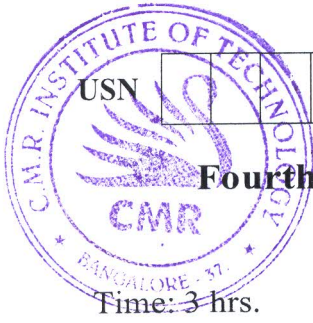


CBCS SCHEME



17CV46

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Advanced Surveying

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define the terms :
 - i) Back Tangent
 - ii) Point of intersection
 - iii) Length of curve
 - iv) Long chord
 - v) Sub-chord. (10 Marks)
- b. Two tangents intersect at chainage 59 + 60. The deflection angle being $50^{\circ} 30'$. Calculate the necessary data for setting out a curve of 15 chains radius to connect the two tangents. Use Rankine's method of tangential angles. If the least count of theodolite is $20''$, tabulate the actual leadings of deflection angles to be set out. Take peg interval as 100 links, length of the chain is 20 meters (100 kinks). (10 Marks)

OR

- 2 a. The following data refer to a compound circular curve which bears to the right :
Total deflection angle is 93° , Degree of first curve 4° , Degree of second curve 5° . Point of intersection at 45 + 61 (20m units). Determine in 20 meter units the running distance of the tangent points and the point of compound curvature, given that the latter point is 6 + 24 from the point of intersection at back angle of $290^{\circ} 36'$ from the first tangent. (10 Marks)
- b. Derive the conditions to find the elements of reverse curve between two parallel straights. (10 Marks)

Module-2

- 3 a. State the principles of geodetic surveying and write a short note on classification of triangulation. (10 Marks)
- b. Explain in detail :
 - i) Selection of site for base line
 - ii) Well conditioned triangle. (10 Marks)

OR

- 4 a. Briefly explain on Laws of weights base or method of least squares. (10 Marks)
- b. Find the most probable values of the angles A and B from the following observations at a station O :
A = $9^{\circ} 48' 36.6''$ weight 2
B = $54^{\circ} 37' 48.3''$ weight 3
A + B = $104^{\circ} 26' 28.5''$ weight 4. (10 Marks)

Module-3

- 5 a. Define the terms :
- The celestial sphere
 - The Zenith and Nadir
 - The observer's Meridian
 - The of Azimuth
 - The Ecliptic.
- (10 Marks)
- b. Explain with neat sketch on the celestial latitude and longitude system. (10 Marks)

OR

- 6 a. Illustrate with neat sketch on spherical triangle and list its properties. (10 Marks)
- b. Find the shortest distance between two places A and B given that the longitude of A and B are $15^{\circ} 0' N$ and $12^{\circ} 6' N$ and their longitudes are $50^{\circ} 12' E$ and $54^{\circ} 0' E$ respectively. Find also the direction of B on the great circuit route. Radius of earth is 6370 km. (10 Marks)

Module-4

- 7 a. Define the terms :
- Vertical photograph
 - Flying height
 - Exposure station.
- (06 Marks)
- b. Derive the relation for the scale of vertical photograph with a neat sketch. (06 Marks)
- c. A line AB 2000m long, lying at an elevation of 500m measures 8.65cm on a vertical photograph for which focal length is 20cm. Determine the scale of photograph in an area the average elevation of which is about 800m. (08 Marks)

OR

- 8 a. Derive the expression for relief displacement on a vertical photograph. (08 Marks)
- b. The scale of an aerial photograph is 1cm = 100m. The photograph size is 20cm × 20cm. determine the number of photographs required to cover an area of 100km² if the longitudinal lap is 60% and the side lap is 30%. (06 Marks)
- c. Write a brief note on ground control for photogrammetric. (06 Marks)

Module-5

- 9 a. Explain the working principle of total station and list the salient features of total station with neat sketch. (10 Marks)
- b. Define remote sensing and explain in detail basic principles of remote sensing. (10 Marks)

OR

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- 10 a. Define GPS and explain the basic principle of GPS and its applications in surveying. (10 Marks)
- b. What is GIS? With a neat sketch explain the components of GPS in detail. (10 Marks)
