

Section D

7. (a) Discuss the procedure to determine the area of an irregular figure by Trapezoidal rule.
(b) Describe the mid-ordinate and average ordinate rules to calculate the area of figure. $2 \times 5 = 10$
8. (a) Discuss briefly the various elements of a vertical curve. Explain the method of tangents to set out a simple curve.
(b) Elaborate different types of curve. Discuss the characteristics and components parts with the help of a neat sketch. $2 \times 5 = 10$

(Compulsory Question)

9. (a) Explain principle of chain surveying.
(b) Discuss the components of prism square.
(c) Define tie lines and check lines in chaining.
(d) Explain temporary adjustments in plane table survey.
(e) Define reciprocal leveling.

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B.Tech. EXAMINATION, 2022

Semester III (CBCS)

CIVIL ENGINEERING

CE-303

Engineering Surveying-I

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) Discuss the following, with the help of neat diagrams :
(i) Optical square
(ii) Cross staff.

- (b) A chain line ABC crosses a river, B and C being on the near and distant banks respectively. The respective bearings of C and A taken at D, a point 60 m measured at right angles to AB from B are 280° and 190° , AB being 32 m. Find the width of river. $2 \times 5 = 10$

2. (a) Differentiate between Prismatic and Surveyor's compass. Discuss the errors in compass survey.
- (b) At a place the bearing of sun is measured at local noon and found to be $175^\circ 15'$. What is the magnitude and direction of magnetic declination of the place ? $2 \times 5 = 10$

Section B

3. (a) Explain the following :
- (i) Traversing
- (ii) Resection methods of plane table surveying.
- (b) Discuss three point problem. Explain the procedure to solve it. $2 \times 5 = 10$

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4. The following consecutive readings were taken with a level and 5 m levelling staff on continuously sloping ground at a common interval of 20 m. The staff readings taken are :
0.602, 1.234, 1.860, 2.574, 0.238, 0.914, 1.936, 2.872,
0.568, 1.824 and 2.722
The R.L. of first point was 192.122 m. Calculate the RL of above points by height of instrument method and calculate the gradient of line joining the first and last RL. 10

Section C

5. (a) Explain the repetition method to measure the horizontal angles with the help of theodolite.
- (b) What are the different errors in theodolite work ? How are these eliminated ? $2 \times 5 = 10$
6. (a) Explain the horizontal control for setting out works. Also discuss the setting out of sewer line.
- (b) Briefly discuss the procedure of setting out center line for tunnel. $2 \times 5 = 10$

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- (f) Discuss axis signal correction.
- (g) Explain swing left and swing right readings.
- (h) Define Zero circle.
- (i) List various types of transition curve.
- (j) Discuss various types of planimeter. **10×2=20**

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