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Printed Pages : 3

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BT-3 / D-17

SURVEYING-I

Paper–CE–207E

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt **five** questions in all, selecting at least **one** question from each part.*

Part–I

1. (a) What factors should be considered in deciding the stations of a chain survey? 10

(b) Explain how will you continue chaining past the following obstacles.

(i) a pond (ii) a river (iii) a hill
(iv) a tall building (v) a railway line 10

2. (a) The following bearings were observed while traversing with a compass. 10

Line	F.B	B.B	Line	F.B	B.B
AB	45°45'	226°10'	CD	29°45'	209°10'
BC	96°55'	277°5'	DE	324°48'	144°48'

Mention which stations were affected by local attraction and determine the corrected bearings.

(b) A Survey line BAC crosses a river A and C being on the near and distant banks. Standing at I, a point 50 metres measured perpendicularly to AB from A, the bearings of C and B are 320° and 230°, AB being 25 metres. Find the width of the river. 10

[Turn over

Part–II

3. (a) The following staff readings were observed successively with a level, the instrument having been moved often the third, sixth and eight readings: 10

2.228; 1.606; 0.988; 2.090; 2.864; 1.262; 0.602; 1.982; 1.044; 2.684 metres. Enter the above readings in a page of a level book and calculate the R.L of points if the first reading was taken with a staff held on a bench mark of 432.384 m.

(b) What is two - point problem? How is it solved? 10

4. (a) Discuss the relative merits and applications of the following methods: 10

(i) Radiation, (ii) Intersection (iii) Resection

(b) What are different sources of errors in levelling? How are they eliminated? 10

Part–III

5. (a) Derive suitable equations for distance calculation using tangential method of tacheometry. Discuss various cases. 10

(b) Derive an expression for the horizontal distance of a vertical staff from a tacheometer, if the line of sight is horizontal. 10

6. (a) Explain various methods of adjusting the traverse in brief. Provide required equation and diagram. 10

(b) Discuss briefly various systems of tacheometry. 10

Part–IV

7. (a) What are the common difficulties in setting out simple curves? Describe briefly the methods employed in overcoming them. 10

   (b) The chainage of the intersection of two straights having the deflection angle of 50° is 1680.50 m. If the radius of the curve is 450m, calculate the following:

   (i) Tangent distance

   (ii) Length of the curve

   (iii) Changes of P.C. and P.T.

   (iv) Length of the chord

   (v) Degree of curve

   (vi) Apex distance and

   (vii) Mid-ordinate

8. (a) What are the methods of determining the length of a transition curve? Explain each in brief. 10

   (b) Describe the method of setting out a compound curve in the field. 10