R13

B.Tech II Year II semester (R13) Regular May/June 2015 Examinations
SURVEYING - II
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

1   Answer the following: (10 x 02 = 20 Marks)
   (a)   What is trigonometric leveling?
   (b)   What is satellite station and reduction to center?
   (c)   What is meant by phase of a signal?
   (d)   What is the effect of curvature of earth?
   (e)   Why analytic lens is used in a tachometer?
   (f)   What are the advantages of tacheometric surveying?
   (g)   Enlist the types of signals used in triangulation.
   (h)   What are the different types of sensors used in remote sensing?
   (i)   What is reverse curve?
   (j)   Define degree of curve.

PART – B
(Answer all five units, 5 x 10 = 50 Marks)

UNIT - I

2   A flagstaff of height 1.2 m on the top of a hill was sighted from two station A & B at very different levels, station A & B being in line with the top of the flagstaff. The angle of elevation from A to the top of the flagstaff was $38^028'$ and that from B to the top of the flagstaff was $26^015'$. The angle of elevation from B to a vane 1.5 m above the foot of the staff held at A was $11^012'$. The heights of instrument at A & B were 1.56 m & 1.494 m respectively. The horizontal distance between A and B was 126 m and the R.L of B was 39.025 m. Find the R.L of the top of the hill and the horizontal distance from B to the flagstaff.

OR

3   An instrument was set up at P and the angle of elevation to a vane 4 m above the foot of the staff held at Q was $9^030'$. The horizontal distance between 'p' and 'Q' was measured to be 2 km. Determine the RL of the staff station 'Q' given that the back sight reading taken on a bench mark of R.L 50.217 m was 0.880 m. Apply necessary corrections.

UNIT - II

4   (a)   Explain the basis system of tacheometric measurements with neat sketch.
     (b)   In tacheometer survey made with an instrument whose constant are 100 and 0.5 the staff was inclined so as to be normal to the line of sight for each reading. Two sets of reading were as given below. Calculate the gradient between the staff stations P and Q athe R.L of station R is 41.800 m.

Instrument station	Height of instrument axis	Staff station	Bearing	Vertical angle	Stadia reading
		P	55	$+ 4^030'$	1.0, 1.417, 1.833
R	1.6				
		Q	135	-4^0	1.0, 1.657, 2.313

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OR

5 A tacheometer is set up at an intermediate point on a traverse course PQ and following observations are made on a vertically held staff.

Staff station	Vertical angle	Staff intercept	Axial hair reading
P	+8^{0}30'	2.35	2.105
Q	6^{0}30'	2.055	1.893

The instruments are fitted with an analytic lens with multiplying constant of 100. Compare the length of PQ and R.L of Q if that of P bearing is 321.5.

UNIT - III

6 (a) What is meant by triangulation? Describe classification of triangulation.
   (b) Define the terms: 1. True error   II. Residual error.   III. Most probable error.

OR

7 (a) The angle of triangle ABC were recorded as follows:
      A = 77^{0}14'20'' weight 4
      B = 49^{0}40'35;; weight 3
      C = 53^{0}04'52'' weight 2
      Give the corrected value of the angles.
   (b) Write a short note on: I. Control stations.   II. Vertical and horizontal control.

UNIT - IV

8 (a) Two straights AB and BC meet in an inaccessible point B and are to be connected by a simple curve of 600 m radius. Two pints P and Q were selected on AB and BC respectively and the following data were obtained angle APQ = 150^0, angle CQP = 160^0, PQ = 150.0m. Calculate the salient elements of the simple circular curve. Considering the chainage of point P to be 1000m.

   (b) Tabulate the necessary data to set out a right handed simple circular curve in the field having a radius of 250 m connecting two straights which intersect at chainage 1250 m at an angle 150^0 bY RANKINES method. Take peg interval of 20 m and least count of the instrument by 20^0.

OR

9 (a) Two tangents AB and BC intersect at B. Another line DE intersects AB and BC at D and E such that angle ADE = 150^0 and angle DEC = 140^0. The radius of the first curve is 200 m and that of the second is 300 m. Calculate all the data necessary for setting out a compound curve if the chainages of B is 1050 m.
   (b) A railway curve is to be tangential to each of the following lines:

Lines	W.C.B	Length (m)
AB	0^0	-
BC	90^0	220
CD	140^0	-

   Determine the salient parameters of the simple circular curve.

UNIT - V

10 (a) Write a brief note on electromagnetic distance measurement.
    (b) List the application of remote sensing in civil engineering.

OR

11 (a) What are the components of GIS?
    (b) Explain with a neat sketch interaction of electromagnetic radiation with earth's atmosphere.
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