

**2012 AP<sup>®</sup> CHEMISTRY FREE-RESPONSE QUESTIONS**

- (b) Magnesium metal is strongly heated in oxygen gas.

(i) Balanced equation:

(ii) What is the oxidation number of magnesium before the reaction occurs, and what is the oxidation number of magnesium after the reaction is complete?

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- (c) A solution of nickel(II) chloride is added to a solution of sodium hydroxide, forming a precipitate.

(i) Balanced equation:

(ii) If equal volumes of 1.0 *M* nickel(II) chloride and 1.0 *M* sodium hydroxide are used, what ion is present in the solution in the highest concentration after the precipitate forms?

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**YOU MAY USE THE SPACE BELOW FOR SCRATCH WORK, BUT ONLY EQUATIONS THAT ARE WRITTEN IN THE ANSWER BOXES PROVIDED WILL BE SCORED.**