

14. (a) Discuss the various errors in Theodolite surveying and precautions in use of Theodolite.

Or

- (b) It is not possible to measure the length and fix the direction of a line AB directly on account of an obstruction between the stations A and B. A traverse ACDB was therefore run and following data was obtained.

Line	Length (m)	Reduced bearing
AC	45	N 50° E
CD	66	S 70° E
DB	60	S 30° E

Find the length and direction of line BA. It was also required to fix a station E on line BA such that DE will be perpendicular to BA. If there is no obstruction between B and E. Calculate the data required for fixing the station.

15. (a) Two straight lines having an intersection angle of $25^{\circ} 12'$ are to be connected by a circular curve of radius 500 m. If the chainage of the intersection point is 1000 m, calculate the data for setting out the curve by
- Deflection distances method
 - Tangential angles method

Take the normal chord as 20 m.

Or

- (b) Describe how the construction survey for a straight horizontal tunnel is carried out.

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B.E./B.Tech. DEGREE EXAMINATIONS,
NOVEMBER/DECEMBER 2010.

THIRD SEMESTER

CIVIL ENGINEERING

CE 37 — SURVEYING — I

(REGULATIONS 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

- What are tallies? State their use in surveying.
- State the recommendable values for included angles of a well conditioned triangle.
- Define and distinguish between true meridian and magnetic meridian.
- What do you mean by orientation in plane table surveying?
- What is bench mark? State the types.
- Compare the two methods of reduction.
- What is meant by angle misclosure? State its permissible value.

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8. Name the methods of adjusting the traverse.
9. What is vertical control in setting out works?
10. What do you mean by degree of a curve.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the method of reciprocal ranging. (6)
- (ii) Discuss the methods of chaining with sketches describing how will you do chaining over obstacles for chaining and not for ranging. (10)

Or

- (b) (i) A distance of 2000 m was measured by 30 chain. Later on it was detected that the chain was 0.1 m too long. Another 500 m (i.e. total 2500 m) was measured and it was detected that the chain was 0.15 m too long. If the length of the chain in the initial stage was correct, determine the exact length that was measured. (6)

- (ii) A survey line ABC crosses a river at right angle and cuts its banks at B and C. To determine the width BC a line BD, 50 m long was set out roughly parallel to the near bank. Point C and D were joined and line CD extended to another point E. Point D was joined to the mid point O of the line BE and the line DO extended to point F such that DO = OF. Points E and F were joined and the line EF extended to cut the survey line ABC at G. If FQ = 30 m and GB = 70 m, determine the river width BC. (10)

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12. (a) Find which stations are affected by local attraction. Work out correct bearings of the lines of a closed traverse ABCDEA

Line	FB	BB
AB	195° 30'	17° 0'
BC	73° 30'	250° 30'
CD	36° 15'	214° 30'
DE	266° 45'	84° 45'
EA	234° 15'	57° 0'

Or

- (b) What is two point problem? Describe the procedure in detail.

13. (a) The following consecutive readings were taken with a level and 5 mere levelling staff on continuously sloping ground at a common interval of 20 metres 0.385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110, 4.485, 0.345, 1.145, 2.115. The reduced level of the first point was 208.125 m. Rule out a page of a level book and enter the above readings. Find the reduced levels of staff stations and also the gradient of the line joining the first and last.

Or

- (b) (i) Write a detailed note on curvature and refraction corrections. (8)
- (ii) Describe the indirect of contouring. (8)

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