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

Question Paper Code: 51136

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. As per Indian standards the length of 1 link in 30 *meters* chain should be

   (a) 20*cm* (b) 30*cm* (c) 40*cm* (d) 10*cm*

2. _____ is the one which is normal to the plumb-line at all points.

   (a) Horizontal line (b) Horizontal plane (c) Level surface (d) Datum

3. A theodolite combined with a camera is known as

   (a) wye theodolite (b) transit theodolite
   (c) photo theodolite (d) micrometer

4. The stadia rods are used for longer sights of

   (a) 50 *m* or more (b) 100 *m* or more
   (c) 75 *m* or more (d) 300 *m* or more

5. The shift of circular curve is calculated using

   (a) $R^2 / 24L$ (b) $L / 24R$ (c) $L^2 / 24$ (d) $L^2 / 24R$

PART - B (5 x 3 = 15 Marks)

6. What do you mean by local attraction?

7. Name the types of levels.

8. What do you mean by transiting?

9. What are the uses of tacheometry?

10. A railway curve of 1350 *m* radius is to be set out to connect two tangents. The design speed is 110 *kmph*. Find the suitable length of transition and the shift of the circular curve.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) What is meant by chain surveying? Explain the principle on which it is based. (8)

(ii) In chaining past a pond, stations *P* and *Q* were selected on opposite sides of the pond. A line *PA* 200*m* long, was set out to the left of *PQ* and a line *PB* was set out on the right such that *A, Q* and *B* are collinear. The length of *PB* was 250*m*. Also *AQ* and *QB* were measured to be 125*m* and 150*m* respectively, Determine *PQ*. (8)

Or

(b) The following are the fore and back bearings of lines observed in an unclosed traverse *ABCDE*.

Line	Fore bearing	Back bearing
AB	65^0 30’	245^0 00’
BC	106^0 00’	286^0 00’
CD	220^0 45’	40^0 30’
DE	210^0 20’	30^0 00’

Locate the position of local attraction and find the corrected bearings. (16)

12. (a) The following consecutive readings were taken with a dumpy level, the instrument having been shifted after the second, fourth and seventh readings: 0.900, 1.250, 2.400, 1.375, 2.945, 3.125, 3.725, 0.100, 1.975, 2.025 and 1.775. The first reading was taken with a staff held on a bench mark of elevation 100.00. Enter the readings in a level-book form and reduce the levels by the rise and fall method. Apply the usual checks. (16)

Or

(b) Explain characteristics of contour and uses of contour map. (16)

13. (a) (i) Explain the procedure carryout temporary adjustments of theodolite. (8)

(ii) Write a short note on errors in theodolite surveying. (8)

Or

(b) Form a closed traverse run with a theodolite, the following data were available:

Line	Length (*m*)	whole – circle bearing
PQ	1200	115^0
QR	?	?
RS	1050	310^0
SP	550	60^0

Compute the length and reduced bearing of *QR*. (16)

14. (a) (i) What are the constants of a tacheometer and how are they determined? (10)

(ii) What are the uses of tacheometry? (6)

Or

(b) Determine the gradient from a point *P* to a point *Q* from the following observations. The constant of the instrument was 100 and the staff was held vertically. (16)

Inst. Stn.at	Staff point	Bearing	Vertical angle	Staff readings		
				Bottom	Centre	Top
A	*P*	140^0	$+ 10^0 45'$	1.35	1.92	2.49
A	*Q*	230^0	$+ 5^0 30'$	1.08	1.90	2.72

15. (a) Draw a simple circular curve and mark the salient points. Explain the elements of a circular curve. (16)

Or

(b) A railway curve is to have a radius of 600*m*. The chainage of intersection is (108 + 09) and the deflection angle is 36°. Determine the tangent length, apex distance, length of curve and the chainages of the beginning, vertex and end of the curve. (16)

———————