Reg. No. : | | | | | | | | | | | |

R 3160

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Third Semester

Civil Engineering

CE 1204 — SURVEYING — I

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Draw neat sketches wherever necessary.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by working from whole to part"?
2. Explain the principle of a vernier scale. What is a retrograde vernier?
3. What is local attraction?
4. Name some of the accessories Plane Tabling.
5. What are the different kinds of Bench marks?
6. What is meant by a "Contour"?
7. What are the fundamental axes of theodolite?
8. Distinguish between closed traverse and open traverse.
9. What is the importance of a location survey?
10. What are the components of a simple curve?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the different types of corrections applied in linear measurement using a tape. (8)

(ii) Explain

(1) Reciprocal Ranging

(2) Errors in Chaining (4 + 4)

Or

(b) (i) Explain with neat sketches any two instruments for setting out right angles to a chain line. (8)

(ii) A survey line PR intersects a pond. To continue the line past this obstacle, stations A and B were taken on the line on opposite sides of the pond. A line, AC, 270 m long, was set out on the left of AB and a second line AD, 330 m in length, was laid down on the right of AB, the points C, B and D being in the same straight line. CB and BD were then measured and found to be 150 m and 165 m respectively. Calculate the length of AB. (8)

12. (a) (i) Explain the two common systems designation of bearings. (8)

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

Line	F. B.	B. B.	Line	F. B.	B.B.
AB	45° 45'	226° 10'	CD	29° 45'	209° 10'
BC	96° 55'	277° 05	DE	324°48'	144°48

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

Or

(b) (i) Explain the radiation and intersection methods of plane tabling. (8)

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

13. (a) (i) Explain the temporary adjustments for a dumpy level. (8)

(ii) Two bench marks A and B are 1200 m apart across a wide river. The following reciprocal levels are taken with one level

Level at	Reading on	
	A	B
A	1.485	2.365
B	1.035	1.400

The error in the collimation adjustment of the level is +0.005 m in 30 m. Calculate the true difference of level between A and B, and the error due to refraction. (8)

Or

(b) (i) The following consecutive readings were taken with a level and 5 meter levelling staff on continuously sloping ground at a common interval of 30 meters 0.385 ; 1.030 ; 1.925 ; 2.825 ; 3.730 ; 4.685 ; 0.625; 2.005 ; 3.110 ; 4.485. The R.L. of the first point was 108.325 m. Rule out a page of a level book and enter the readings. Calculate the R.L's of the points by rise and fall method also the gradient of the line joining the first and last point. (12)

(ii) List some of the difficulties encountered in levelling (4)

14. (a) (i) Explain the adjustment for making vertical axis truly vertical of the theodolite. (8)

(ii) Briefly explain the different methods of adjusting a traverse. (8)

Or

(b) (i) What are sources of error in the theodolite observations? (8)

(ii) The following are the latitudes and departures of the lines of a closed traverse ABCD:

Line	Latitude, in m	Departure, in m
AB	– 116.1	– 44.4
BC	+ 6.8	+ 58.2
CD	+ 80.5	+ 17.2
DA	+ 28.8	– 31.0

Compute the area of the traverse by

(1) co-ordinate method and

(2) the departures and total latitudes method (8)

15. (a) (i) Explain any two linear methods of setting out circular curves. (8)

(ii) Distinguish between a compound curve and a reverse curve. (4)

(iii) What is the need for super elevation? (4)

Or

(b) (i) Compare the difficulties involved in mine surveying with a normal surveying work on ground. (8)

(ii) Explain the terms and their importance.

(1) Sight distance

(2) Shafts. (8)