

CBCS SCHEME

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15CV46

Fourth Semester B.E. Degree Examination, June/July 2018 Advanced Surveying

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Define degree of a curve. Establish the relationship between degree of a curve and its radius. (04 Marks)
- b. Two tangents intersect each other at a chainage of 59 + 60, the deflection angle being $50^{\circ}30'$. It is required to connect the two tangents by a simple curve of 15 chain radius. Taking peg interval of 100 links, calculate the necessary data for setting out the curves by Rankine's method of deflection angles. Take length of the chain as 20m = 100 links. Also write a brief procedure for setting out the curve. (12 Marks)

OR

- 2 a. Distinguish between a compound curve and a reverse curve with sketches. (06 Marks)
- b. A compound curve consists of two simple circular of radii 350m and 500m, respectively and is to be laid out between two tangents T_1I and IT_2 . PQ is the common tangent and D is the point of compound curvature. The angles $\angle IPQ$ and $\angle IQP$ are 55° and 25° respectively. Given the chainage of point of intersection as 1800.00m, calculate the chainages of T_1 , T_2 and D. (10 Marks)

Module-2

- 3 a. What are the important factors to be considered in selection of site for a base line? (06 Marks)
- b. From a triangulation satellite station 'Q' 5.80m away from the main station A, the following directions were observed :
A : $0^{\circ} 0' 0''$, B : $132^{\circ} 18' 30''$, C : $232^{\circ} 24' 6''$, and D : $296^{\circ} 6' 11''$.
The inter connected base lines AB, AC and AD were measured as 3265.50m, 4022.20m and 3086.40m respectively. Determine the directions of AB, AC and AD. (10 Marks)

OR

- 4 a. Define the terms :
i) True error
ii) Residual error
iii) Conditioned equation
iv) Indirect observation. (04 Marks)
- b. Three observed angles α , β and γ from a station P with probable errors of measurement are given below :
 $\alpha = 78^{\circ} 12' 12'' \pm 2''$,
 $\beta = 136^{\circ} 48' 30'' \pm 4''$,
 $\gamma = 144^{\circ} 59' 8'' \pm 5''$
Determine their corrected values. (12 Marks)

1 of 2

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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.

Module-3

- 5 a. Define the terms :
 i) Celestial sphere
 ii) Hour angle
 iii) Prime vertical
 iv) Latitude of a place. (04 Marks)
- b. Find the shortest distance between two places A and B given that their latitudes are 12°N and $13^{\circ} 04'\text{N}$ with respective longitudes $72^{\circ} 30'\text{E}$ and $80^{\circ} 12'\text{E}$. (12 Marks)

OR

- 6 a. Briefly explain the solution of spherical triangle by Napier's rule of circular parts. (06 Marks)
- b. The standard time meridian in India is $80^{\circ} 30'\text{E}$. If the standard time of place is $20^{\text{H}} 24^{\text{M}} 06^{\text{S}}$, find the local mean time of two places having the longitudes as 20°E and 20°W respectively. (10 Marks)

Module-4

- 7 a. With a neat sketch, derive the expression for the scale of a vertical photograph. (08 Marks)
- b. A line AB 2.00 kilometer long, lying at an elevation of 500m measures 8.65cm on a vertical photograph of focal length 20cm. Determine the scale of the photograph at an average elevation of 800m. (08 Marks)

OR

- 8 a. Define the terms :
 i) Tilt
 ii) Exposure station
 iii) Principal point
 iv) ISO centre. (08 Marks)
- b. Mention the reasons for photograph over lap. Justify the same. (08 Marks)

Module-5

- 9 a. Define EDM. (03 Marks)
- b. Explain the working of remote sensing equipment. (05 Marks)
- c. What are the advantages of LIDAR technology? (08 Marks)

OR

- 10 a. Explain the working of total station. (08 Marks)
- b. Explain the civil engineering applications in GIS and remote sensing. (08 Marks)

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