PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2023

Semester : Semester V - 2020   **Date :** 16-JAN-2023
Course Code : CIV3019   **Time :** 9.30AM - 12.30PM
Course Name : Sem V - CIV3019 - Advanced Surveying   **Max Marks :** 100
Program : B.Tech. Civil Engineering   **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.

PART A

ANSWER ALL THE SIX QUESTIONS   **6 X 5 = 30M**

1. Civil surveying is an engineering operation that involves assessing and recording details about an area of land. In relation to this write the differences between Plane survey and Geodetic Survey.

    (CO1) [Knowledge]

2. The millions of stars that we see in the sky on a clear cloudless night are all at varying distances from us, it is exceedingly convenient to picture the stars as distributed over the surface of an imaginary spherical sky having its center at the position of the observer. In relation to this differentiate rotation and revolution of earth.

    (CO2) [Knowledge]

3. Astronomical coordinate systems are organized arrangements for specifying positions of satellites, planets, stars, galaxies, and other celestial objects relative to physical reference points available to a situated observer. List the different celestial coordinate systems.

    (CO2) [Knowledge]

4. An aerial photograph which was taken on the outskirts of Bengaluru to know the field area has a scale 1:10000. On the photo the length is measured as 10cm and the width as 7cm. Using the given data workout the field area in Hectares?

    (CO3) [Knowledge]

5. In the aerial photogrammetry, an aircraft with camera setup is used to take photographs from the air flying over the ground. In relation to this what is Crab and Drift.

    (CO3) [Knowledge]

6. Triangulation utilizes geometric figures composed of triangles. Horizontal angles and base lines are measured. In relation to this define Well conditioned triangle and Strength of figure.

    (CO1) [Knowledge]

PART B

ANSWER ALL THE FIVE QUESTIONS   **5 X 10 = 50M**

7. The parallel of latitude through a point is a small circle which is formed when a plane passing through the point and at right angles to the earth's axis intersects the earth's surface. All the points on a parallel of latitude have the same latitude. With proof show that the distance between two points on parallel of latitude is the product of cosine of latitude and difference in their longitude.

(CO2) [Comprehension]

8. At a point A in latitude 50°N, a straight line AB is run due east at A. A surveyor travels due north from B so as to reach the parallel of latitude 50°N at C. The length of the line AB is 360 nautical miles. What is the angle ABC at which the surveyor must set out and also the distance BC.

(CO2) [Comprehension]

9. Photogrammetry is the science of making measurements on photographs. Terrestrial photogrammetry applies to the measurement of photographs that are taken from a ground station, the position of which usually is known or can be readily determined. Aerial photogrammetry applies to the measurement of photographs taken from the air. Explain the different types of aerial photographs.

(CO3) [Comprehension]

10. When vertical photographs are to be used for the preparation of maps, all the methods of compilation require that the plumb points of the preceding and succeeding prints are visible in each photograph. Photographs are taken at the proper interval along each strip to give the desired overlap of photographs in the given strip. Each strip is spaced at pre-determined distances to ensure desired side lap between adjacent strips. Discuss the reasons for overlapping.

(CO3) [Comprehension]

11. The accuracy of an entire triangulation system depends on that attained in the measurement of the base line and, therefore, the measurement of base line forms the most important part of the triangulation operations. Discuss the points which should be taken into consideration while selecting the site for a base line.

(CO1) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION   **1 X 20 = 20M**

12. The ground length of a line AB is known to be 545 m and the elevations of A and B are 500 m and 300 respectively above mean sea level. A vertical photograph taken with a camera having focal length of 20 cm include the images a and b of these points, and their photographic coordinates are
$(x_a = + 2.65$ cm, $y_a = + 1.36$ cm$)$; $(x_b = -1.92$ cm, $y_b = + 3.65$ cm$)$
The distance ab scaled directly from the photograph is 5.112 cm. Compute the flying height above the mean sea level.

(CO3) [Application]

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