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PRESIDENCY UNIVERSITY BENGALURU

**SET-A**

SCHOOL OF ENGINEERING

**END TERM EXAMINATION – MAY/JUNE 2024**

**Semester :** Semester II - 2023

**Course Code :** CIV1005\_v02

**Course Name :**  Surveying

**Program:** B. Tech.

**Date :** Jun 20, 2024

**Time :** 1:00 PM - 4:00 PM

**Max Marks :** 100

**Weightage :** 50%

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

# PART A

## Answer any 4 4\*5=20

* 1. Surveying is the science and art of determining the relative positions of points and features on the Earth's surface. In connection to this explain the basic principles of surveying with neat sketch.

(CO1) [Knowledge]

* 1. The bearing of a line tells you its direction relative to north or south. Differentiate Fore bearing and Back bearing with neat sketch?

(CO1) [Knowledge]

* 1. Earth acts like a giant magnet, and a compass uses this magnetism to point north. Compass is used to find bearing of angles. Differentiate between surveyor's compass and prismatic compass.

(CO2) [Knowledge]

* 1. A magnetic bearing of line AB is  30', What will be the true bearing if the declination is  15‘ west.

(CO1) [Knowledge]

* 1. Levelling involves taking measurements up and down, not side to side. Hence, this branch of surveying deals with measurements in vertical planes. Describe the temporary adjustment of Dumpy level.

(CO3) [Knowledge]

* 1. Surveyors use benchmarks like reference markers with established elevations. List and explain the types of benchmarks in surveying.

(CO2) [Knowledge]

* 1. Theodolites are precision instruments used in surveying for measuring horizontal and vertical angles. List out the fundamental lines of theodolite.

(CO3) [Knowledge]

* 1. When a theodolite is properly adjusted, these fundamental lines have specific geometric relationships to each other. Define telescope normal and telescope inverted.

(CO3) [Knowledge]

# PART B

## Answer any 4 4\*10=40

* 1. Name the different types of direct and indirect contouring and explain any one of them.

(CO1) [Comprehension]

* 1. Write the characteristics of contour lines and list the uses of contour map?

(CO1) [Comprehension]

* 1. Levelling establishes, verifies, or measures point heights relative to a datum plane. List and explain steps involved in the temporary adjustments of the theodolite.

(CO2) [Comprehension]

* 1. Drones can capture stunning aerial photos and videos that would be difficult or impossible to get from the ground. Explain the advantages and applications of Drone survey.

(CO2) [Comprehension]

* 1. List and explain steps involved in the temporary adjustments of the theodolite.

(CO3) [Comprehension]

* 1. What are the advantages and disadvantages of plane table surveying? List the Errors in Plane table surveying and explain radiation method with a neat sketch.

(CO3) [Comprehension]

# PART C

## Answer any 2 2\*20=40

* 1. a) A traverse ABCDA is made in the form of a square taken in clockwise order, If the bearing of a line AB is 50°30', find the bearing of the other sides.
     1. To find the elevation of the top of a hill, a flag staff of 2M height was erected and observations were made from two stations P and R, 60m apart. The horizontal angle measured at P between R and top of the flag-staff was 30’ and that measured at R between the top of the flag staff and P was 18’. The angle of elevation to the top of the flag staff was measured to be 48’ at P. The angle of elevation to the top of the flag staff was measured to be 48’ at R. Staff readings on Bench mark when the instrument was at P =1.865M and that with the instrument at R is equal to 2.015M. Calculate the elevation of the top of the hill if that of BM was 335.065M.

(CO1) [Application]

* 1. a) In passing an obstacle in the form of a pond, stations A and B on the main line were taken on the opposite sides of the pond. On the left of AB, a line AC 315meter-long was laid down and a second line AD, 270-meter-long as ranged on the right of AB was laid down. The points C, B and D being in the same straight line. CB and BD were then chained and found to be 156 meter and 174 meter respectively. Compute the length of AB.
     1. Differentiate between aerial photogrammetry and terrestrial photogrammetry list the applications of DEM.

(CO2) [Application]

* 1. a) Levelling is performed to estimate the vertical distances of a point. It can be done in many ways. Fly levelling is one of the common ways to establish benchmarks in surveying. Following readings were observed successively with a levelling instrument. The instrument was shifted after fifth and eleventh readings 0.785, 1.110, 1.935, 2.295, 2.775, 1.450, 2.300, 2.595, 3.575, 2.375, 3.895, 1.735,

0.335 and 1.105. 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 165.00 m.

b) List and explain the principles of surveying with neat sketch.

(CO1) [Application]

* 1. a) With a neat sketch explain measurement of horizontal angle by repetition method.
     1. 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 at hill top

RL of benchmark(M)

O2 1.550 6’



O1 0.670 42’



245.5

(CO3) [Application]