

KATHMANDU UNIVERSITY
End Semester Examination [C]
November/December, 2023

07 DEC 2023

Level : B.E..
Year : II
Time : 2 hrs. 30 mins.

Course : CIEG 207
Semester : II
F. M. : 40

SECTION "B"

Attempt **ALL** Questions. Assume suitable data if necessary

1. From the traverse data given below, find the length of CD and bearing of EA. [5]

Line	AB	BC	CD	DE	EA
Length, m	178.6	228.4	-	126.7	238.8
Bearing	127°30'	48°45'	341°45'	258°30'	-

2. The following observations were taken from two traverse stations by means of a tachometer fitted with an anallactic lens. The constant of instrument being 100 and 0.25. [6]

Inst. Station	HI	Staff Station	Zenithal Angle	Staff Readings		
M	1.460	BM	91°54'	2.420	1.720	1.020
M	1.460	P	87°24'	2.430	1.825	1.220
Q	1.450	P	86°54'	2.435	1.610	0.785

If RL of BM is 1508 m, find the RL's of stations M, P and Q.

3. The top (A) of a tower was sighted from two stations B and C at very different levels, the stations B and C being in line with the top of the tower. The angle of elevation from B to the top of tower was 36°12' and that from C to the top of the tower was 16°48'. The angle of elevation from C to a vane 1 m above the foot of the staff held at B was 8°24'. The heights of instrument at B and C were 1.85 m and 1.65 m respectively. The horizontal distance between B and C was 100 m and the RL of C = 248.260 m. Find the RL of the top of the tower and the horizontal distance from B to the tower. [5]
4. Define horizontal equivalent along with the information it provides in a contour map. How would you draw the cross-section along an alignment from the topographical map? Explain the process in detail with the help of appropriate figures. [2+4]
5. A horizontal curve of radius 300 m and deflection angle 36° is to be set out with two theodolites. The chainage of point of intersection is 1083.652 m. Tabulate the necessary angles and theodolite readings, assuming that both the theodolites are turned clockwise from the intersection point to locate the points on the curve at an interval of 20 m. [6]
6. A 5.5 % down gradient meets a 1.5 % down gradient at a chainage of 1034 m, the RL of the point of intersection being 860.640 m. A vertical parabola is to be set out to connect the two grades with pegs at 20 m intervals. The rate of change of grade allowed is 0.4 % per 20 m chain. Tabulate the chainage and RL of the pegs for setting out the curve. [6]
7. Write short notes on **ANY TWO**: [3+3]
- a. Types of signals used in triangulation survey
 - b. Types of aerial photographs
 - c. Working mechanism of remote sensing system

