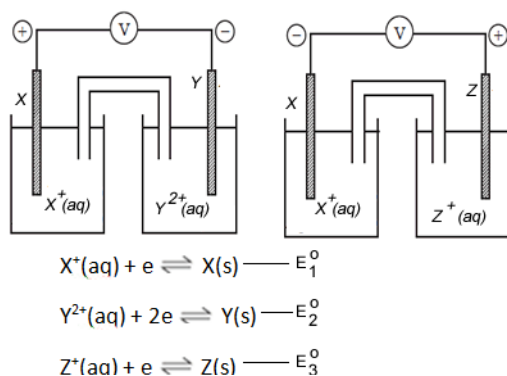


**Friday Worksheet**

**Name:** .....

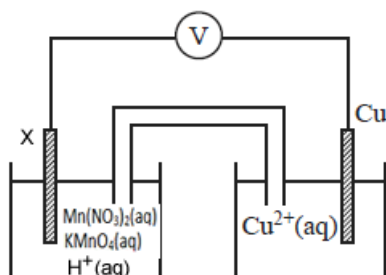
**Galvanic cells worksheet 2**

- 1) Two galvanic cells were constructed under standard conditions in an experiment to determine the relative position in the electrochemical series of the standard electrode potential,  $E^\circ$ , for the following reactions. Both cells generate a potential difference.



Place the electrode potentials in order from highest to lowest.

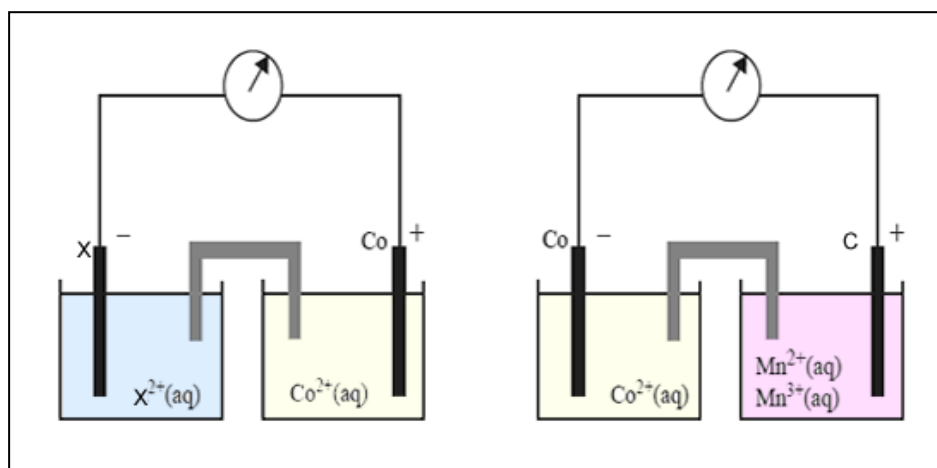
- a) The following galvanic cell was set up under standard conditions.  $MnO_4^-$  is a stronger oxidant than  $Cu^{2+}$ .



- a) What are the properties of material X?
- b) On the diagram above label
- the direction of electron flow
  - the direction of anion flow
  - the direction of cation flow
  - the anode and cathode

- c) Write the equation for the reaction that occurs at the anode
- d) Write the equation for the reaction that occurs at the cathode
- e) Write the overall equation for the cell.

2) Two standard galvanic cells are shown below.



Two standard galvanic cells are shown above.

On the basis of the polarity of the electrodes shown above, which of the following reactions would not be expected to occur spontaneously? Give a reason for each

- A.  $\text{Co}^{2+}(\text{aq}) + \text{X}(\text{s}) \rightarrow \text{Co}(\text{s}) + \text{X}^{2+}(\text{aq})$
- B.  $2\text{Mn}^{2+}(\text{aq}) + \text{Co}^{2+}(\text{s}) \rightarrow 2\text{Mn}^{3+}(\text{aq}) + \text{Co}(\text{s})$
- C.  $2\text{Mn}^{3+}(\text{aq}) + \text{X}(\text{s}) \rightarrow 2\text{Mn}^{2+}(\text{aq}) + \text{X}^{2+}(\text{aq})$
- D.  $\text{X}^{2+}(\text{aq}) + \text{Co}^{2+}(\text{aq}) \rightarrow 2 \text{X}(\text{s}) + \text{Co}(\text{s})$