| Roll No | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

# PRESIDENCY UNIVERSITY
# BENGALURU

## SCHOOL OF ENGINEERING
## END TERM EXAMINATION - JUN 2023

**Semester :** Semester II - 2022
**Course Code :** CIV1005
**Course Name :** Sem II - CIV1005 - Surveying
**Program :** CIV

**Date :** 21-JUN-2023
**Time :** 1.00PM - 4.00PM
**Max Marks :** 100
**Weightage :** 50%

**Instructions:**
*(i) Read all questions carefully and answer accordingly.*
*(ii) Question paper consists of 3 parts.*
*(iii) Scientific and non-programmable calculator are permitted.*
*(iv) Do not write any information on the question paper other than Roll Number.*

### PART A

**ANSWER ALL THE QUESTIONS** **(6 X 5 = 30M)**

1. Two contour lines of different elevations unite to form one line only in one case. Identify the type of cliff were the different elevation unite. Explain any three characteristics of contour lines with neat sketch.
(CO3) [Knowledge]

2. The surveying can be primarily divided in to two categary based on whether the curvature of the earth is taken into account or not. Plain Surveying and Geodetic Surveying. Differentiate between the Plain and the Geodetic surveying.
(CO1) [Knowledge]

3. Purpose of levelling is to find the elevations of points on the earth's surface for topographic maps. List the essential parts of a Dumpy Level and Theodolite.
(CO2) [Knowledge]

4. Compass is used to read the bearing of survey lines. Differentiate between surveyor's compass and prismatic compass.
(CO1) [Knowledge]

5. The most commonly used size of a plane table is 600 mm x 750 mm. This means that the table is 600 mm long and 750 mm wide. What is a Plain table Surveying and write functions of different accessories used in Plane table surveying.
(CO3) [Knowledge]

6. Railway engineers working in the 1830s in Britain commonly referred to a theodolite as a "Transit". List out the fundamental lines of Theodolite.
(CO2) [Knowledge]

## PART B

**ANSWER ALL THE QUESTIONS** **(4 X 10 = 40M)**

**7.** Profile levelling is used to establish changes in elevation along a line. Common lines requiring surveying are drains, roads, fences, and retaining walls. Following consecutive readings were taken with a levelling instrument at intervals of 20M. 1.175, 1.630, 0.815, 2.450, 3.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255, and 3.630. The instrument was shifted after fourth and eighth readings. Draw up a page of level book and determine the R.L of various points by rise and fall method. Take the RL of the point on which the first reading was taken as 142.620 m.

(CO2) [Comprehension]

**8.** In dam construction project high-quality aerial photographs, video, and collecting vast amounts of imaging data are to be carried out by reducing field time and survey cost. Identify the type of instrument required to initiate the proposed project. What are the limitations of identified instrument and explain the applications of LIDAR?

(CO3) [Comprehension]

**9.** The principle of levelling is to obtain a horizontal line of sight at which the vertical distance of a point above or below this line of sight is found. List and explain steps involved in the temporary adjustments of the theodolite.

(CO2) [Comprehension]

**10.** The observations and plotting are to be done simultaneously with no risk of omitting necessary details. Identify the type of surveying carry out under above condition and give reasons. List the methods of plane table surveying and, explain radiation and intersection method with a neat sketch.

(CO3) [Comprehension]

## PART C

**ANSWER ALL THE QUESTIONS** **(2 X 15 = 30M)**

**11.** a) The following observations were made to the target on a hill top to certain elevation at hill top. The height of the target F was 6m. The instrument station were 110m apart and were in line with F. Calculate the RL of foot of the target.

| Instrument Station | Staff reading on BM | Vertical angle on target to Hill top | RL of BM in M |
|---|---|---|---|
| O2 | 3.650 | $17^0$10’ | 262.60 |
| O1 | 2.870 | $22^0$40’ | |

b) List different types of levelling in surveying.

(CO2) [Application]

**12.** To find the elevation of the top of a hill, a flag staff of 4M height was erected and observations were made from two stations P and R, 80m apart. The horizontal angle measured at P between R and top of the flag-staff was $80^0$30’ and that measured at R between the top of the flag-staff and P was $88^0$18’. The angle of elevation to the top of the flag staff was measured to be $20^0$48’ at P. The angle of elevation to the top of the flag staff was measured to be $21^0$48’ at R. Staff readings on Bench mark when the instrument was at P is equal to 2.865M and that with the instrument at R =3.085M. Calculate the elevation of the top of the hill if that of BM was 435.005M.

(CO2) [Application]