FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Printed Pages: 02 Subject Code: RCE 302
Paper Id: 100302 Roll No:

B TECH
(SEM-III) THEORY EXAMINATION 2018-19
SURVEYING

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all parts. Each part carries equal marks. **(2 x 7 = 14)**

a) How will you identify aridge line and a valley line in a contour map?
b) Define local attraction. How will you detect local attraction at a station?
c) What is the difference between accuracy and precision?
d) Define a well-conditioned triangle?
e) What are the principles of surveying? Explain each in brief.
f) What are the various types of meridians?
g) Explain under which conditions tacheometric surveying is advantageous.

SECTION B

2. Attempt any three questions. **(7 x 3 = 21)**

a) The tacheometer is set up at an intermediate point on a traverse line PQ and the following observations are made on a vertically held staff:

Staff station	Vertical angle	Staff intercept (m)	Axial hair readings (m)
P	$+8^0\,36'$	2.350	2.105
Q	$+6^0\,6'$	2.055	1.895

The instrument is fitted with an anallytical lens and the constant is 100. Compute the length of PQ and reduce level of Q. The reduce level of P is 321.50 m.

b) A 30 m long tape was standardized at 20° C and under a pull of 100 N. The tape was used to measure the distance AB when the temperature was 45 °C and the pull was 150 N. The tape was supported at the ends only. Find the corrections per tape length if the cross section of the tape was 4 mm^2, the unit weight of the tape material is 0.0786 N/cm^3, and the coefficient of thermal expansion of the tape material is 11.5 x 10^{-6} / °C. E = 2,000,000 kN/m^2.

c) The following data refer to a closed traverse ABCDE. Find the lengths of the side DE and EA.

Line	Length (m)	Bearing
AB	778.50	$77^0\,30'$
BC	649.00	$337^0\,30'$
CD	660.50	$284^0\,48'$
DE	?	$231^0\,06'$
EA	?	$135^0\,40'$

MANISH KUMAR JHA | 24-Dec-2018 ? 19 | 103.223.163.95
firstranker.com
www.FirstRanker.com
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

d) The following successive staff readings were taken with a level using 5 m leveling staff on a continuously sloping ground at an interval of 25 m:
0.405, 1.035, 1.930, 2.895, 3.805, 4.760, 0.715, 2.060, 3.160, 4.415
The reduce level of the first point is known to be 62.980 m. Workout the staff readings by height of instrument method and find the gradient of the line joining the first and the last points.

e) Two straight lines AC and CB intersect at C, at a chainage of 86.22 chains at a deflection angle of 62°. These lines are to be smoothly connected by a simple curveof radius 12 chains. Find the tangent length, length of the curve and the chainages of the starting and end points of the curve. Find also the length of the long chord.

SECTION C

3. Attempt any one part of the following: **7 x 1 = 7**
(a) Explain the process of repetition and reiteration in theodolite survey.
(b) Differentiate between prismatic and surveyors compass.

4. Attempt any one part of the following: **7 x 1 = 7**
(a) What is the principle of stadia method? Derive the distance and elevation formula when the staff is held vertically and is inclined to the line of sight.
(b) What do you understand by balancing the traverse? Describe any three methods of adjusting a traverse.

5. Attempt any one part of the following: **7 x 1 = 7**
(a) Explain the characteristics of contours. What are the various applications of a contour map?
(b) What are the curvature and refraction errors in leveling? An observer on the deck spots a light house which is 40 m above the sea level. The position of the observer's eye is 6.50 m above sea level. Determine the distance of the light house from the observer.

6. Attempt any one part of the following: **7 x 1 = 7**
(a) What are the various checks for a closed traverse? Explain the various methods of traversing.
(b) What do you mean by satellite station and reduction to center? Derive expression for reducing the angles measured at the satellite stations to center.

7. Attempt any one part of the following: **7 x 1 = 7**
(a). Explain the various types of circular curves. Derive the expression for setting out simple circular curve by offsets from the long chord.
(b). Explain the requirements of a transition curve. Derive the expression for an Ideal transition curve.

firstranker.com
www.FirstRanker.com
MANISH KUMAR JHA | 24-Dec-2019 09:19:15 | 106.223.163.95

FirstRanker.com
Firstranker's choice
www.FirstRanker.com