

2006 AP[®] CHEMISTRY FREE-RESPONSE QUESTIONS (Form B)

Answer EITHER Question 7 OR Question 8 below. Only one of these two questions will be graded. If you start both questions, be sure to cross out the question you do not want graded. The Section II score weighting for the question you choose is 15 percent.

7. Account for each of the following observations in terms of atomic theory and/or quantum theory.
- (a) Atomic size decreases from Na to Cl in the periodic table.
 - (b) Boron commonly forms molecules of the type BX_3 . These molecules have a trigonal planar structure.
 - (c) The first ionization energy of K is less than that of Na.
 - (d) Each element displays a unique gas-phase emission spectrum.
8. Use chemical and physical principles to account for each of the following.
- (a) An aluminum container filled with an aqueous solution of CuSO_4 eventually developed a leak. Include a chemical equation with your answer.
 - (b) The inside of a metal container was cleaned with steam and immediately sealed. Later, the container imploded.
 - (c) Skin feels cooler after rubbing alcohol has been applied to it.
 - (d) The redness and itching of the skin caused by ant bites (injections of methanoic acid, HCO_2H) can be relieved by applying a paste made from water and baking soda (solid sodium hydrogen carbonate). Include a chemical equation with your answer.

STOP

END OF EXAM