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Total No. of Questions : 09

Total No. of Pages : 03

B.Tech.(CE) (Sem.–3)
SURVEY-I
Subject Code : CE-201
Paper ID : [A0601]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. SECTION-A is COMPULSORY.
2. Attempt any FOUR questions from SECTION-B.
3. Attempt any TWO questions from SECTION-C.

SECTION-A (10 × 2 = 20 Marks)

1. (a) Give any four differences between plane and geodetic surveying.

(b) Which is the basic geometrical figure on which chain surveying principle is based? Why only this geometrical figure?

(c) Differentiate between the angular graduations/ readings for bearing measurement in prismatic and surveyor's compass.

(d) Differentiate between fore bearing and back bearing of a survey line.

(e) Define sensitivity of a bubble tube.

(f) What is meant by strength of fix in resection method of plane table surveying?

(g) In levelling the line of collimation represents a horizontal line. Which correction is required for getting the reduced levels of stations? Explain about the sign of this correction.

(h) Give four differences between internal and external focusing types of telescope.

(i) Differentiate between the terms fore sight and back sight as used in levelling.

(j) Briefly describe the folding and telescopic type of staff.

SECTION-B (4 × 5 = 20 Marks)

2. (a) Briefly describe the factors to be considered for selecting the contour interval. [3]

(b) The measured length of a line is 1126 m when measured with a 30 m tape. On calibration, the 30 m chain's actual length was found to be 30.05 m. Determine the correct length of the survey line. [2]

3. Briefly describe the grid method and radial lines method of contouring [5]

4. The figure given below shows three sections of an embankment at regular interval of 20m. Calculate the volume between the end sections by trapezoidal formula. [5]

Section 1   Section 2   Section 3
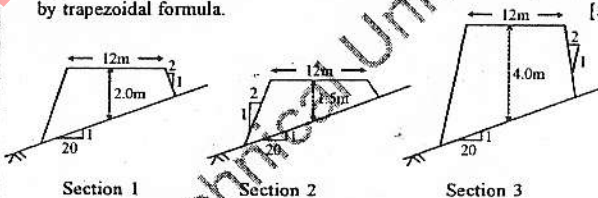
5. (a) The staff reading taken on a staff held at a distance of 100 m from the instrument with the bubble central was 1.845 m. When the bubble is moved 5 divisions off the centre, the staff reading observed is 1.880. If the length of one division is 2 mm, find the radius of curvature, and the sensitivity of the tube. [2]

(b) A survey line AB cannot be chained since A and B are on the opposite sides of a pond. The surveyor establishes stations C and D on either side of station B such that CBD are in line. Also line AC, CBD and AD are clear of pond. The distances measured are AC = 300 m, CB = 150 m, BD = 200 m and AD = 250 m. Compute the length of line AB. [3]

6. The following bearings were observed for a closed traverse ABCDEA.

Line	AB	BC	CD	DE	EA
F.B.	290° 30′	340° 0′	80° 30″	140° 30″	230° 30″

Calculate the included (interior) angle at each station. [3]

SECTION-C (2 × 10 = 20 Marks)

7. Briefly describe with neat sketches the Bessel's graphical method for three point problem. [10]

8. (a) The following readings were observed successively with a levelling instrument. The instrument was shifted after 4th and 9th reading. The 1st reading was taken on a B.M. of R.L. 535.650 m.

(1) 1.235 (2) 1.010 (3) 1.165 (4) 0.980

(5) 1.365 (6) 1.275 (7) 1.895 (8) 2.160

(9) 2.450 (10) 1.875 (11) 2.160 (12) 2.110

Draw up a page of level book and determine the R.L. of various stations by **Rise and Fall** method. Apply suitable arithmetic checks. [5]

(b) A compass traverse ABCDEA was run anticlockwise and the following bearings were taken where local attraction was suspected.

Line	AB	BC	CD	DE	EA
F.B.	150° 0′	77° 30′	41° 30′	314° 15′	220° 15′
B.B.	329° 45′	256° 0′	222° 45′	134° 45′	40° 15′

Determine the magnitude of local attraction at each station and the correct bearings and included angles. [5]

9. (a) Briefly describe the uses of an Abney level. [2.5]

(b) A steel tape 30 m long is standardized with a pull of 65 N. If the pull at the time of measurement was 75 N, determine the actual length of the tape. Cross sectional area of tape = 6 mm^2. Assume E = 2 × 10^5 N/mm^2 [2.5]

(c) Describe the factors which must be considered while selecting main stations in compass surveying. [5]