

Electron Configurations

- Electrons are arranged around the nucleus in a regular order. The first electrons fill the energy sublevel closest to the nucleus.
- Electrons continue filling each sublevel until it is full and start filling the next closest sublevel.
- A partial list of sublevels in order of increasing energy is:
➤ $1s < 2s < 2p < 3s < 3p < 4s < 3d < 4p < 5s < 4d \dots$

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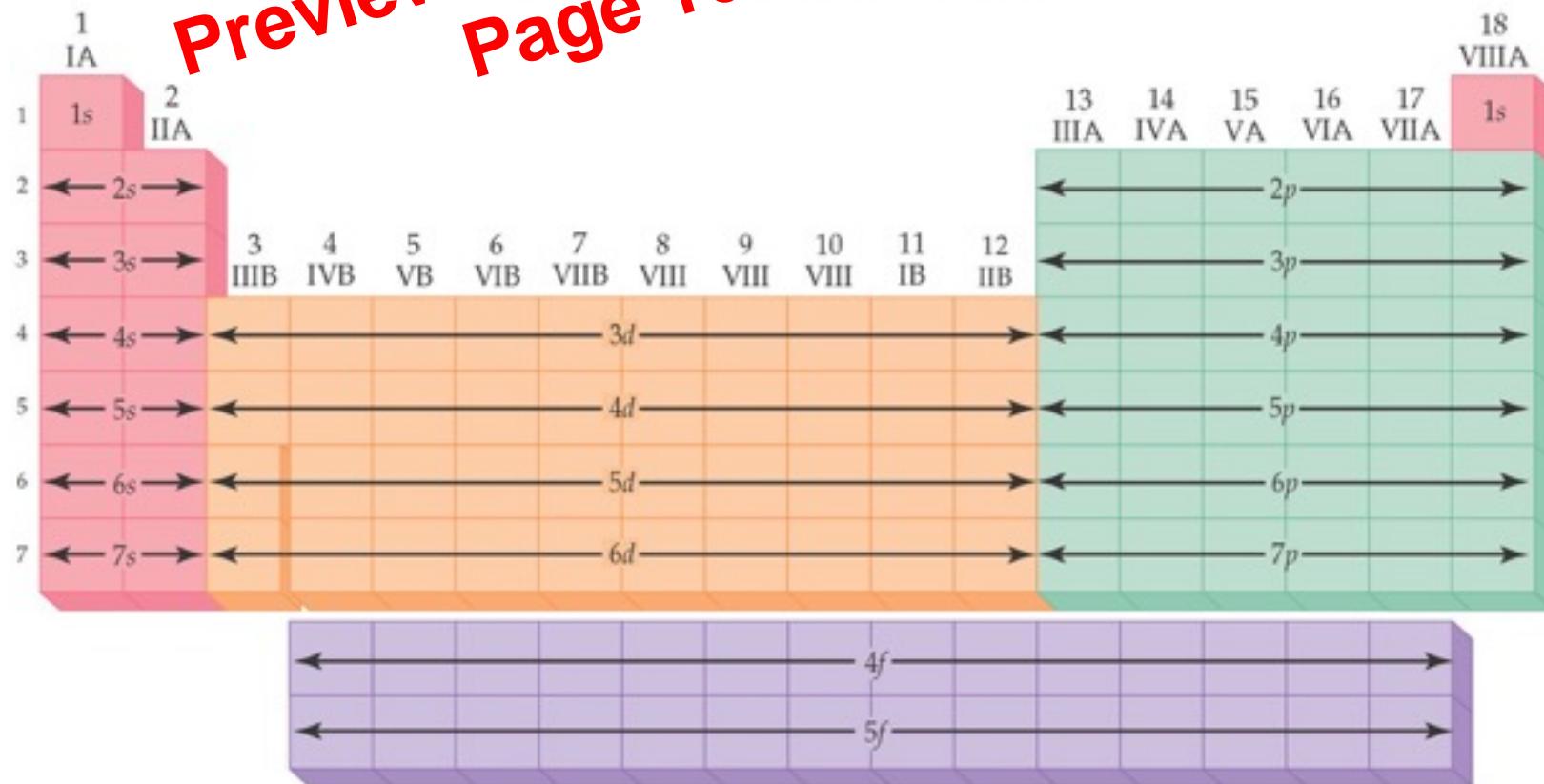
Writing Electron Configurations

- First, determine how many electrons are in the atom. Iron (Fe) has 26 electrons.
- Arrange the energy sublevels according to increasing energy:
 - $1s \ 2s \ 2p \ 3s \ 3p \ 4s \ 3d \dots$
- Fill each sublevel with electrons until you have used all the electrons in the atom:
 - Fe: $1s^2 \ 2s^2 \ 2p^6 \ 3s^2 \ 3p^6 \ 4s^2 \ 3d^6$
- The sum of the superscripts equals the atomic number of iron (**26**)

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Blocks and Sublevels

- We can use the periodic table to predict which sublevel is being filled by a particular element.



Representative s-block elements
Transition d-block elements

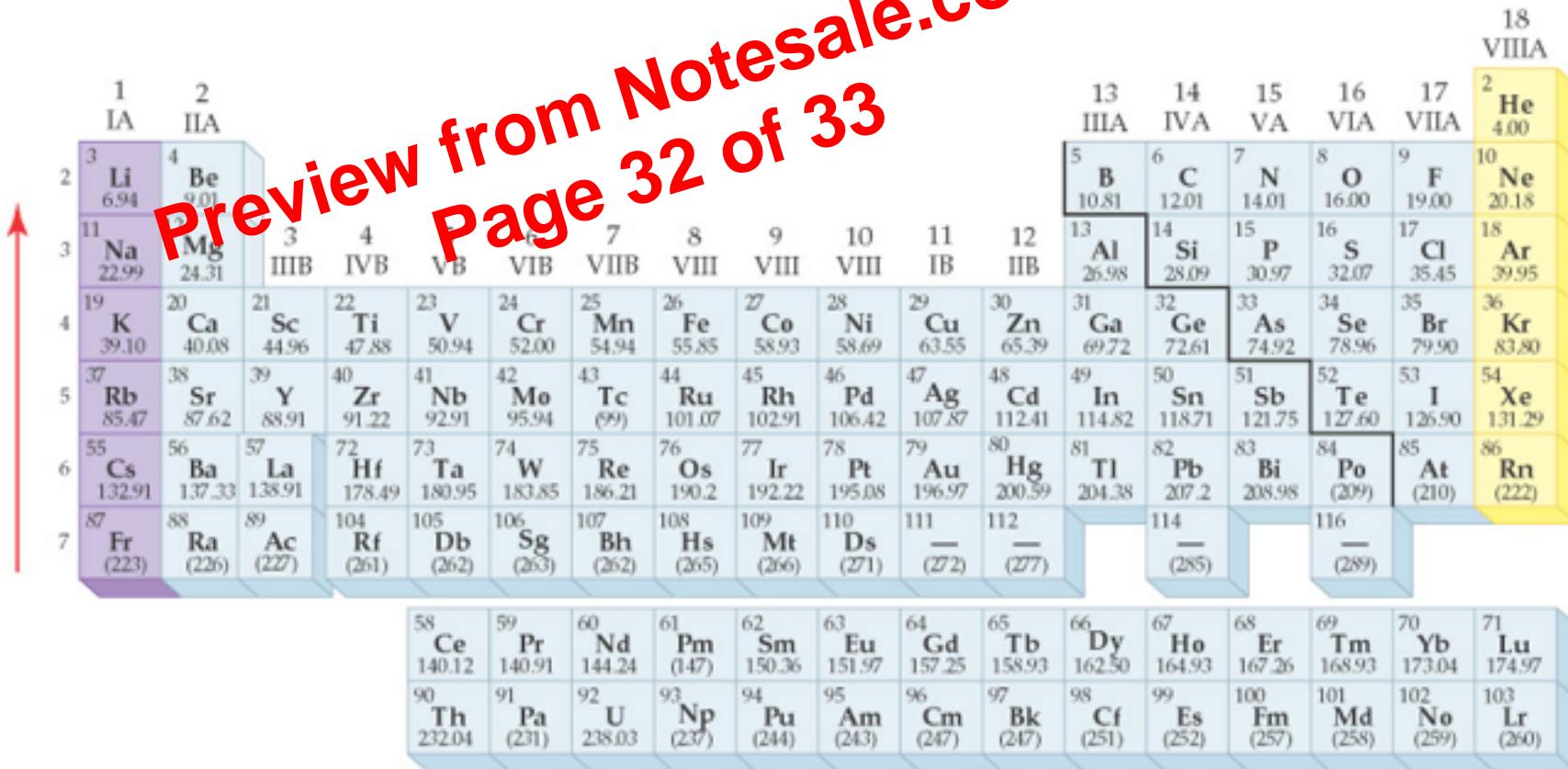


Representative p-block elements
Inner Transition f-block elements

Ionization Energy Trend

The image shows a portion of a periodic table with elements 1 through 18. A large red watermark with a diagonal orientation reads "Preview from Notesale.co.uk" followed by "Page 32 of 33".

A large, semi-transparent red watermark is angled across the page. The text "Preview from Note" is written in a large, bold, sans-serif font, and "Page 32 of 33" is written below it in a slightly smaller font. The watermark is positioned such that it covers the top right portion of the page.



Ionization energy increases →

- This figure shows the first ionization trend for all elements

Assigned Readings

Chapter 4 – Section 4.7 (Pages 108-111)

Chapter 9 – Section 9.6 – 9.9 (Pages 295 – 312) (In Section 9.6, ignore shapes of orbitals and orbital diagrams)

End of Chapter Problems:

Chapter 4 – 81, 83, 85

Chapter 9 – 23, 25, 27, 45, 49, 53, 55, 57, 61, 63, 67, 73, 75, 77, 81, 85, 89, 93,