1078
B.E. (Civil Engineering)
Third Semester
CIV-301: Surveying

Time allowed: 3 Hours   Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part. Assume missing data suitably, if any.*

x-x-x

1. (a) Differentiate between Prismatic and Surveyor's compass.

    (b) What is a staff? What are the different types of staff available?

    (c) Give a list of direct and indirect methods of contouring.

    (d) How are temporary adjustments of a theodolite done?

    (e) Differentiate between latitude and departure of a line with the help of diagram.

                                                                        [5×2=10]

Part-A

2. A survey line BAC crosses a river, A and C being on the near and opposite banks respectively. A perpendicular AD, 40 m long, is set out at A. If the bearings of AD and DC are 48° 30′ and 288° 30′ respectively, draw the sketch and find the bearings of the chain line BAC and also the chainage of C when that of A is 207.8 m. Given that, the chainage of C is 277.08 m.   [10]

3. The following are the bearing observed in traversing, with a compass, an area where local attraction was suspected. Calculate the interior angles of the traverse and correct them if necessary.   [10]

Line	FB	BB	Line	FB	BB
AB	150° 0′	330° 0′	DE	298° 00′	120° 00′
BC	230° 30′	48° 0′	EA	49° 30′	229° 30′
CD	306° 15′	127° 45′			

4. (a) The following consecutive readings were taken with a dumpy level and 5-m long levelling staff on continuously sloping ground at a common interval of 15 m. The first point has an elevation of 185.275 m. Rule out the page of level field book and enters the readings. Calculate (a) the reduced level of the points by rise and fall method and (b) the gradient of the line joining the first and last point. 0.415, 1.025, 2.085, 2.925, 3.62, 4.595, 0.715, 2.115, 3.090, 4.405.   [6]

    (b) Write down the characteristics of contour lines. Also give exceptions with examples.   [4]

PART-B

5. (a) The following are the distances (D) of the staff position from the instrument and the corresponding staff interval (S). Calculate the tachometric constants.   [5]

D (m)	20	50	100	120
S (m)	0.195	0.495	0.997	1.197

    (b) Derive an expression for the horizontal distance of a vertical staff from a tacheometer, if the line of sight is inclined with horizontal.   [5]

6. (a) Explain the stepwise procedure of horizontal angle measurements by repetition and reiteration method. Give tables for recording angles to support your answer.   [6]

    (b) Describe with diagrams the solution of 3-point problem using tracing paper method.   [4]

7. Differentiate between the following (i) Latitude and departure, (ii) Bowditch's rule and transit rule and (iii) consecutive coordinates and independent coordinates.   [10]

x-x-x