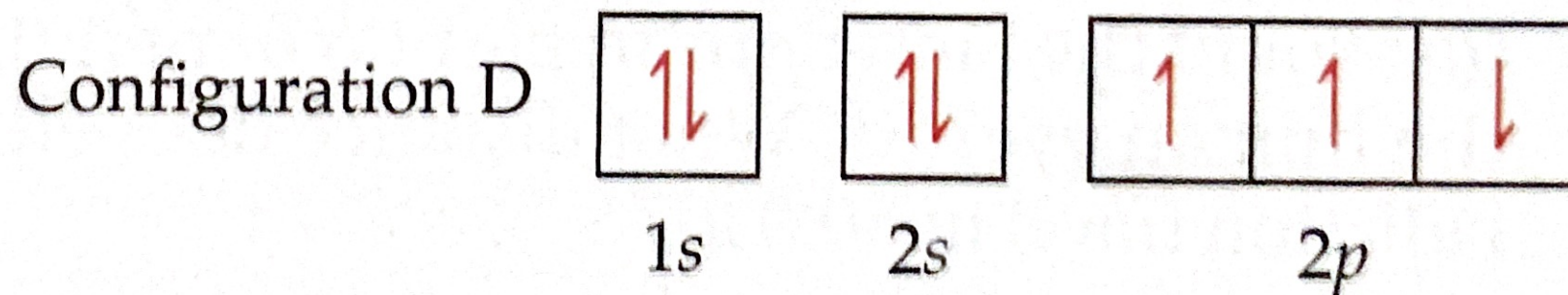
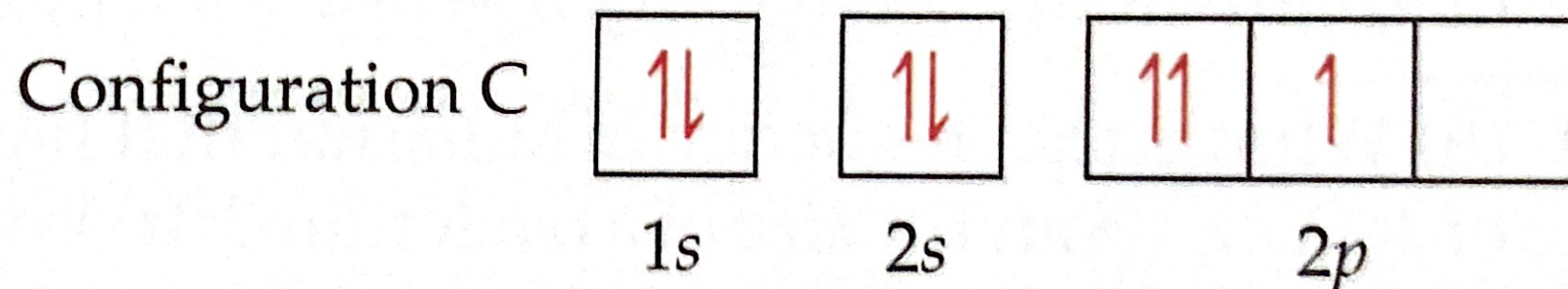
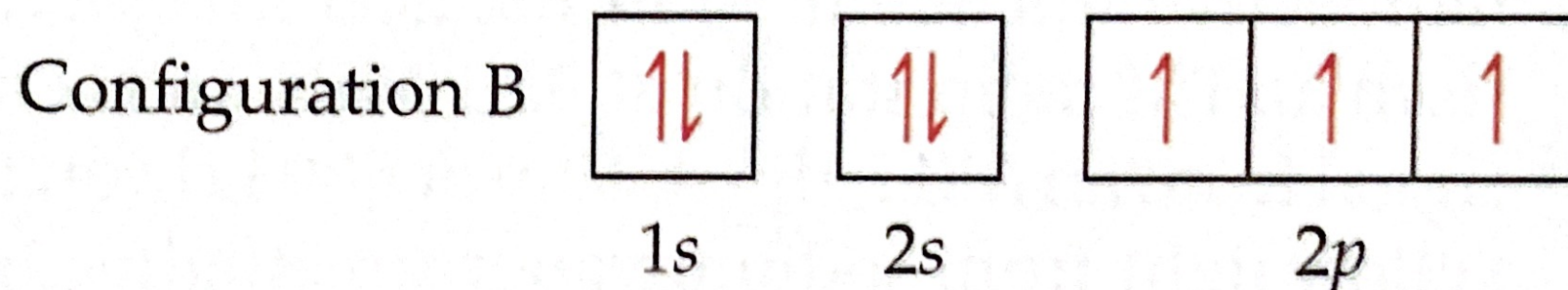
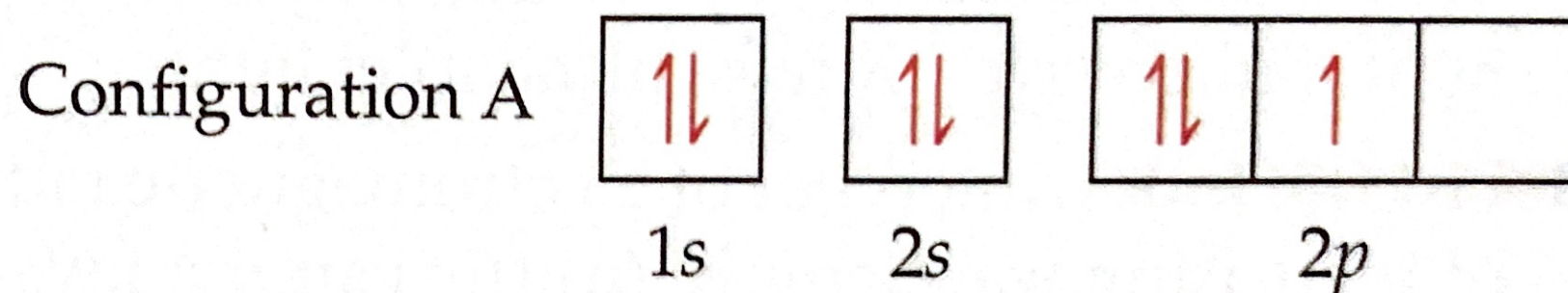


6.11 Four possible electron configurations for a nitrogen atom are shown below, but only one schematic represents the correct configuration for a nitrogen atom in its ground state. Which one is the correct electron configuration? Which configurations violate the Pauli exclusion principle? Which configurations violate Hund's rule? [Section 6.8]



6.15 Label each of the following statements as true or false. For those that are false, correct the statement. **(a)** Visible light is a form of electromagnetic radiation. **(b)** Ultraviolet light has longer wavelengths than visible light. **(c)** X rays travel faster than microwaves. **(d)** Electromagnetic radiation and sound waves travel at the same speed.

6.71 What is the maximum number of electrons that can occupy each of the following subshells? (a) $3p$, (b) $5d$, (c) $2s$, (d) $4f$.

6.73 (a) What are “valence electrons”? (b) What are “core electrons”? (c) What does each box in an orbital diagram represent? (d) What object is represented by the half arrows in an orbital diagram? What does the direction of the arrow signify?

Additional Exercises

6.81 Consider the two waves shown here, which we will consider to represent two electromagnetic radiations:

- (a) What is the wavelength of wave A? Of wave B?
- (b) What is the frequency of wave A? Of wave B?
- (c) Identify the regions of the electromagnetic spectrum to which waves A and B belong.

