level. The instrument having been shifted after the 4th, 7th and 10th readings. The R.L of the starting point(B.M) is 100.00m. Enter the readings in the form of a level book page and reduce the level by the collimation method and apply the usual checks.
2.65, 3.74, 3.83, 5.27, 4.64, 0.38, 0.96, 1.64, 2.84, 3.48, 4.68 and 5.26.
- b) Distinguish between Line of collimation and line of sight. [7+3]

OR

3. a) How do you determine the capacity of a reservoir using contours.
 b) The following offsets were taken in meters from a chain line to a hedge

Distance	0	30	60	90	120	150	180
Offset	9.4	10.8	12.5	10.5	14.5	13.0	7.5

Compute the area included between the chain line, the hedge and end offset by the Simpson's rule. [3+7]

6. Determine the gradient from a point P to another point Q from the following observations made with a tacheometer fitted with an anallactic lens. The constant of the instrument was 100 and the staff was held vertical. [10]

Instrument station	Staff station	Bearing	Vertical angle	Staff readings (m)
R	P	130°	+10°32'	1.255, 1.810, 2.365
	Q	220°	+5°06'	1.300, 2.120, 2.940

(OR)

7. a) What are the different errors in theodolite work?
 b) What are the limits of precision in theodolite traversing? [5+5]

8. A tacheometer was setup at station A and the following readings were obtained on a vertically held staff:

Station	Staff station	Vertical angle	Hair readings	Remarks
A	B.M	-2°18'	3.225, 3.550, 3.875	R.L of B.M = 437.655m
	B	+8°36'	1.650, 2.515, 3.380	

Calculate the horizontal distance from A to B and the R.L of B, if the constants of the instruments were 100 and 0.4. [10]

(OR)

9. a) What are the different methods of designation of a curve?
 b) Draw a neat sketch of a circular curve and show its various elements thereon. [5+5]

10. a) Explain what are the latest advancements in total station techniques and their significance.

- b) What are the uses of an electronic Total station? [6+4]

(OR)

11. a) Explain various segments of GPS.
 b) Write down various applications of GPS. [5+5]