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Question Paper Code: 53106

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. Which of the below is not a classification of surveying? CO1- R
(a) Marine (b) Basement (c) Astronomical (d) Land
2. How many methods of contouring are present? CO2- R
(a) 5 (b) 3 (c) 2 (d) 4
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. During chaining along a straight line, the leader of the party has 4 arrows in his hand while the follower has 6. Distance of the follower from the starting point is CO4-R
(a) 4 chains (b) 6 chains (c) 120 m (d) 180m
5. The degree of the curve is the angle subtended by a chord of length CO5- R
(a) 15.12m (b) 20.32m (c) 25.42m (d) 30.48m

PART – B (5 x 3= 15 Marks)

6. List the various accessories used in chain surveying. CO1- R
7. What is meant by change point in levelling? CO2- App
8. Recall face left and face right observations in Theodolite traversing? CO3- U

9. Pen down the uses of stadia method. CO4- R
10. What is a reverse curve in surveying? CO5- U

PART – C (5 x 16= 80 Marks)

11. (a) (i) Differentiate clearly between plane and geodetic surveying CO1- U (8)
(ii) What are the instruments used in chain surveying? How is chain survey executed in the field? CO1- U (8)

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) The following notes refer to reciprocal levels taken with level: CO2 -App (16)

Inst.at	Staff reading on		Remarks
	P	Q	
P	1.824	2.748	Distance between P and Q = 1010 m
O	0.928	1.606	

Find a) true R.L. of Q, b) the combined correction for curvature and refraction, and c) the angular error in the collimation adjustment of the instrument.

What will be the difference in answers of (a) and (c) if observed staff readings were 2.748 on P and 1.824 on Q, the instrument being at P; and 1.606 on P and 0.928 on Q, the instrument being at Q.

Or

- (b) What do you mean by contouring? Describe its characteristics with neat sketch with its uses. CO2- U (16)
13. (a) Explain in detail about the essentials of the transit theodolite and draw a neat sketch. CO3-U (16)

Or

- (b) Discuss in detail about the sources of error in theodolite work. CO3- App (16)

14. (a) A tacheometer was set up at a station A and the readings on a vertically held staff at B were 2.255, 2.605 and 2.955, the line of sight being at an inclination of $+8^{\circ} 24'$. Another observation on the vertically held staff at B.M. gave the readings 1.640, 1.920 and 2.200, the inclination of the line of sight being $+1^{\circ} 6'$. Calculate the horizontal distance between A and B, and the elevation of B if the R.L. of B.M. is 418.685 meters. The constants of the instruments were 100 and 0.3. CO4 U (16)

Or

- (b) An observation with a percentage theodolite gave staff readings of 1.052 and 2.502 for angles of elevation of 5% and 6% respectively. On sighting the graduation corresponding to the height of the instrument axis above the ground, the vertical angle was 5.25%. Compute the horizontal distance and the elevation of the staff station if the instrument station has an elevation of 942.552 meters. CO4- App (16)
15. (a) Explain in detail about setting out of simple circular curve using two theodolite method. CO5- App (16)

Or

- (b) Two parallel railway lines are to be connected by a reverse curve, each section having the same radius. If the lines are 12 meters apart and the maximum distance between tangent points measured parallel to the straights is 48 meters, find the maximum allowable radius. If however, both the radii are to be different, calculate radius of the second branch if that of the first branch is 60 meters. Also, calculate the lengths of both the branches. CO5- App (16)

