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**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - AUGUST 2024**

Semester : 4th SEM	Date : 12 -08-2024
Course Code : CIV3019	Time : 9.30AM to 12.30PM
Course Name :ADVANCED SURVEYING	Max Marks :100
Program : BTECH	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 ANY 6 QUESTIONS		6Q X 5M=30M	
1	Vertical photographs and oblique photographs are two types of aerial photographs in aerial photogrammetry. Define vertical and oblique photograph.	(CO 3)	[Knowledge]
2	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 in triangulation Survey?	(CO 1)	[Knowledge]
3	The process of a measuring system comprised of joined or connected triangles whose vertices and stations marked on the surface of the earth and in which angular observations are supported by occasional distance observation is known as triangulation. List the steps involved in the routine of triangulation survey.	(CO 1)	[Knowledge]
4	The Zenith and Nadir line is perpendicular to celestial horizon which passes through the center of the earth. Define zenith and List the different celestial coordinate systems.	(CO 2)	[Knowledge]
5	What is Crab and Drift aerial photogrammetry?	(CO 3)	[Knowledge]
6	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. What is celestial sphere and celestial horizon?	(CO 2)	[Knowledge]
7	Based on the extent and purpose of the survey, and consequently on the degree of accuracy desired, triangulation surveys are classified. List the different types of triangulation surveys.	(CO 1)	[Knowledge]

PART B**ANSWER ANY 5 QUESTIONS****5Q X 10M=50M**

8	A <i>signal</i> is a device erected to define the exact position of a triangulation station so that it can be observed from other stations whereas a <i>tower</i> is a structure over a station to support the instrument and the observer, and is provided when the station or the signal, or both are to be elevated. Before deciding the type of signal to be used, the triangulation stations are selected. Discuss the criteria for the selection of triangulation stations.	(CO1)	[Comprehension]
9	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]
10	In an aerial photogrammetry survey, vertical photographs are taken over a large area for soil mapping purpose. Some parts of the area mapped have a flat terrain while others have variable terrain. Derive the expression for determining the scale of the vertical photographs over the Flat terrain and for the scale of the vertical photographs over a variable terrain.	(CO3)	[Comprehension]
11	The highest, average, and lowest terrain points are 610, 460, and 310m above sea level respectively. Calculate the maximum scale, minimum scale, and average scale, if the flying height above mean sea level is 300m and the camera focal length is 152.4mm.	(CO3)	[Comprehension]
12	Triangulation survey is done throughout the country to fix horizontal and vertical control points. Discuss the objectives of triangulation survey?	(CO1)	[Comprehension]
13	The concept of spherical triangle is of great significance in solving problems of field astronomy to find distance and direction. Explain the properties of spherical triangle.	(CO2)	[Comprehension]
14	A rectangular agricultural field measures 8.65cm long and 5.13cm wide on a vertical photograph having a scale of 1:20,000. Find the area of the field at ground level.	(CO3)	[Comprehension]

PART C**ANSWER ANY 1 QUESTION****1Q X 20M=20M**

14	Compute the shortest distance between two places A and B and the direction of B on the great circle, given that latitude of A and B are 15°0' N and 12°6' N and their longitudes are 50°12' E and 54°0' E respectively. Take radius of earth 6370km.	(CO2)	[Application]
15	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. Compute the angle ABC at which the surveyor must set out and the distance BC. The length of the line AB is 360 nautical miles.	(CO2)	[Application]