

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: CIVIL**

**SEMESTER: III
SESSION : MO/2018**

SUBJECT : CE3003-SURVEYING - I

TIME: 1.5 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 30.
 2. Candidates may attempt for all 30 marks.
 3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. The missing data, if any, may be assumed suitably.
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- Q1 (a) What are the principles of surveying? [2]
(b) On a map drawn to a scale of 50 m to 1 cm, a surveyor measured the distance between two stations as 3500 m. But later, it was found that by mistake he had used a scale of 100 m to 1 cm. Find the true distance between the stations. [3]
- Q2 (a) What are the classifications of survey? [2]
(b) An old map was plotted to a scale of 40 m to 1 cm. Over the years, the map has been shrinking, and a line originally 20 cm long is only 19.5 cm long at present. If the present area of the map measured by planimeter is 125.50 cm², find the true area of the land surveyed. [3]
- Q3 A steel tape was exactly 20 m long at 20°C when supported throughout its length under a pull of 5 kg. A line measured with this tape under a pull of 16 kg and at a mean temperature of 32°C, was found to be 680 m long. Assuming the tape is supported at every 20 m, find the true length of the line. Given that (i) Cross-sectional area of the tape = 0.03 cm², (ii) $E = 2.1 \times 10^6$ kg/cm², (iii) $\alpha = 11 \times 10^{-6}$ per °C, and (iv) density of the tape = 10 g/c.c. [5]
- Q4 (a) List the obstacles in chain survey? [2]
(b) Explain the working principle of optical square with proper figure. [3]
- Q5 (a) What is local attraction? [2]
(b) Convert the following W.C.B. to R.B. or vice versa: (i) 123° 17', (ii) S 74° 32' W, (iii) N 13° 21' E. [3]
- Q6 A closed traverse is conducted with five stations A, B, C, D and E taken in anticlockwise order, in the form of a regular pentagon. If the F.B. of AB is 30° 00', Find the F.B. of the other sides. [5]