CLASS: BARCH   SEMESTER: IV
BRANCH: ARCHITECTURE   SESSION : SP/2019

SUBJECT : AR4407 SURVEYING

TIME: 1.5 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) An offset is laid out $5°$ from its true direction on the field. Find the resulting   [2]
          displacement of the plotted point on the paper in a direction parallel to the chain line,
          and in a direction perpendicular to the chain line, given that the length of the offset
          is 20 m and the scale is 10 m to 1 cm.

    (b) Explain how will you continue chaining past the following obstacles: [3]
          (i) a pond   (ii) a river   (iii) a hill.

Q2 (a) Explain the principles of chain surveying. In which conditions, the chain surveying is   [2]
          more suitable?

    (b) In passing an obstacle in the form of a pond, stations A and D, on the main line, were   [3]
          taken on the opposite sides of the pond. On the left of AD, a line AB, 200 m long was
          laid down and a second line AC, 250 m long, was ranged on the right of AD, the points
          B, D and C being in the same straight line. BD and DC were then chained and found to
          be 125 m and 150 m respectively. Find the length of AD.

Q3 (a) The following are observed fore-bearings of the lines   [2]
          (i) AB $12° 24'$ (ii) BC $119° 48'$ (iii) CD $266° 30'$ (iv) DE $354° 18'$
          (v) PQ N $18° 0'$ E   (vi) QR S $12° 24'$ E   (vii) RS S $59° 18'$ W   (viii) ST N $86° 12'$ W.
          Find their back bearings.

    (b) The following bearings were observed with a compass for a closed traverse ABCDEA.   [3]
          Calculate the interior angles.

Line	Fore Bearing
AB	$60° 30'$
BC	$122° 0'$
CD	$46° 0'$
DE	$205° 30'$
EA	$300° 0'$

Q4 (a) What are the differences between prismatic compass and surveyor's compass?   [2]
    (b) What is local attraction? How is it detected and eliminated?   [3]

Q5 (a) A level was set up at a point C at a distance of 100 m from A and 1000 m from B. The   [2]
          staff reading on the staff kept at A was 0.445 m and that on the staff held at B was
          2.845 m. Find the true difference in elevations of A and B.

    (b) Explain the working of a dumpy level with a sketch.   [3]

Q6 (a) What is reciprocal levelling? How would you determine the correct difference of levels   [2]
          of two points on the opposite banks of a river?

    (b) What is sensitivity of a level tube? Derive a relation between the sensitivity and the   [3]
          radius of the tube ?