Reg. No. : | | | | | | | | | | |

Question Paper Code: 31016

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

Third Semester

Civil Engineering

01UCE306 – SURVEYING - I

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are arrows?
2. What do you meant by reciprocal ranging?
3. What is the difference between triangulation and traversing?
4. Name the methods of orienting plane table.
5. State the limitation of the prismoidal formula.
6. What is check leveling?
7. What is Gale's table?
8. What kind of error can be eliminated by taking face left and face right observations?
9. On what basis, a vertical curve is designed?
10. What is the principle of subtense method?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the methods of chaining while there are obstacles such as building or river. (9)

(ii) Describe the construction and working of an optical square with a neat sketch. (7)

Or

(b) (i) *P* and *Q* are two points 517 *m* apart on the same bank of a river. The bearings of a tree on the other bank observed from *P* and *Q* are *N* 33°40' *E* and *N* 43°20' *W* respectively. Find the width of river if the bearing of *PQ* is *N* 78 °*E*. (9)

(ii) A 20 *m* steel tape was standardized on flat ground at a temperature of 20°C under a pull of 15 *kg*. The tape was used in catenary at a temperature of 30°C under a pull of 10 *kg*. The cross sectional area of the tape is 22 mm^2 and its total weight is 400 *gm*. The young's modulus and coefficient of thermal expansion for steel are 21000 kg/mm^2 and 11 × 10 - 6 °C respectively. Find the correct distance. (7)

12. (a) The following are the bearings observed during traversing with a compass of an area where local attraction was suspected. Find the amount of local attraction at different stations, the correct bearings of the lines and the included angles. (16)

Line	AB	BC	CD	DE	EA
FB	59°00'	139°30'	215°15'	208°00'	318°30'
BB	239°00'	317°00'	36°30'	29°00'	138°45'

Or

(b) (i) List the various types of errors in plane table surveying and also list out the precautionary measures to overcome them. (10)

(ii) Discuss the advantages and disadvantages of plane table surveying. (6)

13. (a) The following consecutive readings were taken with a dumpy level and 4 *m* levelling staff on a continuously sloping ground at 30 *m* intervals.
0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530 and 2.250
R.L of the starting point was 80.750 *m*.

(i) Rule out a page of a level book and enter the above readings (3)
(ii) Determine the *RL* of various staff stations (10)
(iii) Estimate the average gradient of ground measured. (3)

Or

(b) (i) Discuss the effects of curvature and refraction in levelling and derive the expression for these corrections. (9)

(ii) Name the methods of contouring and explain the procedure of any one method. (7)

14. (a) Describe with the help of sketches about the characteristics of contour surveying. (16)

Or

(b) The following offsets were taken from a chain line to an irregular boundary line at an interval of 10 *m*:

0, 2.50, 3.50, 5.00, 4.60, 3.20, 0 *m*

Compute the area between the chain line, the irregular boundary line and the end offsets by

(i) The mid - ordinate rule (8)

(ii) The average - ordinate rule. (8)

15. (a) In an open traverse *ABCDE*, it is required to find length of *AE* and to fix the midpoint of *AE*. Following is the record of readings.

Line	Length(*m*)	Bearing
AB	130.5	*N* 20°30' *E*
BC	215.0	*N* 60°15' *E*
CD	155.5	*N* 30°30' *E*
DE	120.0	*N* 30°30' *E*

(i) Determine the length and bearing of *AE* (10)

(ii) Determine the length and bearing of line joining midpoint of *AE* and the station *C*. (6)

Or

(b) (i) Discuss the temporary adjustments of a transit theodolite. (9)

(ii) Describe the essential parts of a transit theodolite with neat sketch. (7)

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