

2006 AP[®] CHEMISTRY FREE-RESPONSE QUESTIONS

8. Suppose that a stable element with atomic number 119, symbol Q, has been discovered.
- (a) Write the ground-state electron configuration for Q, showing only the valence-shell electrons.
 - (b) Would Q be a metal or a nonmetal? Explain in terms of electron configuration.
 - (c) On the basis of periodic trends, would Q have the largest atomic radius in its group or would it have the smallest? Explain in terms of electronic structure.
 - (d) What would be the most likely charge of the Q ion in stable ionic compounds?
 - (e) Write a balanced equation that would represent the reaction of Q with water.
 - (f) Assume that Q reacts to form a carbonate compound.
 - (i) Write the formula for the compound formed between Q and the carbonate ion, CO_3^{2-} .
 - (ii) Predict whether or not the compound would be soluble in water. Explain your reasoning.

STOP

END OF EXAM