

2007 AP[®] CHEMISTRY FREE-RESPONSE QUESTIONS (Form B)

	First Ionization Energy (kJ mol ⁻¹)	Second Ionization Energy (kJ mol ⁻¹)	Third Ionization Energy (kJ mol ⁻¹)
Element 1	1,251	2,300	3,820
Element 2	496	4,560	6,910
Element 3	738	1,450	7,730
Element 4	1,000	2,250	3,360

6. The table above shows the first three ionization energies for atoms of four elements from the third period of the periodic table. The elements are numbered randomly. Use the information in the table to answer the following questions.
- (a) Which element is most metallic in character? Explain your reasoning.
 - (b) Identify element 3. Explain your reasoning.
 - (c) Write the complete electron configuration for an atom of element 3.
 - (d) What is the expected oxidation state for the most common ion of element 2 ?
 - (e) What is the chemical symbol for element 2 ?
 - (f) A neutral atom of which of the four elements has the smallest radius?

STOP

END OF EXAM