CBCS SCHEME

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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° 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 theodalite 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° 36′ form 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 0 :
A = 9° 48′ 36.6″ weight 2
B = 54° 37′ 48.3″ weight 3
A + B = 104° 26′ 28.5″ weight 4. **(10 Marks)**

Module-3

5 a. Define the terms :
   i) The celestial sphere
   ii) The Zenith and Nadir
   iii) The observer's Meridian
   iv) The of Azimuth
   v) 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° 0′ N and 12° 6′ N and their longitudes are 50° 12′ E and 54° 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 :
   i) Vertical photograph
   ii) Flying height
   iii) 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 100km^2 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

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)**

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