

21.1.9

B. Arch. Part-II 3rd Semester Examination, 2009
Subject: Surveying
Subject Code: CE 302(A)

Full Marks: 70

Time: 3 hours

Use separate answerscript for each half

FIRST HALF

(Answer any THREE questions)

(Two marks are reserved for neatness)

Q1. Write short note on the followings (any four)

- (a) Various methods of taking offsets
- (b) Optical square
- (c) Cross-staff
- (d) Reciprocal ranging
- (e) Reconnaissance survey and index sketch
- (f) Field book

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Q2. (b) Describe the Methods of Chaining on Sloping Ground.

- (c) When a river forms an obstacle in chaining, how is the length of the line measured? Explain with a neat sketch.

7+4

Q3. (a) What are the different tape/chain corrections and how are they applied?

- (b) A steel tape was exactly 30 m long at 20°C when supported throughout its length under a pull of 10 kg. A line was measured with this tape under a pull of 25 kg and at a mean temperature of 35°C and found to be 780 m long. The cross-sectional area of the tape = 0.03 cm², and its total weight = 0.715 kg. α for steel = 11×10^{-6} per °C and E for steel = 2.1×10^6 kg/cm². Compute the true length of the line if the tape was supported during measurement at every 30 m.

4+7

Q4. (a) Discuss the various methods of traversing.

- (b) What do you mean by temporary adjustment of prismatic compass? How is it carried out?

- (c) The following are the fore and back bearings of the sides of a closed traverse:

Side	FB	BB
AB	150°15'	330°15'
BC	20°30'	200°30'
CD	295°45'	115°45'
DE	218°00'	38°00'
EA	120°30'	300°30'

Calculate the interior angles of the traverse.

2+3+6

Q5. (a) What is local attraction? How is it detected and corrected for?

- (b) The following are the observed bearings of the lines of a traverse ABCDEA with a compass at a place where local attraction was suspected.

Line	Fore Bearings (FB)	Back Bearings (BB)
AB	191°45'	13°0'
BC	39°30'	222°30'
CD	22°15'	200°30'
DE	242°45'	62°45'
EA	330°15'	147°45'

Find the correct bearings of the lines

4+7

SECOND HALF

*(Answer any **THREE** questions)*

(Two marks are reserved for neatness)

- Q6.** Write short note on the followings (any four)
- (a) Line of collimation
 - (b) Levelling staff
 - (c) Bench-marks (BM)
 - (d) Back sight (BS) and Fore sight (FS) reading
 - (e) Parallax
 - (f) Methods of Plane Table

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- Q7.** What is meant by plane tabling? When do you recommend it? What are the accessories required in a plane table survey? How do you orient the table in plane table survey? Also describe one of the methods briefly.

1+1+2+2+5

- Q8.** (a) What is reciprocal levelling? Explain with a neat sketch.
(b) In an operation involving reciprocal levelling, two points A and B are taken on opposite banks of a river. When the level was set up near A, the staff readings on A and B were 2.245 m and 3.375 m respectively. When the level was set up near B, the respective staff readings were 1.955 m 3.055 m. Find the true difference of level between A and B. What is the reduced level (RL) of B, if that of A is 125.550 m?

6+5

- Q9.** (a) What is 'Height of the Instrument'?
(b) Describe the steps involved in the temporary adjustment of Dumpy Level.

2+9

- Q10.** The following consecutive readings were taken with a levelling instrument at intervals of 20 m.:
2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m.
The instrument was shifted after the fourth and the eighth readings. The last reading was taken on a BM of RL 110.200 m. Find the RL of all the points.

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