There are four tasks for this exam. It is expected that you do all. The four tasks are weighted as indicated in brackets.

Task 1: Explain the following concepts (20%)

a. Curvature
b. Flow direction
c. LIDAR
d. Viewshed
e. Watershed

Task 2: Representations (20%)

a. Describe the difference between a discrete thematic raster and a continuous thematic raster.
b. Describe the different effects of using soft versus hard break lines when constructing a Triangular Irregular Network (TIN) model.
Task 3: Map algebra (30%)

Below is two raster, a zone raster and a value raster, which you will use as input to a zonal map algebra function. The output of the function will be a table with some descriptive statistics. Draw this table and fill it with values for the following descriptive statistics: COUNT, MIN, MAX, RANGE, SUM, VARIETY, MAJORITY, MINORITY, MEDIAN. You should ignore NoData in calculating the zonal statistics.

<table>
<thead>
<tr>
<th>Zone raster</th>
<th>Value raster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 0 0</td>
<td>0 1 1 0</td>
</tr>
<tr>
<td>1 2 2</td>
<td>3 3 1 2</td>
</tr>
<tr>
<td>4 0 0 2</td>
<td>0 0 2</td>
</tr>
<tr>
<td>4 0 1 1</td>
<td>3 2 1 0</td>
</tr>
</tbody>
</table>

Task 4: Kriging (30%)

Use the two illustrations below as a point of departure to explain the main principles which Kriging is based on.

a) 

b)