Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

IV SEMESTER B.TECH. (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, JUN/JUL- 2017

SUBJECT: APPLIED SURVEYING [CIE 2204]

REVISED CREDIT SYSTEM
(/ /2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

<table>
<tr><td>1A.</td><td>With the neat sketch derive an expression for horizontal and vertical distances for all the cases using tangential method.</td><td>6M</td></tr>
<tr><td>1B.</td><td>Determine the value of stadia constants for the following observations with the horizontal line of sight.
<table>
<tr><th rowspan="2">instrument</th><th rowspan="2">Staff reading</th><th rowspan="2">Distance (m)</th><th colspan="2">Stadia reading</th></tr>
<tr><th>Upper</th><th>Lower</th></tr>
<tr><td rowspan="3">O</td><td>A</td><td>150</td><td>1.255</td><td>2.750</td></tr>
<tr><td>B</td><td>200</td><td>1.000</td><td>3.000</td></tr>
<tr><td>C</td><td>250</td><td>0.750</td><td>3.255</td></tr>
</table></td><td>4M</td></tr>
<tr><td>2A.</td><td>Discuss the scale of an aerial vertical photograph and also derive the expression for the same in various cases.</td><td>6M</td></tr>
<tr><td>2B.</td><td>Photographs of a certain area were taken from P and Q, two camera stations, 100m apart. The focal length of the camera is 150mm. The axis of the camera makes an angle of 60° and 40° with the base line at stations P and Q respectively. The image of a point A appears 20.2mm to the right and 16.4mm above the hair lines on the photograph taken at P 35.2mm to the left on the photograph taken at Q. Calculate the distance PA and QA and elevation of point A, if the elevation of the instrument axis at P is 126.845m.</td><td>4M</td></tr>
<tr><td>3A.</td><td>Write a short on setting out of bridges.</td><td>3M</td></tr>
<tr><td>3B.</td><td>Explain the operation of transferring the surface alignment to underground line.</td><td>3M</td></tr>
<tr><td>3C.</td><td>What are the requirement of sounding? And Describe briefly how the soundings are located by two angles from the shore and intersecting ranges.</td><td>4M</td></tr>
</table>

Reg. No.										

4A.	A circular curve of 900m radius has been set out connecting two straights with a deflection angle of 50^o. It is decided, for construction reasons, that the mid-point of the curve must be moved 4m towards the center, i.e., away from the intersection point. The alignment of the straights is to remain unaltered. Calculate radius of new curve, deflection angle required for setting out 40m chords of the new curve and length of curve, distance from the intersection point to the new tangent point.	**7M**
4B.	With neat sketch explain the elements of simple circular curve.	**3M**
5A.	Two straights intersecting at an angle of 60^o. Calculate all the data necessary to set out the Bernoulli's Lemniscate Curve, at least 10 points are to be marked on the ground for setting out curve, if the apex distance is 25m.	**6M**
5B.	Explain briefly the principle of EDM.	**4M**