This question paper contains 3 printed pages.

3314 *Your Roll No.* .....

B.Tech. (C) / II **J**

Paper ECE–203

SURVEYING

Time : 3 hours *Maximum Marks* : 70

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer any five questions.
All questions carry equal marks.
Assume missing data, if any.

1. (*a*) Derive expressions for the horizontal distance D and the vertical intercept V when the staff is (*i*) vertical, (*ii*) normal. 7

   (*b*) Differentiate between the fixed-hair method and the movable-hair method. Discuss the advantages and disadvantages of each method. 7

2. (*a*) A tacheometer is set up at an intermediate point on a traverse course PQ and the following observations are made on a vertically held staff:

Staff Station	*Vertical Angle*	*Staff Intercept*	*Axial Hair Reading*
P	+9° 30′	2·250	2·105
Q	+ 6°00′	2·055	1·875

P. T. O.

The instrument is fitted with an anallactic lens and the multiplying constant is 100. Compute the length PQ and the reduced level of Q. R.L of P=350·50 m. 7

(*b*) What are different methods of designation of a curve? Derive a relationship between the radius and the degree of curve. 7

3. (*a*) Explain the procedure for setting out a circular curve with a tape and a theodolite. Also derive the expression for the same. Discuss the advantages and disadvantages of Rankine's method. 8

(*b*) Two tangents intersect at the chainage of 1190·0 m, the deflection angle being 36°. Calculate all the data necessary for setting out a curve with a radius of 300 m by deflection angle method. The peg interval is 30 m. 6

4. (*a*) What are different types of arrangements used in triangulation? What are their relative advantages and disadvantages? What is grid iron system? 8

(*b*) Discuss various methods for the measurement of the base line. 6

5. Explain the following terms:

(*i*) Standard deviation

(*ii*) Residual

(*iii*) True error

(*iv*) Most probable error

(*v*) Most probable value

(*vi*) Variance. 14

6. (*a*) Describe the methods of setting out of a building. 6

(*b*) Describe the procedure of setting out of pipelines and sewers. 8

7. (*a*) Write short notes on:

(*i*) Aerial photograph

(*ii*) Parallax

(*iii*) Mosaic

(*iv*) Aerial maps. 8

(*b*) The distance from the principal point to an image on a photograph is 7·50 cm and the elevation of the object above the datum (sea level) is 350 m. What is the relief displacement of the point if the datum scale is 1/8000 and the focal length of the camera is 250 cm? 6