

- (b) Explain the following :
- Aerial Camera
 - Scale of a Vertical photograph. $2 \times 5 = 10$

Section D

7. (a) Describe visible light instruments in the category of EDM instruments.
- (b) Discuss interaction of EM Radiation with Earth's surface. $2 \times 5 = 10$
8. (a) Discuss briefly the principle of GIS and advantages of GIS.
- (b) Briefly discuss the functioning of GPS. Discuss the error in GPS. $2 \times 5 = 10$

(Compulsory Question)

9. (a) Explain the theory of anallatic lens.
- (b) Define compound curve.
- (c) Discuss the disadvantages of transition curve.
- (d) Explain the importance of inter-visibility of stations in surveying.

July-22-00251

B.Tech. EXAMINATION, 2022

Semester IV (CBCS)

CIVIL ENGINEERING

CE-403

Engineering Surveying-II

Time : 3 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt Five questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. 9 is compulsory.

Section A

1. (a) Derive the formula for distance and elevation for the condition with staff normal and inclined sight.

(b) Discuss the different methods employed in tacheometer surveying. $2 \times 5 = 10$

2. Sighted horizontally, a tacheometer reads 1.645 and 2.840 corresponding to the stadia wires, on a vertical staff 120 m away. The focal length of the object glass is 20 cm and distance from the object glass to the trunnion axis is 15 cm. Calculate the stadia interval. 10

Section B

3. (a) Discuss the Rankine's method of tangential angles to set out a simple curve.
- (b) A compound curve is to connect two straight having a deflection angle of 90° . As determined from the plan, the lengths of the two tangents are 350 m and 400 m, respectively. Calculate the lengths of the two arcs if the radius of the first curve is to be 300 m. $2 \times 5 = 10$

4. (a) Explain the elements of a reverse curve, with the help of neat diagram.
- (b) Discuss the method of rate of change of radial acceleration, to determine the length of transition curve. $2 \times 5 = 10$

Section C

5. (a) Discuss the procedure to determine the difference in elevation between the instrument station and the object under observation, in same vertical plane, when the base of the object is inaccessible.
- (b) Adjust the angles A and B, observations of which give :
- | | |
|-----------------------------|------------------------------|
| $A = 20^\circ 10' 10''$ | ; weight 6 |
| $B = 30^\circ 20' 30''$ | ; weight 4 |
| $A + B = 50^\circ 30' 50''$ | ; weight 2 $2 \times 5 = 10$ |
6. (a) Discuss the various steps involved in the combination of vertical air photographs by the principal point radial line method.

- (e) List laws of weights.
- (f) Define tilt distortion.
- (g) Define flight planning.
- (h) Discuss the principle of working of EDM instruments.
- (i) Define tilt displacement.
- (j) Define stereoscopic vision and parallax.

10×2=20

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