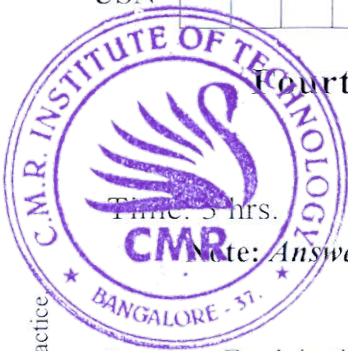


USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



Fourth Semester B.E. Degree Examination, Jan./Feb. 2023 Advanced Surveying

Max. Marks: 100

Time: 3 hrs.

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the elements of simple curve with neat sketch. (06 Marks)
- b. Explain the Linear method of setting out simple curve by the method of offset from long chord. (04 Marks)
- c. The Chainage at the point of intersection of the tangents to a railway curve is 1250m and the angle between them is 150°. Calculate all the data necessary for curve setting out a curve of radius 250m by the deflection angle method. The peg interval is 20m. Also apply the arithmetic check. (10 Marks)

OR

- 2 a. With the help of neat sketch, explain the elements of a compound curve. (06 Marks)
- b. Explain condition of an ideal transition curve. (04 Marks)
- c. Two tangents intersect at a chainage of 800m and deflection angle of 60°. If the radii of two branches are 80m and 100m and if the branches are of equal length. Determine the chainage at tangent point and at point of compound curve. (10 Marks)

Module-2

- 3 a. Explain orders of triangulation. (06 Marks)
- b. What are the important features of to be considered in selection of site for a base line? (06 Marks)
- c. From a satellite station S, 5.8m from main triangulation station A, the following directions were observed :

A	0°	0'	0"
B	132°	18'	30"
C	232°	24'	6"
D	296°	6'	11"

The lengths of AB, AC and AD were computed to be 3265.5m, 4022.2m and 3086.4m respectively. Determine the directions of AB, AC and AD. (08 Marks)

OR

- 4 a. Explain the following terms with example
 - i) Independent Quantity
 - ii) Conditioned Quantity
 - iii) True value of Quantity. (06 Marks)
- b. Explain types of Errors. (06 Marks)
- c. Find the most probable values of the angles A, B and A + B from the following observation.

A	=	42°20'30.4"	weight 1
B	=	36°18'25.2"	weight 2
A + B	=	78°38'50.3"	weight 3

(08 Marks)

Module-3

- 5 a. Define the following terms ;
 i) Nadir ii) Celestial Horizon iii) Vertical circle iv) Latitude. (04 Marks)
 b. Explain the zones of Earth. (08 Marks)
 c. Find the shortest distance between two places A and B on the earth for the data given below:
 Latitude of A = 14°N Longitude of A = $60^{\circ}30'\text{E}$
 Latitude of B = 12°N Longitude of B = 65°E
 Find also the direction of B from A. (08 Marks)

OR

- 6 a. Mention the properties of a spherical triangle. (05 Marks)
 b. Define the terms, celestial sphere, Prime vertical, Latitude, Azimuth and hour angle. (05 Marks)
 c. Determine the altitude and azimuth of the star of
 Latitude of the place = 48°
 Declination of the star = $12^{\circ}30'$, south
 Hour angle of the star = 306° (10 Marks)

Module-4

- 7 a. Define the following :
 i) Vertical photograph ii) Exposure station iii) Perspective projection. (06 Marks)
 b. With a neat sketch, derive the expression for the scale of a vertical photograph. (06 Marks)
 c. In a photograph taken with an aerial camera having a focal length of 200mm, a line PQ measures 108mm. If the same line has length of 40mm on a map drawn to a scale of 1:40,000, find the flying height of aircraft if the average elevation is 400m. (08 Marks)

OR

- 8 a. Write a note on overlap in vertical photograph. (04 Marks)
 b. Derive an expression for relief displacement on a vertical photograph. (08 Marks)
 c. Two points P and Q have elevations of 600m and 300m respectively. The photographic coordinate of P and Q were measured as P(35, 25) and Q(20, 15) in cm. The photograph was taken with a camera having a focal length of 210mm and an attitude of 2500m. Find the length of line PQ. (08 Marks)

Module-5

- 9 a. With neat sketch, explain the electromagnetic spectrum. (06 Marks)
 b. What are the advantages of LIDAR technology? (06 Marks)
 c. Explain the working of total station. (08 Marks)

OR

- 10 a. Define Remote sensing. Explain the stages of idealized remote sensing system. (08 Marks)
 b. What is GIS? With a neat sketch, explain the components of GIS. (08 Marks)
 c. What is GPS? Explain its application in surveying. (04 Marks)

* * * * *