

S.E. Civil III CBGS

5-6-15

Surveying - I

QP Code : 4766

(3 Hours)

[Total Marks : 80

- N. B. : (1) Question No. 1 is compulsory.
 (2) Attempt any three question out of remaining questions.
 (3) Illustrate answers with neat sketches wherever required.
 (4) Attempt sub-question in order.
 (5) Assume any suitable data if required and state the same clearly.

1. Attempt any four :- 20
- Explain principles of surveying with suitable example.
 - Explain with neat sketch dip of magnetic needle.
 - Describe various method of plane table surveying.
 - Write an exhaustive note on characteristics of contour.
 - Explain Bowditch rule for adjustment of theodolite traverse.
 - Compare Trapezoidal Rule and Simpson's Rule for determination of area.
2. (a) Explain the obstacles in chaining. 6
- (b) On a map drawn to a scale of 40 m to 1 cm, a surveyor measured the distance between two stations as 400 m. But it was found that by mistake he had used a scale of 100 m to 1 cm. Find the true distance between the stations. 7
- (c) A closed traverse is conducted with five stations A, B, C, D and E taken in anticlockwise order, in the form of regular pentagon. If the F.B. of AB is 30° find the F.B. of other side. 7
3. (a) Explain the various type of bench marks in levelling. 4
- (b) Discuss the advantages and disadvantages of plane table survey. 6
- (c) The following consecutive reading were taken with a levelling instrument at intervals of 20 m 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m. 10
 The instrument was shifted after the fourth & eighth reading. The last reading was taken on BM of RL 100 200 m. Find the RL of all the points.
4. (a) What is the spire test & how is it carried out in the field. 8

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- (b) Calculate latitudes, departures & closing error for the following traverse & adjust using Bowditch Rule 12

Line	length	W.C.B.
AB	89.31	45°10'
BC	219.76	72°05'
CD	151.18	161°52'
DE	159.10	228°43'
EA	232.26	300°42'

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5. (a) The following perpendicular offsets was taken from a chain line to an irregular boundary. Calculate the area using trapezoidal and simpsons rule. 10
- | | | | | | | | | |
|--------------|---|------|------|------|------|------|------|------|
| Chainage (m) | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 |
| Offsets (m) | 0 | 2.65 | 3.80 | 3.75 | 4.65 | 3.60 | 5.00 | 5.18 |
- (b) Explain interpolation method of contour. 5
- (c) Explain fly levelling. 5

5. Write short notes on any four :- 20
- Reciprocal levelling
 - Orientation in PTS
 - Area of zero circle
 - Hyptenusal allowance
 - Fundamental lines of a theodolite & relation between them