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B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Third Semester

Civil Engineering

CE 1204 — SURVEYING — 1

(Regulations – 2004)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

Draw neat sketches wherever necessary.

PART A — (10 × 2 = 20 marks)

1. Name the different ways of classification of surveys.

2. Explain the construction of a diagonal scale.

3. What are the instruments required for a chain survey?

4. Differentiate between 'Surveyors compass' and 'Prismatic compass' with reference to reading and tripod.

5. Name some of the errors in plane tabling.

6. What are the different kinds of bench marks?

7. List the essential qualities of a theodolite telescope.

8. Explain the "Bowditch's rule" in balacing the traverse.

9. What are the aims when undertaking setting out operations?

10. What are the three classes of circular curves?

11. (i) Explain the different steps in chain surveying. (8)

    (ii) What are the common obstacles in chaining? Explain any one method of overcoming each. (8)

12. (a) (i) Write a note on the Whole circle bearing system and the Quadrantal bearing system and adjustments of a prismatic compass. (4 + 4)

    (ii) The following bearings were observed while traversing with a compass :

Line	F.B.	B.B.	Line	F.B.	B.B.
AB	75°05'	254°20'	CD	165°35'	345°35'
BC	115°20'	296°35'	DE	224°50'	44°05'
EA	304°50'	125°05'			

Mention which stations were affected by local attraction and determine the corrected bearings. (8)

Or

  (b) (i) Differentiate between a Surveyor's compass and a Prismatic compass. (8)

    (ii) The following are the bearings taken on a closed compass traverse :

Line	F.B.	B.B.	Line	F.B.	B.B.
AB	80°10'	259°0'	BC	120°20'	310°50'
CD	170°50'	350°50'	DE	230°10'	49°30'
EA	310°20'	130°15'			

Compute the interior angles and correct them for observational errors. Assuming the observed bearing of the line CD to be correct, adjust the bearing of the remaining sides. (8)

13. (a) (i) What is meant by contour interval (C.I.)? Explain how proper contour interval is to be chosen. (8)

    (ii) With neat sketches. Explain the "Lehmann's rule" and "strength of fix" in plane table surveying. (8)

Or

(b) (i) What are the different methods of locating contours? (8)

(ii) What is a "Planimeter"? Explain how the volume of a reservoir could be determined through plane table and contour surveying. (8)

14. (a) (i) Explain — Simple leveling, Differential Levelling, and the systems of reducing of levels. (8)

(ii) During a construction work, the R.L. at the bottom of a R.C. Chajja had to be determined. The following readings were recorded. Reading on the temporary BM = 1,360; Reading on peg on ground = 1,035; Change of instrument; Reading on peg on ground = 1.246; Reading on inverted staff at the bottom of chajja = 2,460. Enter the readings in a level field book page and calculate the R.L. at the bottom of the Chajja. (8)

Or

(b) A page of a level book was defaced so that the only legible figures were :

Consecutive entries in the column of R.L.s ; 55.565 (BM); 54.985 (TP); 55.170; 53.670; 53.940 (TP); 52.180; 52.015; 51.480 (TP); 53.145; 54.065 (TBM);

Entries in the BS column : 1.545; 2,310; 0.105; 3,360 in order from the top of the page. Reconstruct the page as booked and check your work. Calculate the corrected level of the TBM if the instrument is known to have an elevated collimation error of 60" and back and foresight distance averaged 80 and 30 meters respectively. (16)

15. (a) (i) Explain the Rankine's method of tangential angles and the two theodolite methods in setting out a circular curve. (8)

(ii) Name the types of reference grids and the types of rods used for vertical control in setting out works. (8)

Or

(b) Explain the procedure for setting out of a tunnel. (16)

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