

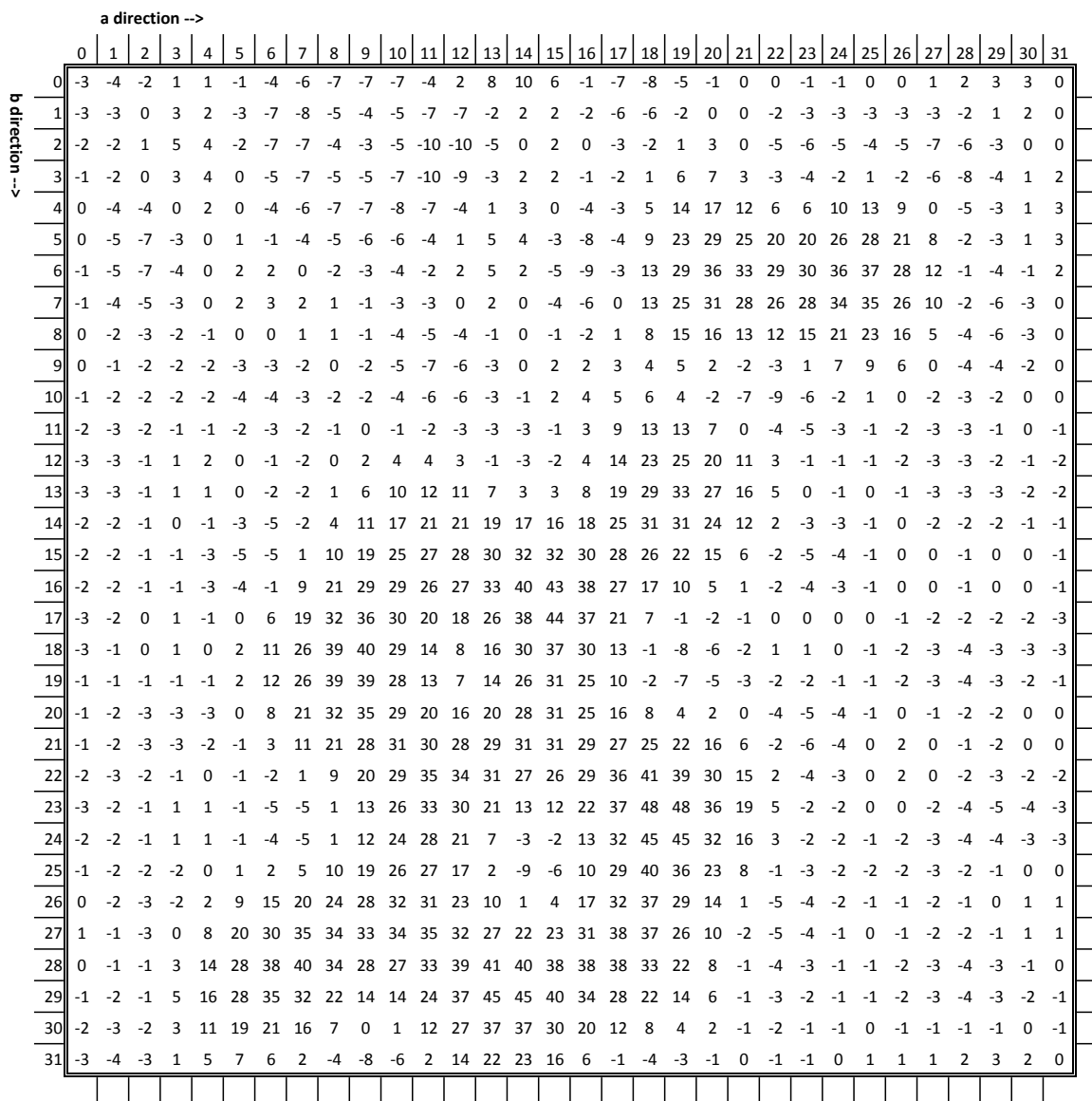
2.) The table below shows a slice from an electron density map of a small organic molecule. The whole 3D map has the following parameters:

```

Number of columns, rows, sections ..... 32 32 32
Map mode ..... 2
Start and stop points on columns, rows, sections 0 31 0 31 0 31
Grid sampling on x, y, z ..... 32 32 32
Cell dimensions ..... 10.0 10.0 10.0 90.0 90.0 90.0
Fast, medium, slow axes ..... Z X Y
Minimum density ..... -13.2446
Maximum density ..... 103.9197
Mean density ..... -0.00000
Rms deviation from mean density ..... 6.54540
Space-group ..... 1
  
```

Select a few suitable electron density levels and manually draw the contours into the electron density map slice. Answer the following questions:

- Does it make sense to select contour levels with negative values?
- How many atoms can you identify in the electron density map slice?
- List the fractional coordinates of all atoms you can identify.
- Estimate the errors of the atom positions based on the map slice.
- What is the pixel size in the 2D slice of the map?
- What is the voxel size of the map?



G) (UNRELATED TO THE MAP ABOVE) What is the voxel size of a map with the following parameters:

```

Grid sampling on x, y, z ..... 77 154 10
Cell dimensions ..... 77.0 285.7 54.0 90.0 135.4 74.0
  
```