C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 53106

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Third Semester

Civil Engineering

15UCE306 - SURVEYING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Give the designation and representative fraction for the scale: A line 135 meters long represented by 22.5 cm on plan. CO1- R

   (a) 6m to 1cm; 1/600 (b) 7m to 1m; 1/700

   (c) 6.5m to 1 cm; 1/650 (d) 7.5 m to 1 cm; 1/750

2. Contours of different elevations may cross each other only in case of _____ CO2- R

   (a) an overhanging cliff (b) a vertical cliff (c) a saddle (d) an inclined plane

3. In leveling, the correction for combined curvature and refraction (in meters) is equal to CO3-R

   (a) $0.00785D^2$ (b) $0.0785\ D^2$ (c) $0.0112\ D^2$ (d) $0.0673\ D^2$

4. The multiplying constant for the tacheometer is, generally, kept as _____ CO4-R

   (a) 20 (b) 40 (c) 60 (d) 100

5. The radius of a simple circular curve is 300 m and length of its specified chord is 30 m. The degree of the curve is _____ CO5- R

   (a) 5.73° (b) 5.37° (c) 3.57° (d) 3.75°.

PART – B (5 x 3= 15 Marks)

6. What is local attraction? CO1- R

7. Reduced level of Bench Mark A - 50.000m CO2- App
   Reading on staff held at A - 2.435m
   Reading on staff held at station point B - 1.650m
   Calculate:
   (a) Height of collimation.
   (b) Reduced level of station point B.
   (c) Rise/fall of B with respect to A.

8. Summarize the temporary and permanent adjustments of theodolite. CO3- U

9. Define the term anallatic lens. What is the use of an anallatic lens? CO4- R

10. Differentiate between point of curvature and point of tangency. CO5- U

PART – C (5 x 16= 80 Marks)

11. (a) Explain in detail about the classification of survey. CO1- U (16)

Or

(b) A distance of 2000 m was measured by a 30 m chain. After the measurement, the chain was found to be 10 cm longer. It was found to be 15 cm longer after another 500 m was measured. If the length of the chain was correct before the measurement, determine the exact length of the whole measurement. CO1- App (16)

12. (a) Given the following data in Table, determine the R.L.s of the points 1 to 6. If an uniform upward gradient of 1 in 20 starts at point 1, having elevation of 150 m, calculate the height of embankment and depth of cutting at all the points from 1 to 6. CO2 -App (16)

Station	Chainage (m)	B.S	I.S	F.S	Remarks
B.M	-	10.11	-	-	153.46 m
1	0	-	3.25	-	-
2	100	-	1.10	-	-
3	200	6.89	-	0.35	-
4	300	-	3.14	-	-
5	400	11.87	-	3.65	-
6	500	-	-	5.98	-

Or

(b) What do you meant by contouring? Describe its characteristics with neat sketch with its uses. CO2- U (16)

13. (a) List the various sources of errors in theodolite and explain them in detail. CO3-U (16)

Or

(b) The following data were collected while running a closed traverse ABCDA. Calculate the missing data. CO3- App (16)

Line	Length (m)	Bearing
AB	330	$181^0 25'$
BC	?	$89^0 50'$
CD	411	$355^0 00'$
DA	827	?

14. (a) Determine the gradient from a point A to a point B from the following observations made with a tacheometer fitted with an anallatic lens. The constant of the instrument was 100 m and the staff was held vertically. CO4 U (16)

Instrument station	Staff station	Bearing	Vertical angle	Staff readings
P	A	134°	+ 10° 32'	1.360, 1.915, 2.470
	B	224°	+ 05° 06'	1.065, 1.885, 2.705

Or

(b) A staff held vertically at a distance of 50 m and 100 m from a transit fitted with stadia hairs, the staff intervals with the telescope normal were 0.494 m and 0.994 m respectively. The instrument was then set up near a B.M of R.L 1500 m and the readings on the staff held on the B.M was 1.495 m. The staff readings at the station A with staff held vertically and the line of sight horizontal were 1.00, 1.85, and 2.70. What is the horizontal distance between the B.M and A and R.L of A. CO4- App (16)

15. (a) A simple circular curve has a radius of 300m and a long chord of length 120 m. Calculate offsets to the curve from the long chord at 10 m intervals. CO5- App (16)

Or

(b) A circular curve has 300 m radius and 60° deflection angle. What is its degree by (a) arc definition and (b) chord definition of standard length 30 m. CO5- App (16)

Also calculate

(i) length of curve

(ii) tangent length

(iii) length of long chord

(iv) mid-ordinate

(v) apex distance