Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
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A Constituent Institution of Manipal University

III SEMESTER B.TECH. (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: BASICS OF SURVEYING [CIE 2104]

REVISED CREDIT SYSTEM
(04/01/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A.	Explain any two methods of carrying out chain surveying when there is obstacle to both chaining and ranging with neat diagram.	**03**	**CO 1**
1B.	Explain the working principle of Optical square with neat diagram.	**03**	**CO 1**
1C.	A 3 km long line is measured with a tape of length 30m which is standardized under no pull at 15°c. The tape has cross sectional area of 3.75mm^2. If one half of the line is measured at temperature of 20°c and other half at 26°c and the tape is stretched with a pull of 22kg. Find the corrected total length, given that $\alpha=12x10^{-6}$per°c, weight of 1cm^3 of steel=7.7504gm and $E=2.11x10^6$kg/cm^2	**04**	**CO 1**
2A.	Find which stations are affected by local attraction. Work out correct bearings of the lines of a closed traverse ABCDEA using included angles at each station.	**05**	**CO 2**
2B.	Explain methods of obtaining omitted measurements for the following cases: a) When length of one side and bearing of another side are omitted b) When length of two side are omitted	**05**	**CO 2**
3A.	Explain in detail how the contour maps helps in determining the reservoir capacity. Substantiate with the help of a figure.	**04**	**CO 1**
3B.	Explain in detail the resection after orientation by two points with neat figures.	**06**	**CO 2**

Line	FB	BB
AB	$195^0\,30'$	$17^0\,0'$
BC	$73^0\,30'$	$250^0\,30'$
CD	$36^0\,15'$	$214^0\,30'$
DE	$266^0\,45'$	$84^0\,45'$
EA	$234^0\,15'$	$57^0\,0'$

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<table>
<tr><td>4A.</td><td>It has been found necessary to consult the notes of dumpy levelling carried out some years ago. But some of the readings are illegible. Calculate the missing values.
<table>
<tr><th>BS (m)</th><th>IS (m)</th><th>FS (m)</th><th>Rise (m)</th><th>Fall (m)</th><th>RL (m)</th><th>Remarks</th></tr>
<tr><td>0.719</td><td></td><td></td><td></td><td></td><td>36.990</td><td>BM</td></tr>
<tr><td></td><td></td><td></td><td></td><td>0.591</td><td></td><td></td></tr>
<tr><td>1.234</td><td></td><td>2.222</td><td></td><td></td><td></td><td>TP</td></tr>
<tr><td></td><td></td><td></td><td></td><td>1.359</td><td></td><td></td></tr>
<tr><td></td><td>1.314</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>2.112</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>34.540</td><td></td></tr>
<tr><td></td><td></td><td>2.374</td><td></td><td></td><td></td><td>TP</td></tr>
<tr><td></td><td>0.981</td><td></td><td>0.481</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>34.141</td><td></td></tr>
<tr><td></td><td>1.990</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>34.603</td><td></td></tr>
<tr><td></td><td></td><td>1.786</td><td></td><td></td><td></td><td></td></tr>
</table></td><td>06</td><td>CO 3</td></tr>
<tr><td>4B.</td><td>Obtain expressions for correction due to curvature and refraction in calculating true difference in elevation between two points.</td><td>04</td><td>CO 3</td></tr>
<tr><td>5A.</td><td>Explain in detail the method of double plane trigonometric levelling.</td><td>06</td><td>CO 3</td></tr>
<tr><td>5B.</td><td>Explain the methods of repetition and reiteration of measuring angles using theodolite</td><td>04</td><td>CO 3</td></tr>
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