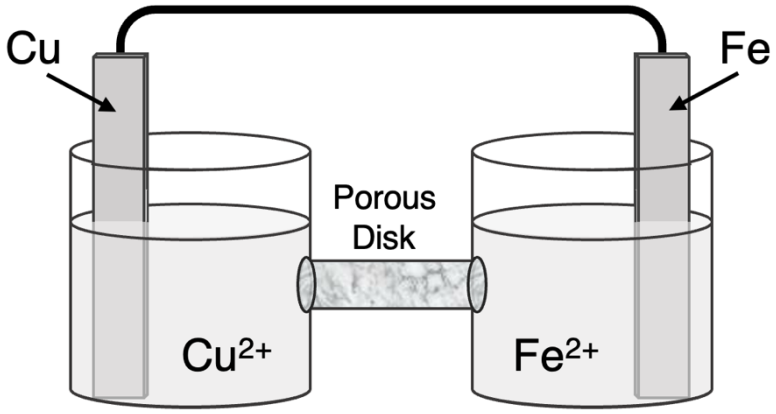
Oxidation-Reduction

Apprentice Difficulty Level
Question Group 1
Question 1

The redox reaction for this galvanic cell is:

$$Cu^{2+}_{(aq)} + Fe_{(s)} \rightarrow Cu_{(s)} + Fe^{2+}_{(aq)}$$

Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.

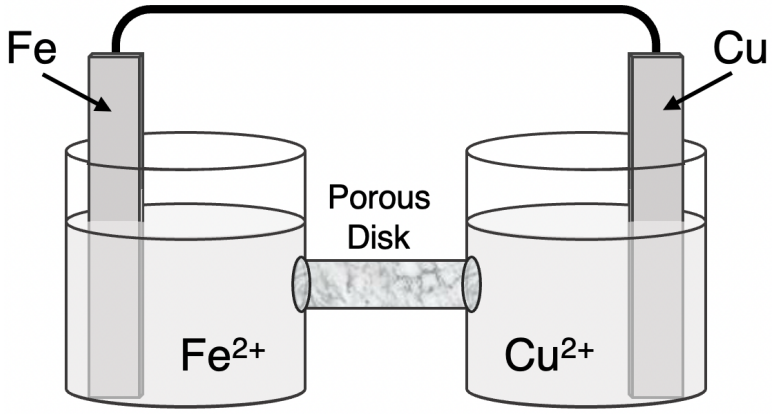


Question 2

The redox reaction for this galvanic cell is:

$$Fe_{(s)} + Cu^{2+}_{(aq)} \rightarrow Fe^{2+}_{(aq)} + Cu_{(s)}$$

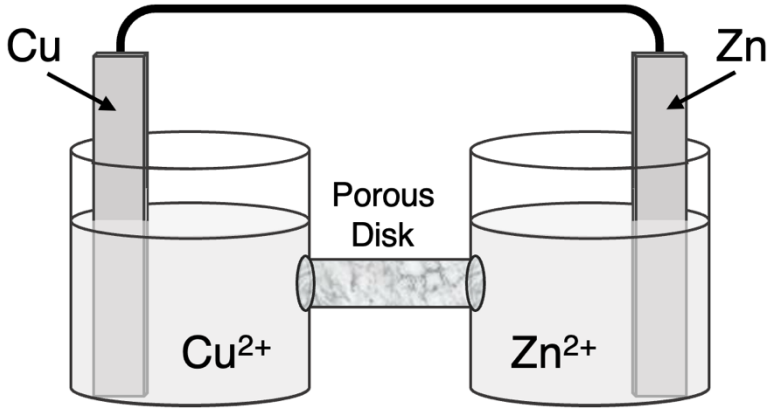
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question Group 2
Question3
The redox reaction for this galvanic cell is:

$$Cu^{2+}_{(aq)} + Zn_{(s)} \rightarrow Cu_{(s)} + Zn^{2+}_{(aq)}$$

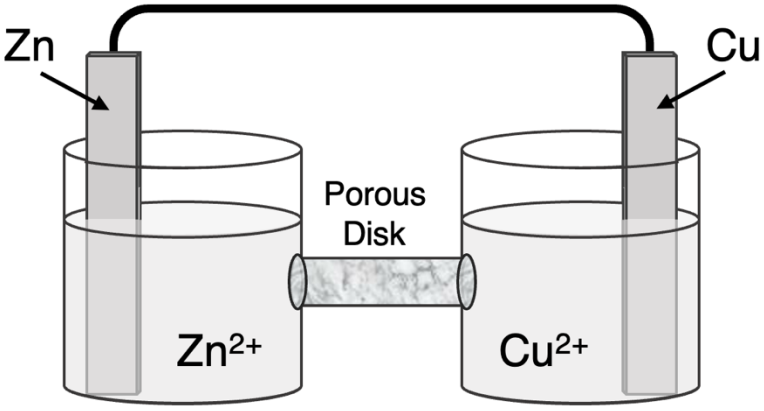
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question 4
The redox reaction for this galvanic cell is:

$$Zn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$$

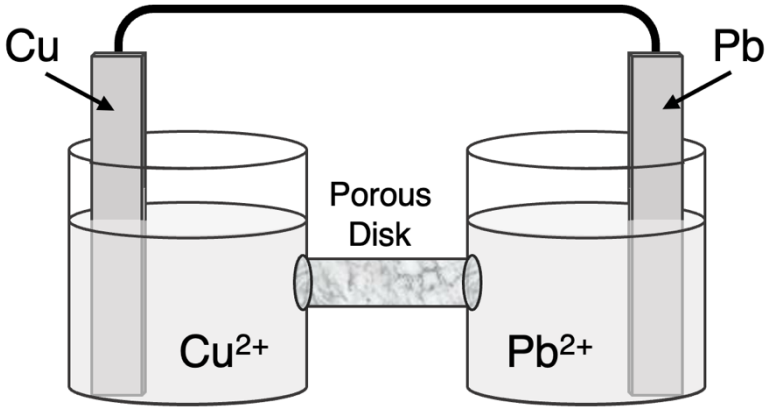
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question Group 3
Question 5
The redox reaction for this galvanic cell is:

$$Cu^{2+}_{(aq)} + Pb_{(s)} \rightarrow Cu_{(s)} + Pb^{2+}_{(aq)}$$

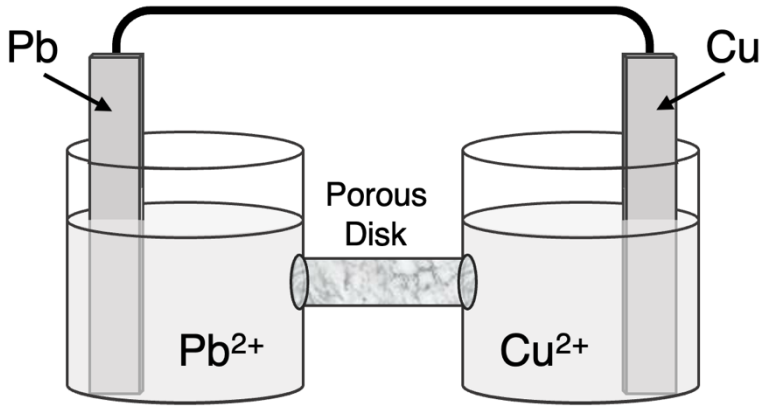
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question 6
The redox reaction for this galvanic cell is:

$$Pb_{(s)} + Cu^{2+}_{(aq)} \rightarrow Pb^{2+}_{(aq)} + Cu_{(s)}$$

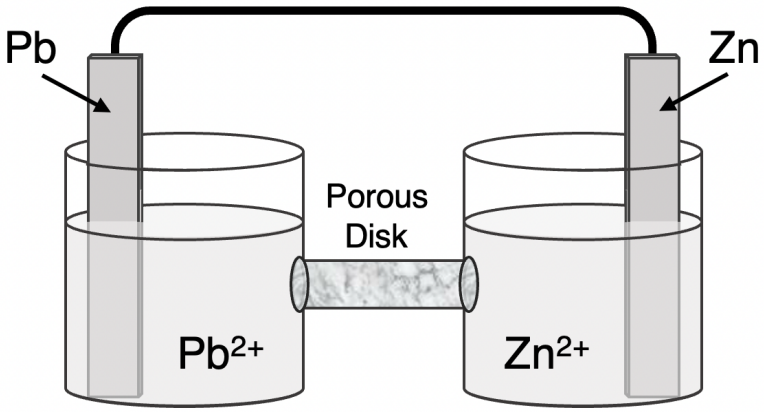
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question Group 4
Question 7
The redox reaction for this galvanic cell is:

$$Pb^{2+}_{(aq)} + Zn_{(s)} \rightarrow Pb_{(s)} + Zn^{2+}_{(aq)}$$

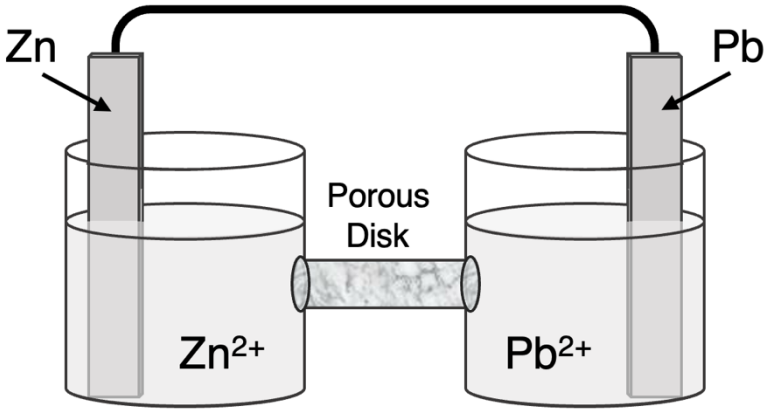
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Question 8
The redox reaction for this galvanic cell is:

$$Zn_{(s)} + Pb^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Pb_{(s)}$$

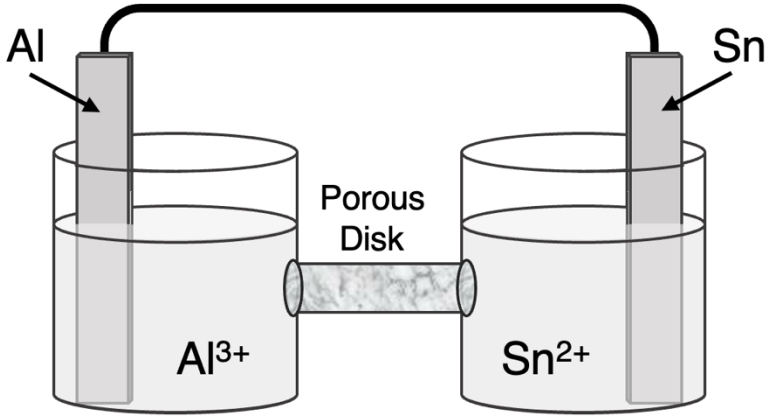
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, and identifying the direction of electron flow in the wire.



Master Difficulty Level
Question Group 5
Question 9
The redox reaction for this galvanic cell is:

$$Al_{(s)} + Sn^{2+}_{(aq)} \rightarrow Al^{3+}_{(aq)} + Sn_{(s)}$$

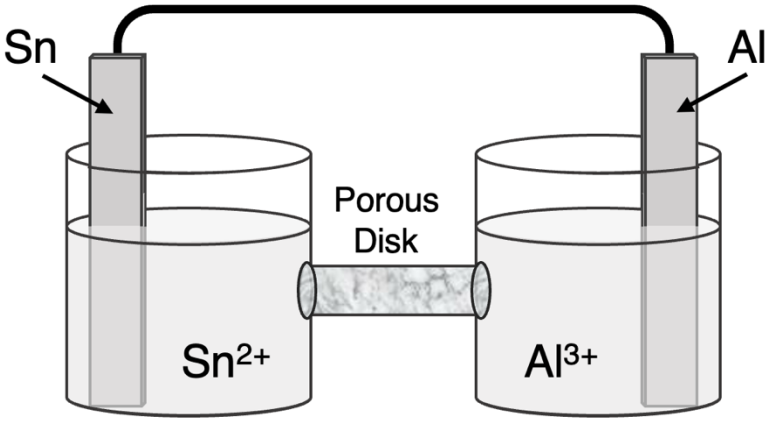
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 10
The redox reaction for this galvanic cell is:

$$Sn^{2+}_{(aq)} + Al_{(s)} \rightarrow Sn_{(s)} + Al^{3+}_{(aq)}$$

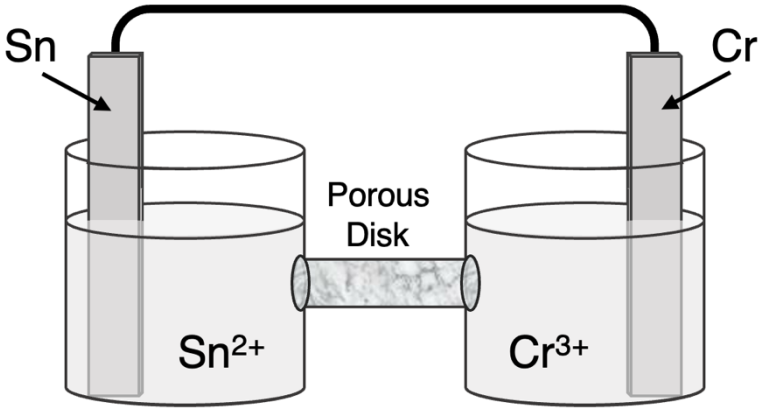
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 6
Question 11
The redox reaction for this galvanic cell is:

$$Sn^{2+}_{(aq)} + Cr_{(s)} \rightarrow Sn_{(s)} + Cr^{3+}_{(aq)}$$

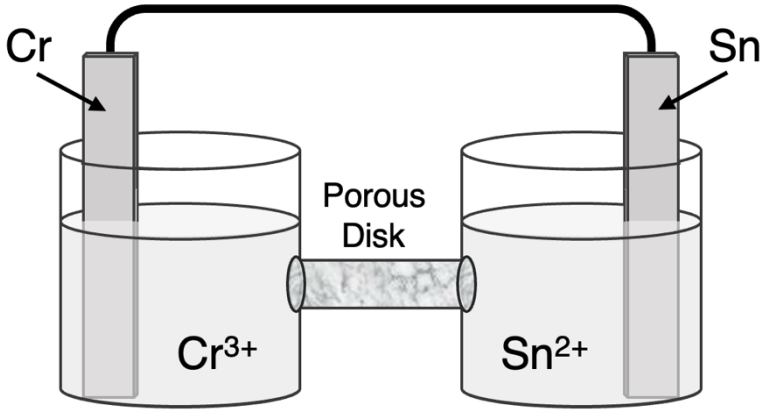
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 12
The redox reaction for this galvanic cell is:

$$Cr_{(s)} + Sn^{2+}_{(aq)} \rightarrow Cr^{3+}_{(aq)} + Sn_{(s)}$$

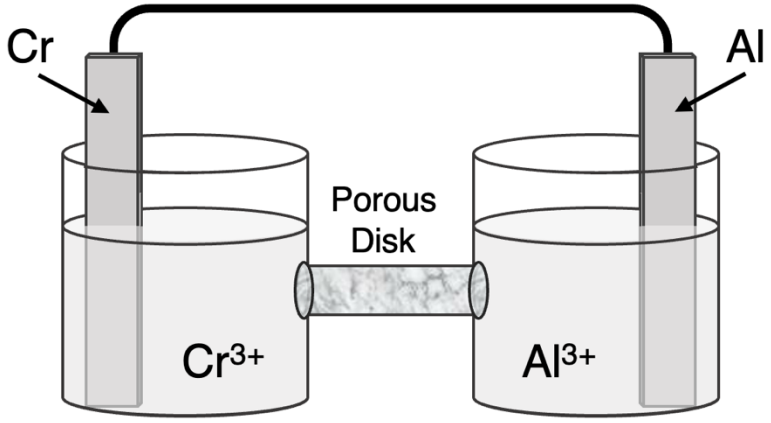
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 7
Question 13
The redox reaction for this galvanic cell is:

$$Cr^{3+}_{(aq)} + Al_{(s)} \rightarrow Cr_{(s)} + Al^{3+}_{(aq)}$$

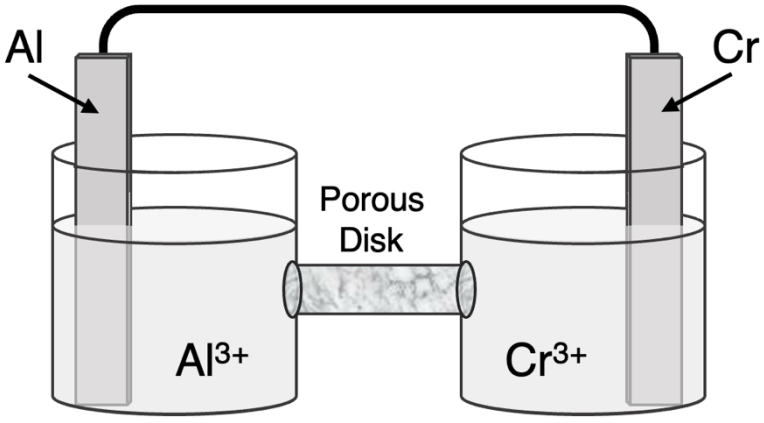
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 14
The redox reaction for this galvanic cell is:

$$Al_{(s)} + Cr^{3+}_{(aq)} \rightarrow Al^{3+}_{(aq)} + Cr_{(s)}$$

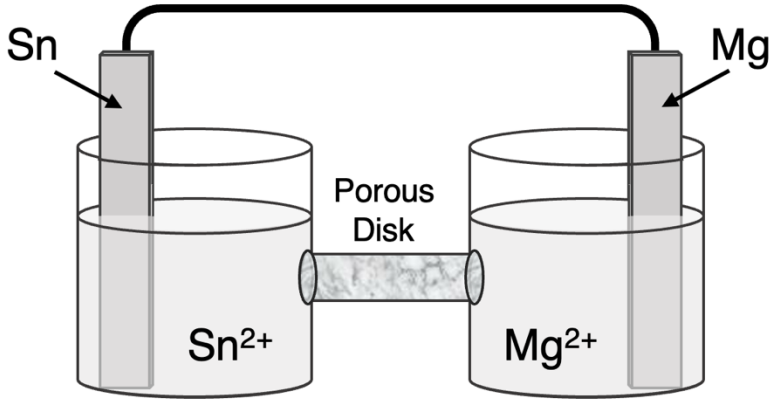
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 8
Question 15
The redox reaction for this galvanic cell is:

$$Sn^{2+}_{(aq)} + Mg_{(s)} \rightarrow Sn_{(s)} + Mg^{2+}_{(aq)}$$

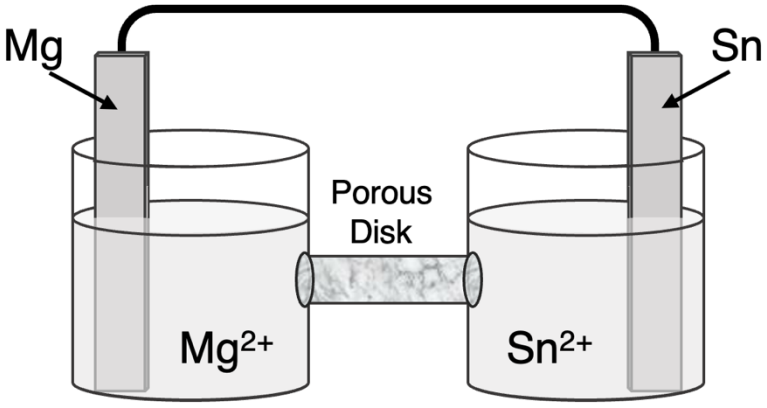
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 16
The redox reaction for this galvanic cell is:

$$Mg_{(s)} + Sn^{2+}_{(aq)} \rightarrow Mg^{2+}_{(aq)} + Sn_{(s)}$$

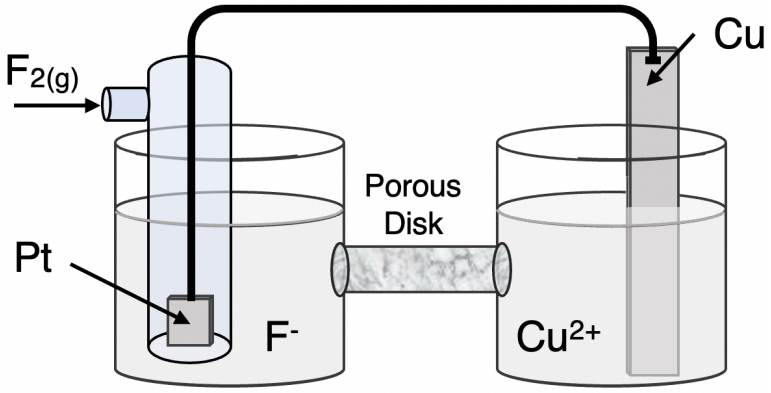
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Wizard Difficulty Level
Question Group 9
Question 17
The redox reaction for this galvanic cell is:

$$F_{2(g)} + Cu_{(s)} \rightarrow 2\ F^-_{(aq)} + Cu^{2+}_{(aq)}$$

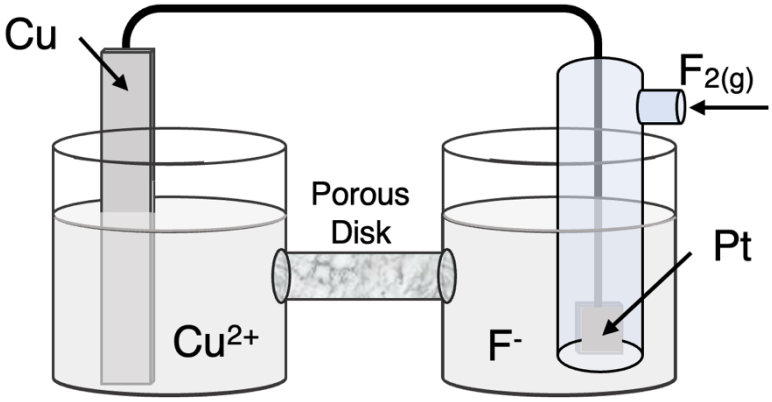
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 18
The redox reaction for this galvanic cell is:

$$Cu_{(s)} + F_{2(g)} \rightarrow Cu^{2+}_{(aq)} + 2\ F^-_{(aq)}$$

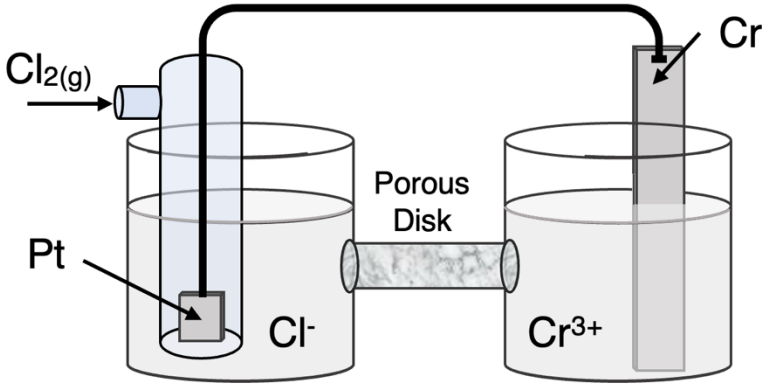
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 10
Question 19
The redox reaction for this galvanic cell is:

$$3\ Cl_{2(g)}\ +\ 2\ Cr_{(s)}\ \rightarrow\ 6\ Cl^{-}_{(aq)}\ +\ 2\ Cr^{3+}_{(aq)}$$

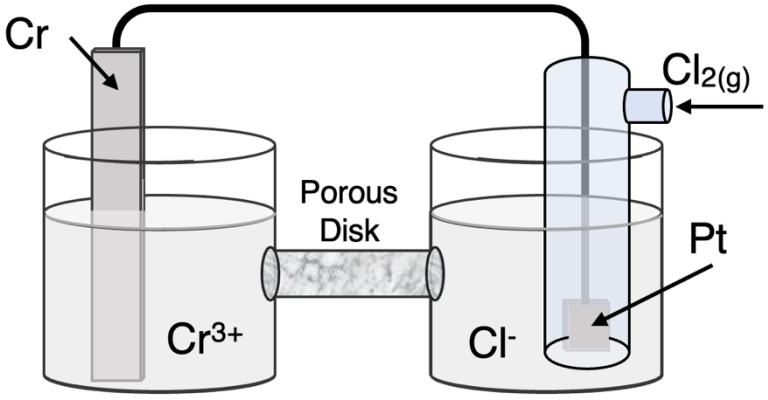
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 20
The redox reaction for this galvanic cell is:

$$2\ Cr_{(s)}\ +\ 3\ Cl_{2(g)}\ \rightarrow\ 2\ Cr^{3+}_{(aq)}\ +\ 6\ Cl^{-}_{(aq)}$$

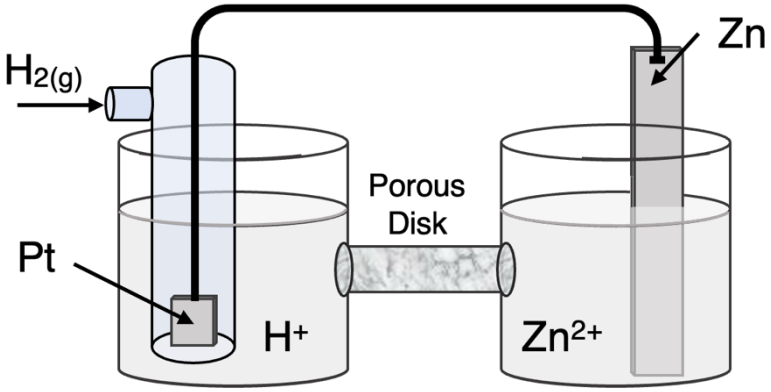
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 11
Question 21
The redox reaction for this galvanic cell is:

$$2\ H^{+}_{(aq)}\ +\ Zn_{(s)}\ \rightarrow\ H_{2(g)}\ +\ Zn^{2+}_{(aq)}$$

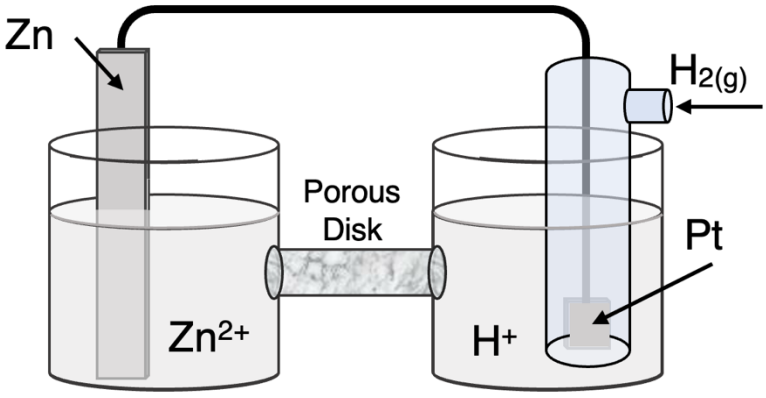
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 22
The redox reaction for this galvanic cell is:

$$Zn_{(s)}\ +\ 2\ H^{+}_{(aq)}\ \rightarrow\ Zn^{2+}_{(aq)}\ +\ H_{2(g)}$$

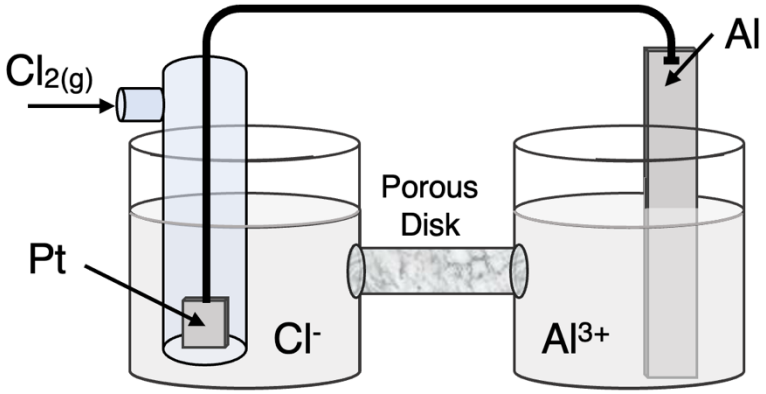
Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question Group 12
Question 23
The redox reaction for this galvanic cell is:

$$3\ Cl_{2(g)}\ +\ 2\ Al_{(s)}\ \rightarrow\ 6\ Cl^{-}_{(aq)}\ +\ 2\ Al^{3+}_{(aq)}$$

Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.



Question 24
The redox reaction for this galvanic cell is:

$$2\ Al_{(s)}\ +\ 3\ Cl_{2(g)}\ \rightarrow\ 2\ Al^{3+}_{(aq)}\ +\ 6\ Cl^{-}_{(aq)}$$

Complete the voltaic cell diagram by identifying the half equations occurring in each half-cell, identifying the half-cell where oxidation occurs and the half-cell where reduction occurs, labeling the anode and the cathode, identifying the direction of electron flow in the wire, and identifying the direction of positive and negative ion flow through the porous membrane.