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

Question Paper Code : X60246

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2020.

Third Semester

Civil Engineering

CE 2204/CE 37/10111 CE 307 — SURVEYING – I

(Regulations 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the Conventional signs in mapping.

2. What do you mean by adjustment of a survey instrument?

3. What do you mean by fly and check levelling?

4. Explain merits of plane table surveying?

5. Define sensitivity of a level tube.

6. What are the temporary adjustments of a dumpy level.

7. Name the permanent adjustments of a theodalite in sequential order.

8. Distinguish between direct and deflection angles.

9. What are the requirements of a good transition curve?

10. What is geometric method of orientation in an underground surveying?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Compare two point and three point problem in plane tabling. (6)

(ii) Explain the use of plane tabling in detailed surveying. (10)

Or

(b) (i) Explain about surveyor's compass. (4)

(ii) The following bearings were observed with a compass. (12)

AB	74°0'	BA	254°0'
BC	91°0'	CB	271°0'
CD	l66°0'	DC	343°0'
DE	177°0'	ED	0°0'
EA	189°0'	AE	9°0'

Where do you suspect the local attraction? Find the correct bearings.

12. (a) (i) What is meant by closing error in-a closed traverse? How would you adjust it graphically? (8)

(ii) The following bearings were taken in running a compass traverse;

Line	Fore bearing	Back bearing
AB	48°25'	230°00'
BC	177°45'	356°00'
CD	104°15'	284°55'
DE	165°15'	345°15'
EA	295°30'	79°00'

(1) State what stations are affected by local attraction and by how much.

(2) Determine the corrected bearings.

(3) Calculate the true bearings if the declination was 1°30' W. (8)

Or

(b) (i) What is three point problem? How is it solved by Bessel's methods? (8)

(ii) Compare the advantages and disadvantages of plane table surveying with those of chain surveying. (8)

13. (a) Following readings were observed successively with a levelling instrument. The instrument was shifted after 5th and 11th readings.

0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.745, 0.635 and 1.605.

Draw up a page of level book and determine the RL of various points, if RL of first point is 134.00 m.

Or

(b) (i) Explain the effects of curvature and refraction in levelling and their corrections. (10)

(ii) Discuss the uses of contours. (6)

14. (a) For the following traverse, compute the length of the line CD so that A, D and E may be in one straight line.

Line	Length (m)	Bearing
AB	110	83° 12'
BC	165	30° 42'
CD	?	346 °06'
DE	212	16° 18'

Or

(b) What are the sources of errors in theodalite surveying? Explain how will you eleminate them.

15. (a) (i) What are the usual difficulties in ranging simple curves and how are they obviated? (10)

(ii) Two straight lines AB and BC intersect at chainage (68 + 27), the intersection angle being 140°. It is desired to connect these two straights by a simple curve of 50° Calculate the radius of the curve and the chainage of the tangent points if unit chord is 30 m. (6)

Or

(b) (i) What is a reverse curve? Where is it provided? State its advantages. (6)

(ii) Two straight roads AB and CD both produced intersect at V. CBV = 30° and BCV = 120°. It is proposed to introduce a reverse curve consisting of two circular arcs AT and TD, T lying on BC. Length BC is 791.71 m and radius of arc AT is 800 m. Chainage of B is 1000 m. Calculate the radius of arc TD, length of arc AT, length of arc TD and the chainage of point D. (10)

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