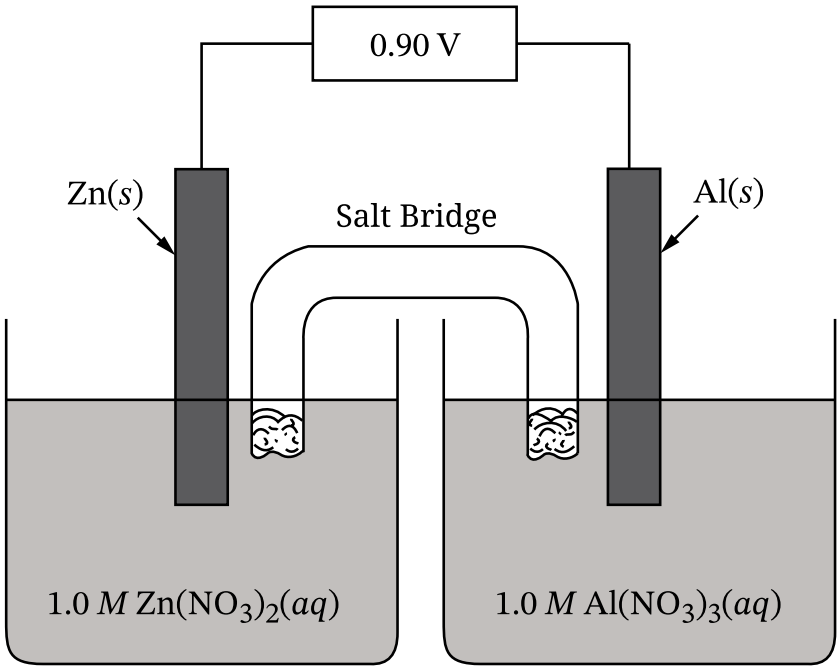
6. A scientist constructs a galvanic cell as shown in the diagram. As the cell operates, the $Zn(s)$ electrode increases in mass and the $Al(s)$ electrode decreases in mass. A data table with the standard reduction potentials for the substances follows the diagram.



Half-Reaction	E° (V)
$Zn^{2+}(aq) + 2\ e^- \rightarrow Zn(s)$	-0.76
$Al^{3+}(aq) + 3\ e^- \rightarrow Al(s)$	-1.66

A. Write the half-reaction for the oxidation that occurs at the anode.

B. Write the balanced net ionic equation for the overall reaction that occurs in the galvanic cell.

C. Initially, each electrode has a mass of 50.0 g. The cell is allowed to run for a period of time and is then stopped. Which electrode's mass changed the most? Justify your answer with a calculation.

Reduction Half-Reaction	E° (V)
$Au^{3+}(aq) + 3\ e^- \rightarrow Au(s)$	$+1.50$
$Zn^{2+}(aq) + 2\ e^- \rightarrow Zn(s)$	-0.76
$Mn^{2+}(aq) + 2\ e^- \rightarrow Mn(s)$	-1.19
$Al^{3+}(aq) + 3\ e^- \rightarrow Al(s)$	-1.66
$Be^{2+}(aq) + 2\ e^- \rightarrow Be(s)$	-1.85

D. The standard Zn/Al cell has a value of E°_{cell} equal to 0.90 V. The scientist needs a galvanic cell that produces a greater voltage. The scientist has access to the chemical systems in the table. If the scientist uses the Zn half-cell and one of the other options from the table, what is the MAXIMUM voltage that could be generated at standard conditions?