

III/SEM/CIVIL/2015(W)

(2)

SURVEY-I

Sub Code-CET-303

Full Marks : 70

Time : 3 hours

Answer any five questions

The figures in the right-hand margin indicate marks

- 1. (a) What is cadastral surveying? 2
- (b) Describe briefly ranging across a high ground. 5
- (c) A 30 m steel tape was standardized on flat ground, at a temperature of 30 °C and under a pull of 10 kg. The cross-sectional area of the tape is 0.30 cm², and its total weight is 600 gm. The Young's modulus and co-efficient of linear expansion of steel are 2.1×10^6 kg/cm² and 11×10^{-6} per °C respectively. Find the correct horizontal distance. 7
- 2. (a) State Simpson's rule. 2
- (b) Explain the procedures for setting up plane table over a station. 5

(Turn Over)

- (c) Explain any one method of adjusting closing errors. 7
- 3. (a) Define fore bearing and back bearing of a survey line. 2
- (b) What are the obstacles in chaining ? Explain any one with neat sketch. 5
- (c) The following bearings were observed in traversing with a compass. At what station do you suspect local attraction ? Correct the bearings.

| Line | F.B | B.B |
|------|---------|---------|
| AB | 44°30' | 226°30' |
| BC | 124°30' | 302°15' |
| CD | 181°00' | 1°00' |
| DA | 288°30' | 108°45' |

Calculate also true bearings if the declination was 1°30' E. 7

- 4. (a) Draw the conventional symbols of church and railway crossing. 2
- (b) The following offsets were taken from a chain line to an irregular boundary line at an interval

(3)

of 4 m. 0, 2.6, 3.5, 4.5, 4.8, 3, 2.8 and 0 .
Compute the area between the chain line, the
irregular boundary line and the end offsets by
Simpson's rule.

5

(c) A line CAB crosses a river. A and B are on near
and distant banks of the river respectively.
Perpendiculars AD and CE are 30.5 m and
50.5 m respectively. Such that B, D and E are
in a straight line. If the chainage of A is
550.5 m and AC = 45 m, then calculate the
chainage of B.

7

5. (a) The bearing of line AB and AE are 210° and
 70° respectively. Calculate the interior
angle A. <http://www.sctevtonline.com>

2

(b) A surveyor measured the distance between two
points on the plan drawn to a scale of 1 cm =
40 m and the result was 460 m. Later however
he found that he used a scale of 1 cm = 20 m.
Find the true distance between the points.

5

(c) Describe the field procedure of chain survey.

7

6. (a) Convert the following W.C.B to Q.B. :

2

(i) $160^\circ 25'$

(4)

(ii) $285^\circ 50'$

(iii) $15^\circ 45'$

(iv) $203^\circ 30'$

(b) Explain the principle of a line ranger with neat
sketch.

5

(c) What is two point problem ? Explain the above
problem with neat sketch.

7

7. (a) Define well-conditioned and ill-conditioned
triangle.

2

(b) Explain the various sources of error in
compass.

5

(c) Write short notes on radiation method and
traversing method in plane table surveying.

7

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