Representing Galvanic Cells: Application Questions

Background
You will test your understanding of galvanic cells and the redox reactions that they involve by analyzing a novel cell and describing in a variety of forms (e.g. diagram, equation, prediction of macroscopic changes, etc.)

Tasks:
1. Sketch a galvanic cell made by the following:
   Ni (s) electrode in 1.0 M Ni^{2+} (aq)
   Ag (s) electrode in 1.0 M Ag^+ (aq)

   NOTE: Your sketch should include the following pieces of information:
   a. Cell potential
   b. Direction of electron flow
   c. Anode and cathode labels
   d. Direction of salt bridge anion flow
   e. Direction of salt bridge cation flow

2. Write the balanced reaction for this cell (assume it is in a neutral solution).

3. Write the cell line notation for this cell.
4. Predict the weight (lighter, heavier, or the same) of the Ni (s) and Ag(s) metal strips after the cell has been running for a period of time.

5. Explain your thinking for each one. If it is heavier, what has been added? From where? By what process? If it is lighter, what has been removed? By what process?

6. Predict the concentration (higher, lower or the same) of the Ni$^{+2}$ (aq) and Ag$^{+}$ (aq) solutions after the cell has been running for a period of time.

7. Explain your thinking for each one. If it is more concentrated, how did this happen? If it is more dilute, how did this happen?