



EXERCISE 22

MATTER AND MATERIALS

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1 Complete the following table:



Element	Symbol	Mass number	Nucleons	Protons	Neutrons	Electrons
Sodium	1.1 Na	1.2 23	23	11	1.3 11	1.4 11
1.5 Aluminium	Al	27	g. 12	1.7 13	1.8 14	1.9 13
Sulfur	1.10 S	1.11 32	32	1.12 16	16	1.13 16
1.14 Calcium	Ca	40	1.15 40	20	2.16 20	20
Argon	1.17 Ar	40	40	1.18 18	18	1.19 18



2 Give the names of the following:

2.1 Horizontal rows on the Periodic Table
Periods

2.2 Elements to the left of the zigzag line
Metale

2.3 Vertical rows on the Periodic Table
Groups

2.4 Group 3 – 12
Transition elements





2.5 Group 18
Noble gases

2.6 Group 1
Alkali metals

2.7 Group 7
Halogens

2.8 Elements to the right of the zigzag line
Non-metals





3. Write down the names of the seven diatomic elements and give the formula of each.

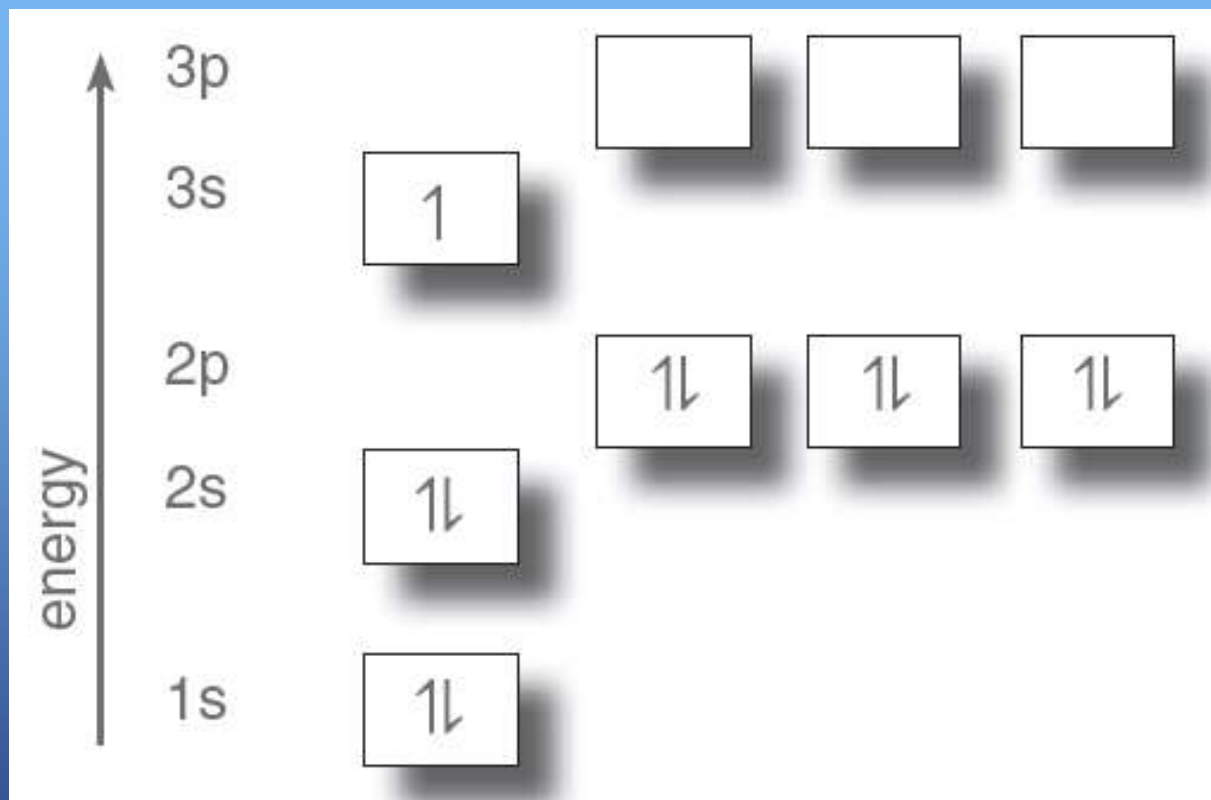
**Hydrogen (H_2); nitrogen (N_2); oxygen (O_2);
fluorine (F_2); chlorine (Cl_2); bromine (Br_2); iodine (I_2)**



4 Draw energy level diagrams and give the spectroscopic electron configuration for the following elements:



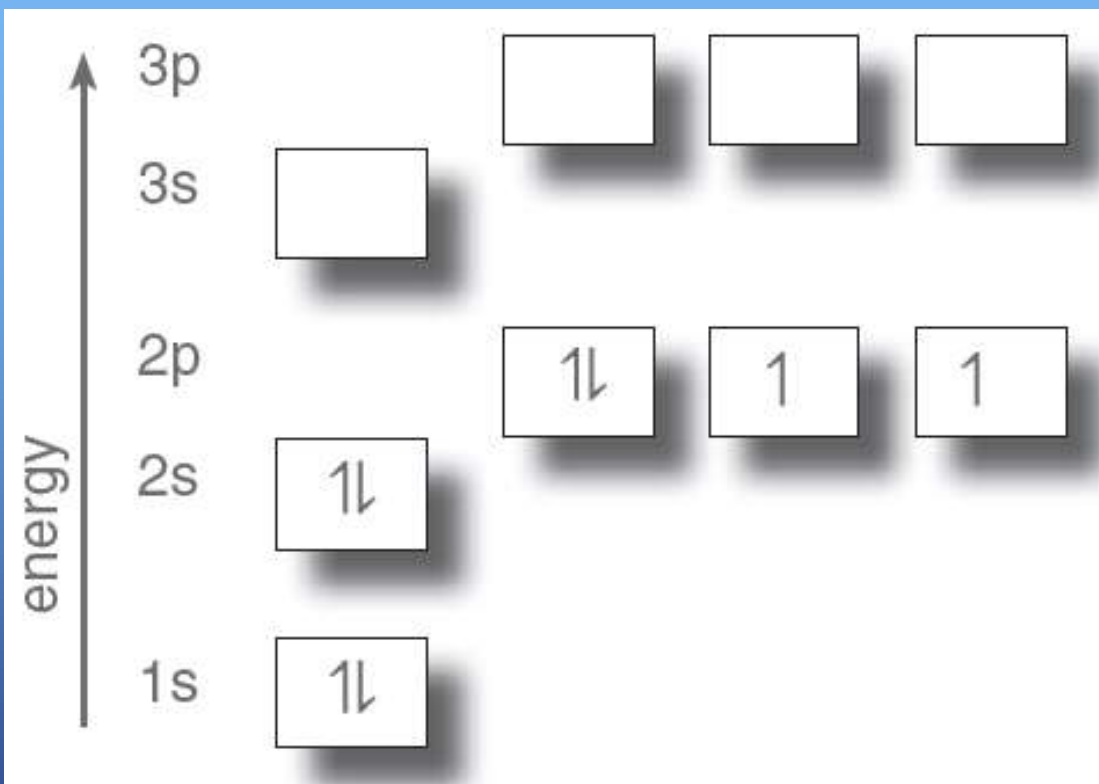
4.1 Sodium



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^1$



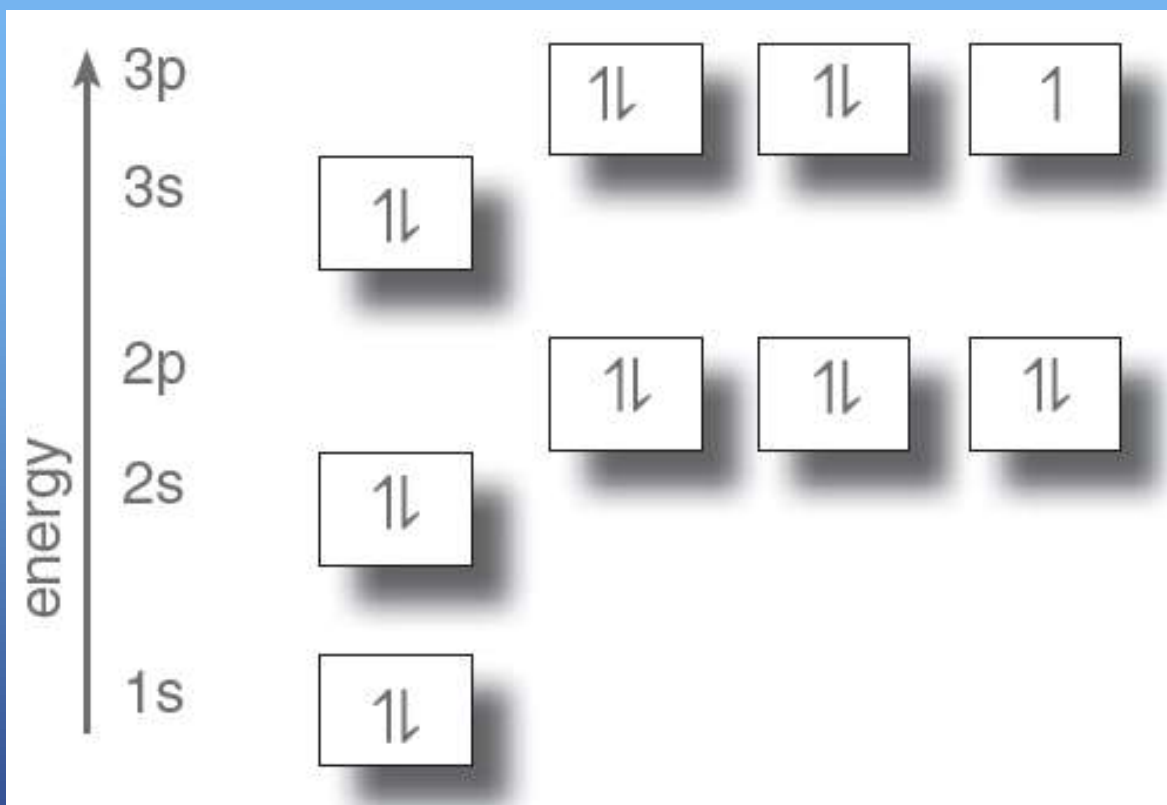
4.2 Oxygen



Spectroscopic electron configuration
 $1s^2 2s^2 2p^4$



4.3 Chlorine

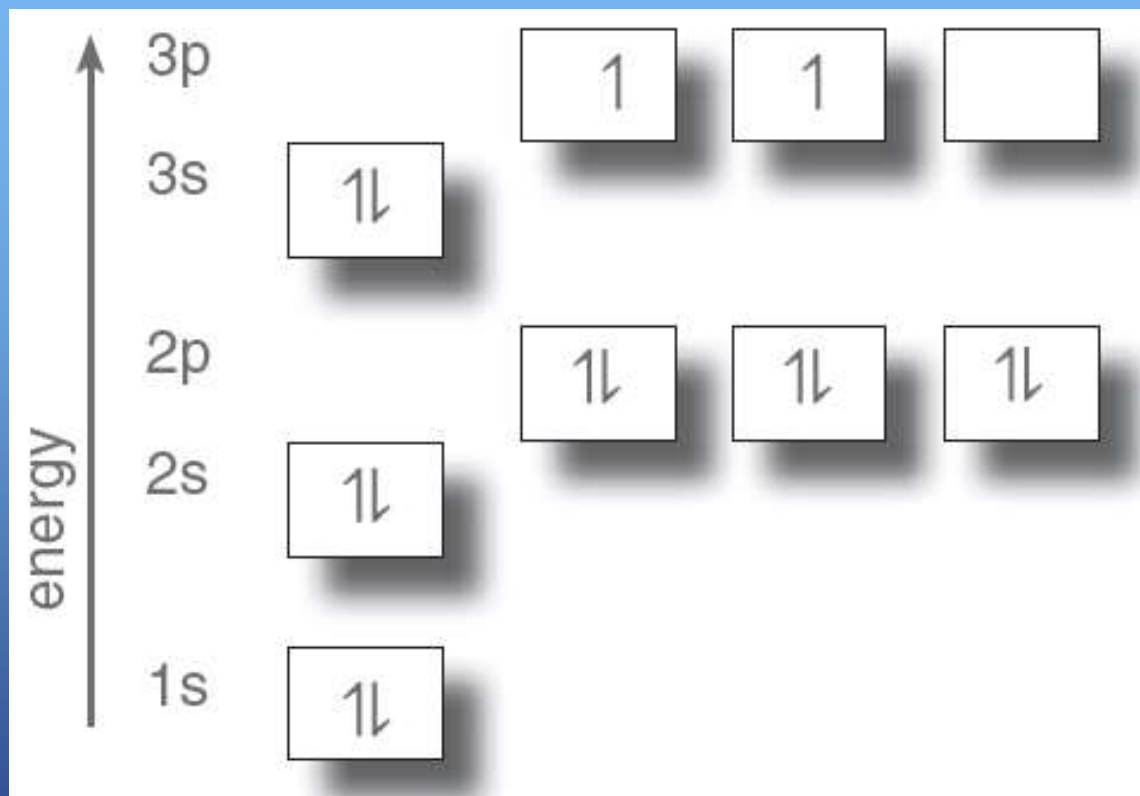


Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^5$





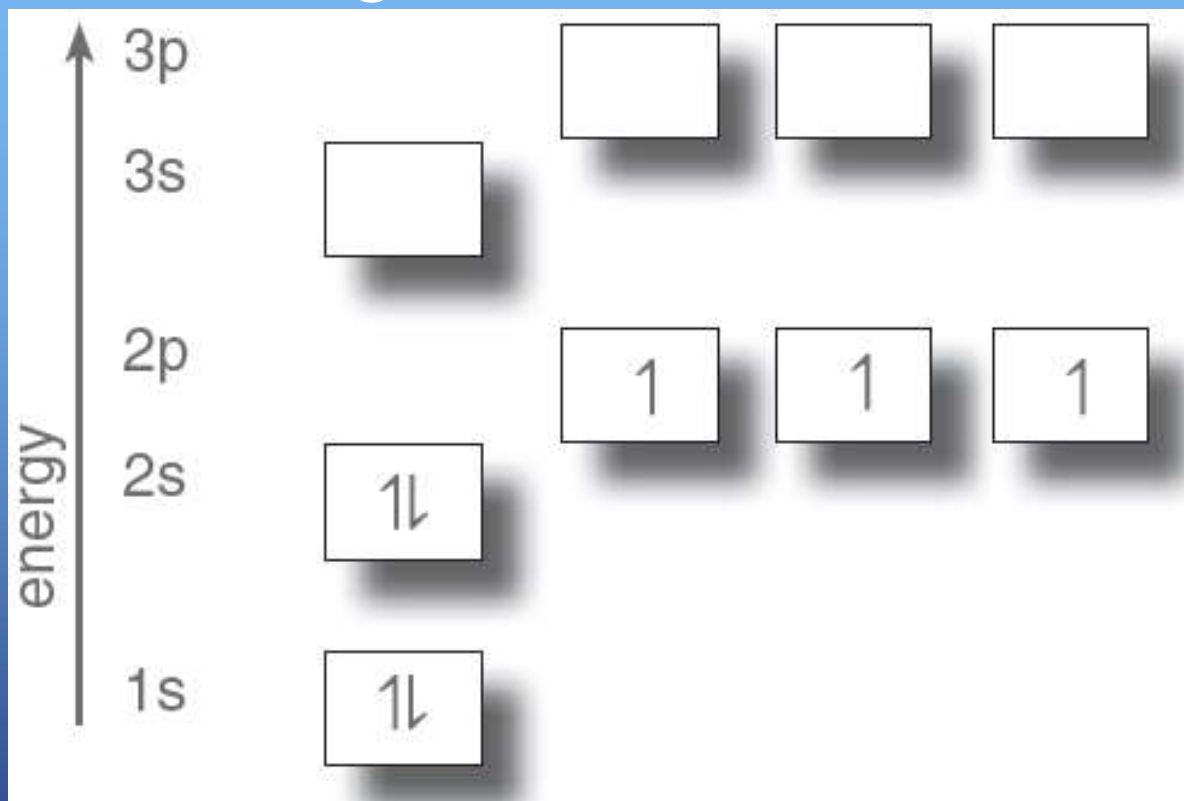
4.4 Silicon



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^2$



4.5 Nitrogen

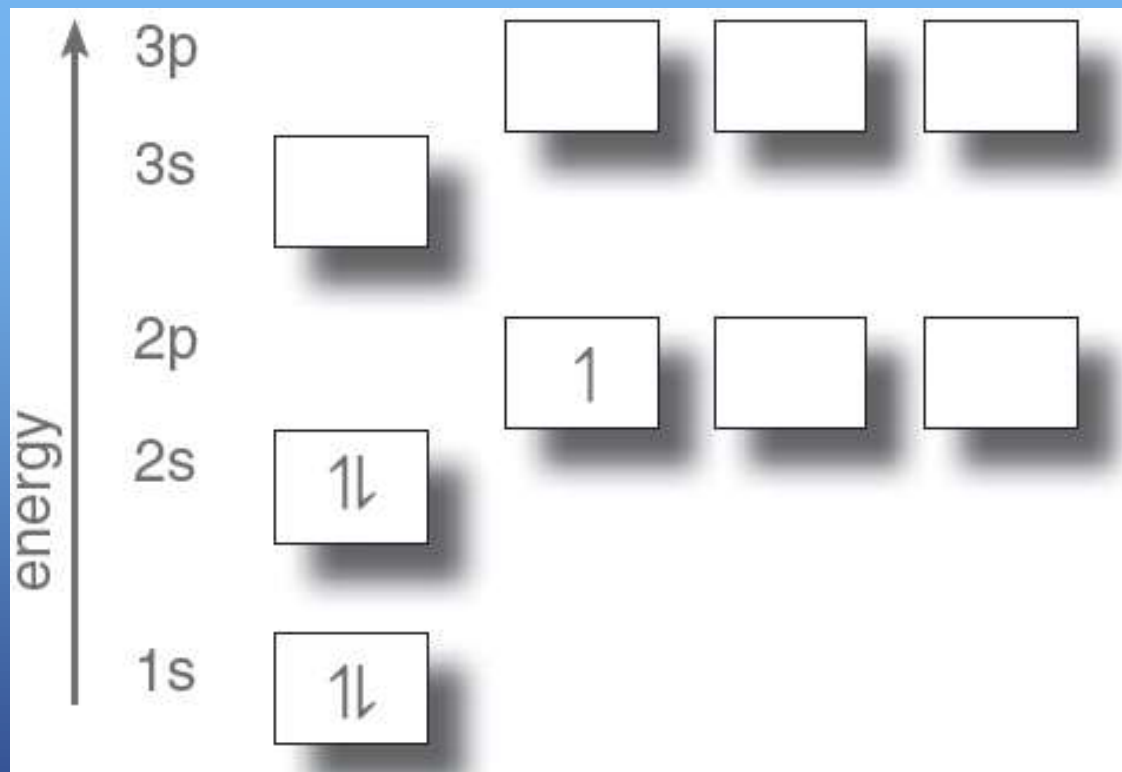


Spectroscopic electron configuration





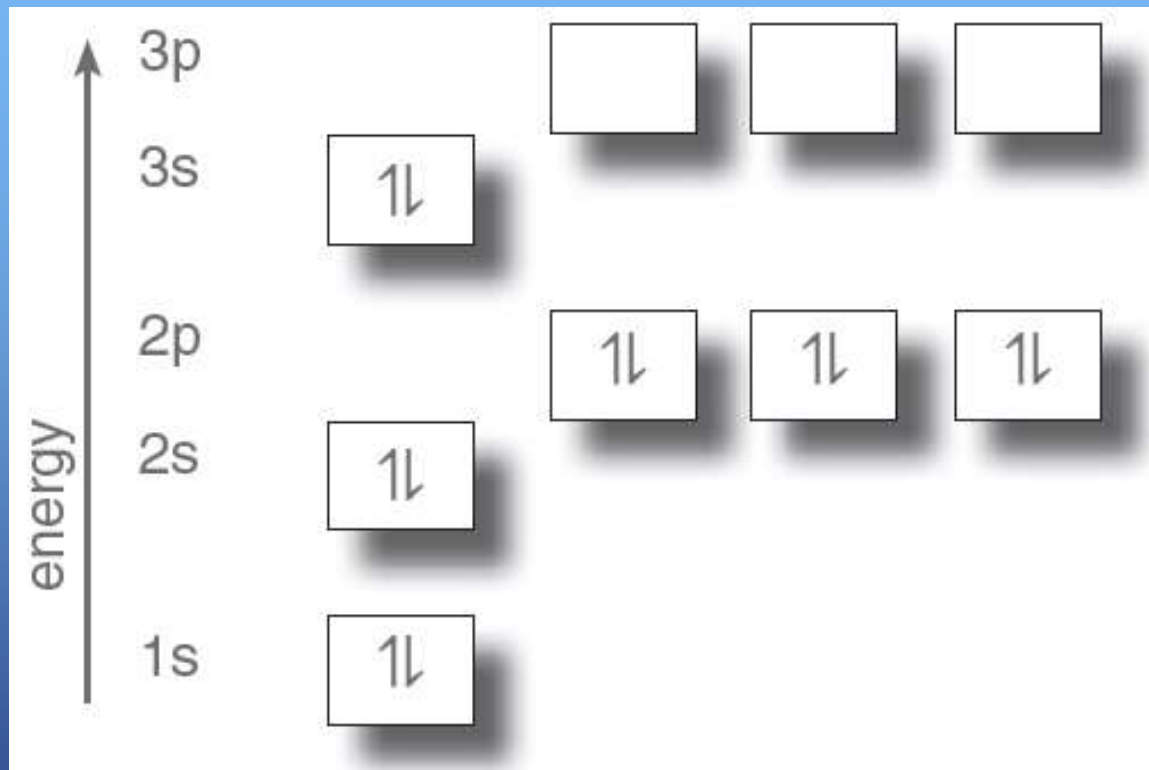
4.6 Boron



Spectroscopic electron configuration
 $1s^2 2s^2 2p^1$



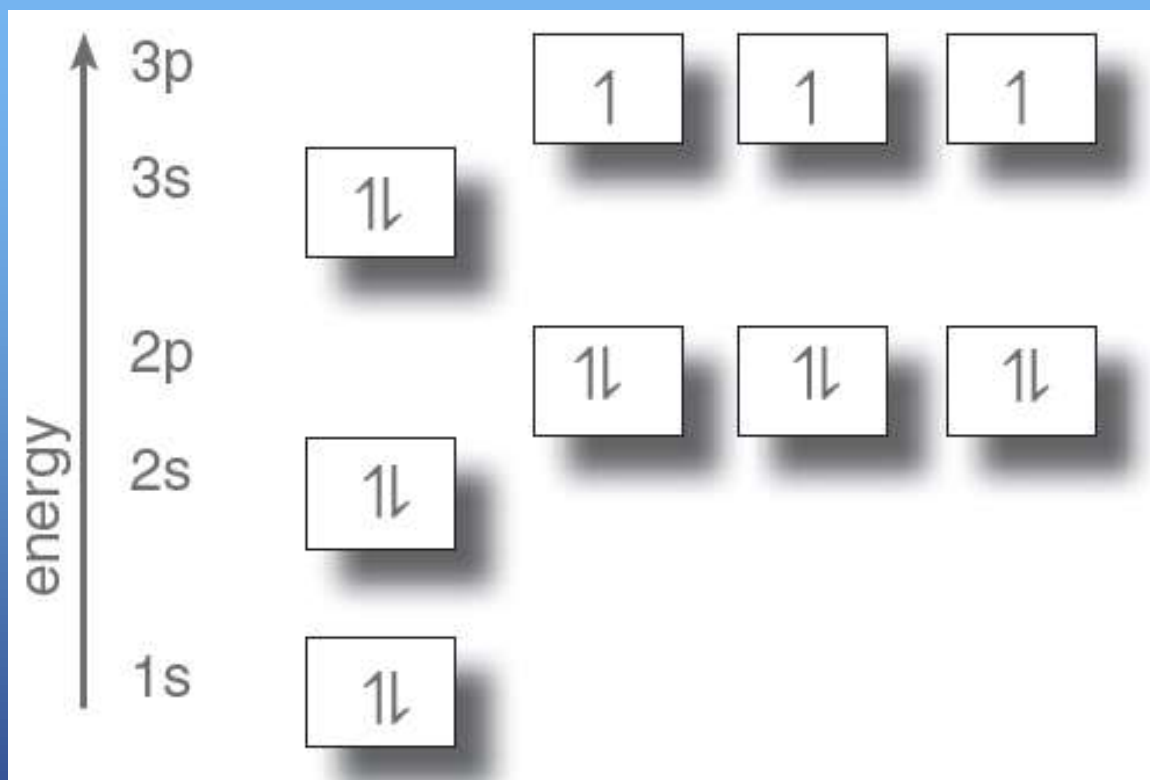
4.7 Mg



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2$



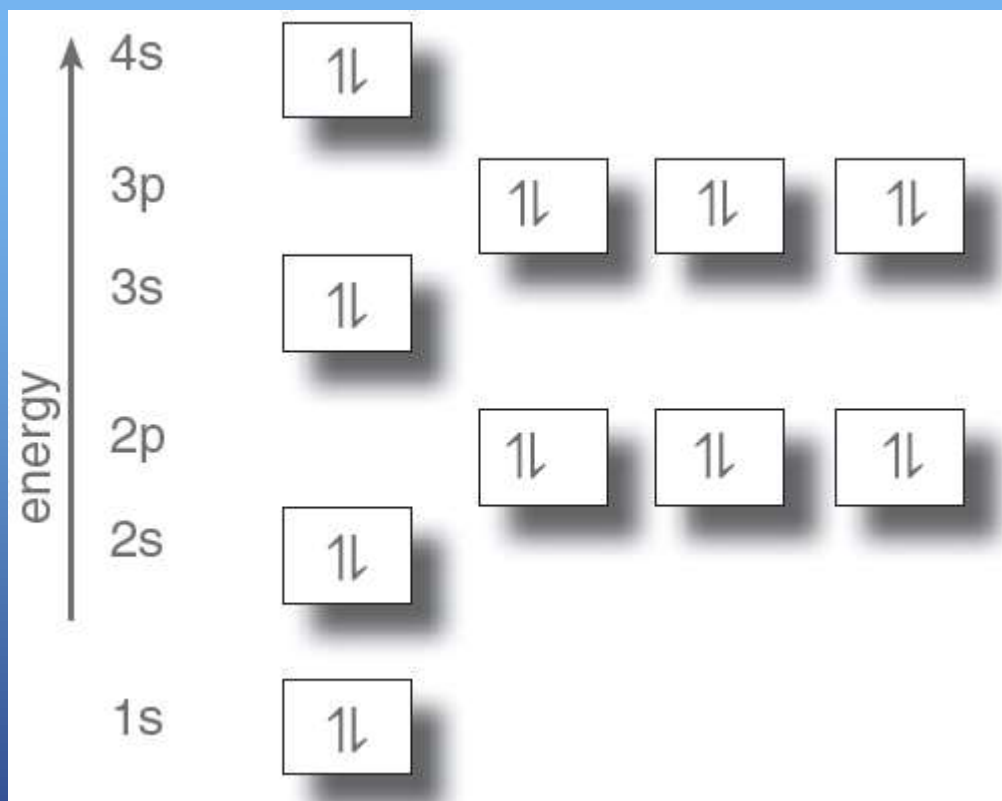
4.8 Phosphorous



Spectroscopic electron configuration
 $1s^2 2s^2 2p^5$



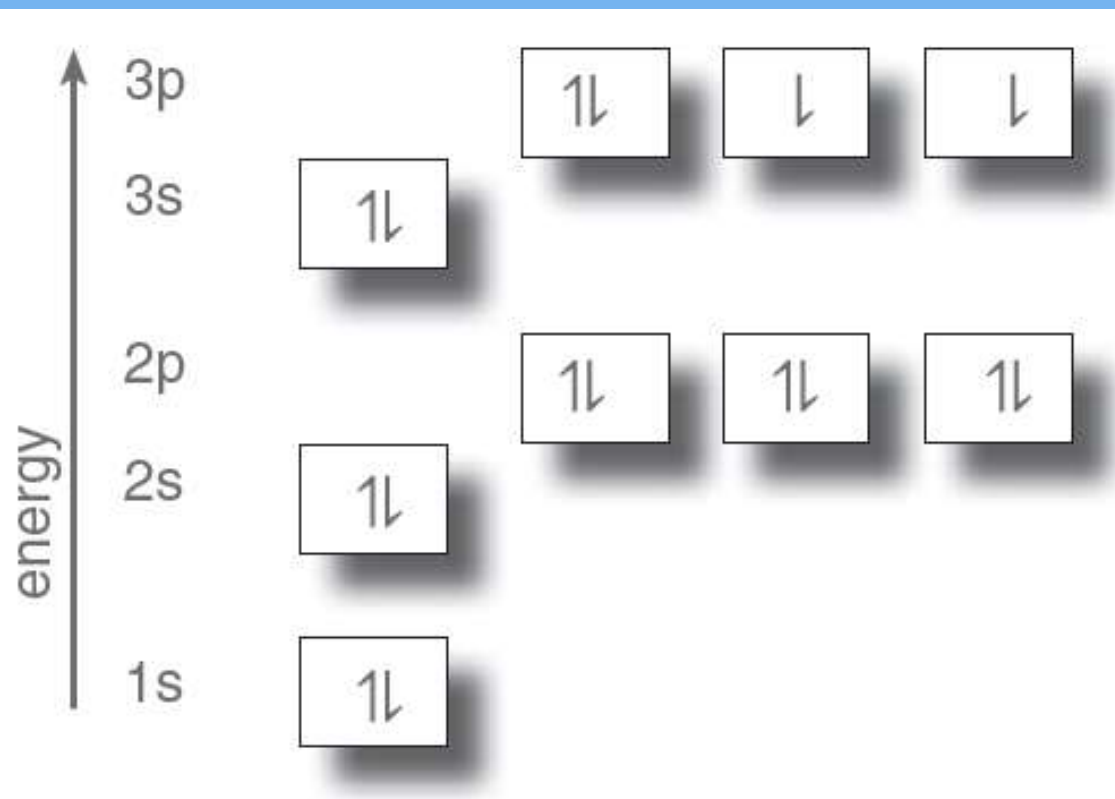
4.9 Ca



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$



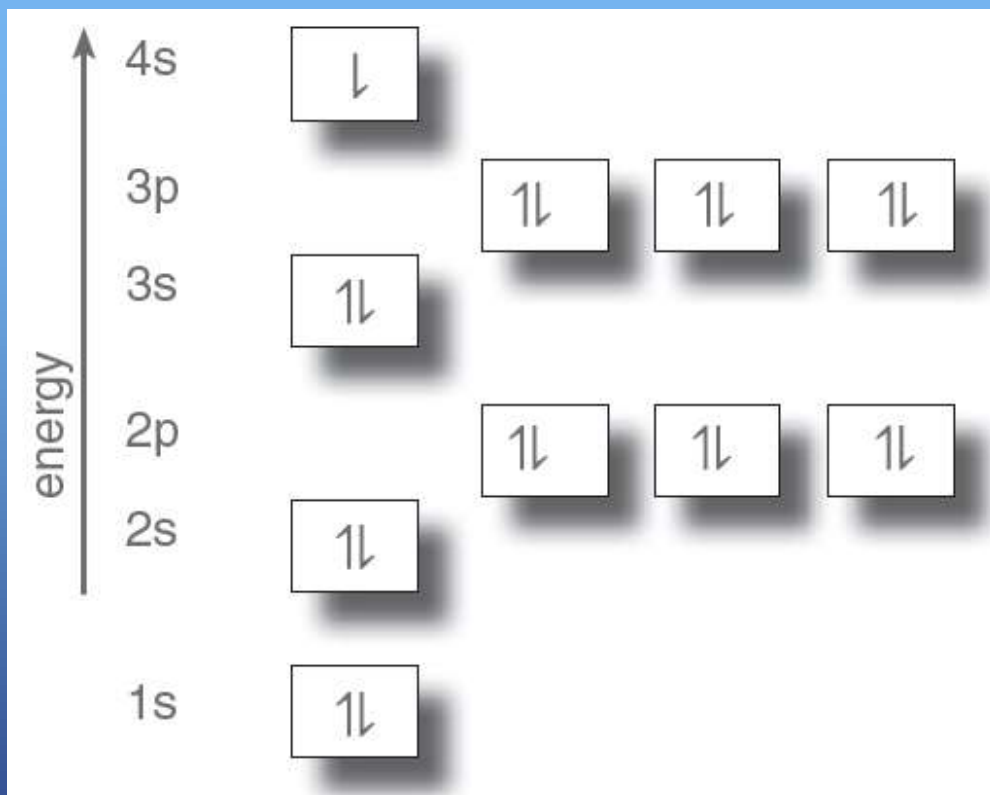
4.10 S



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$



4.11 Potassium

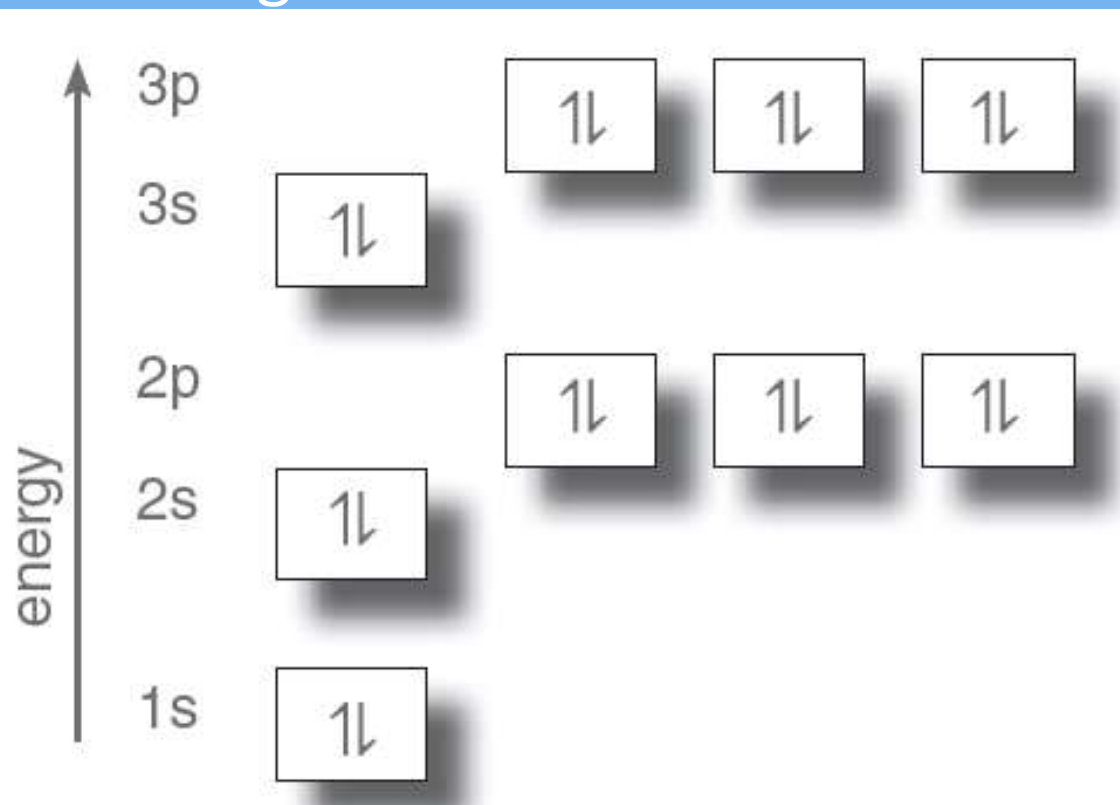


Spectroscopic electron configuration





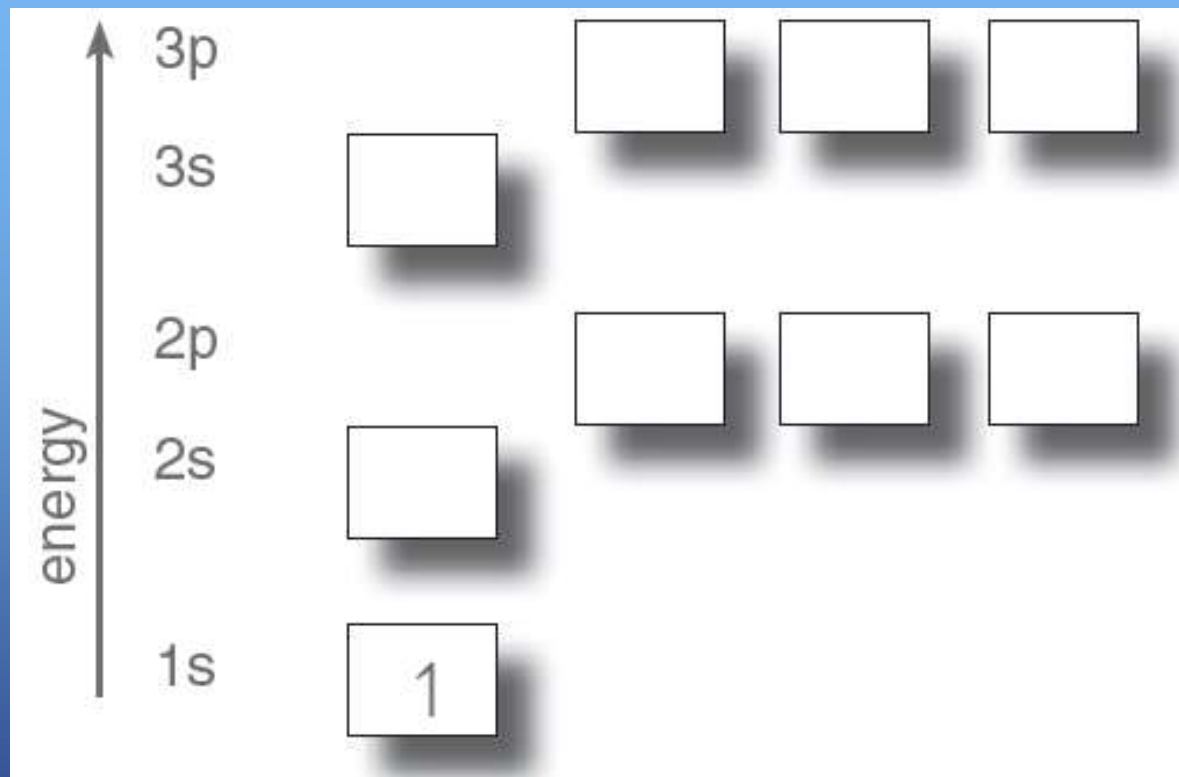
4.12 Argon



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^6$



4.13 Hydrogen

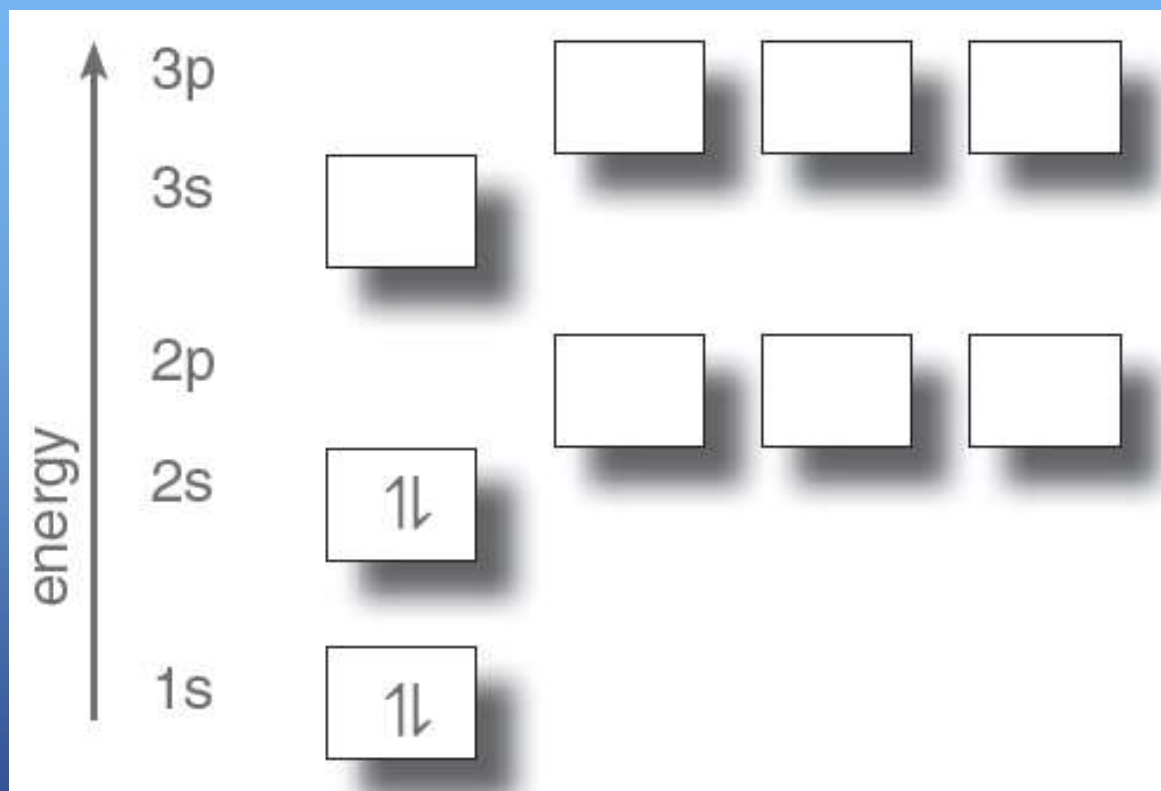


Spectroscopic electron configuration

1s¹



4.14 Be

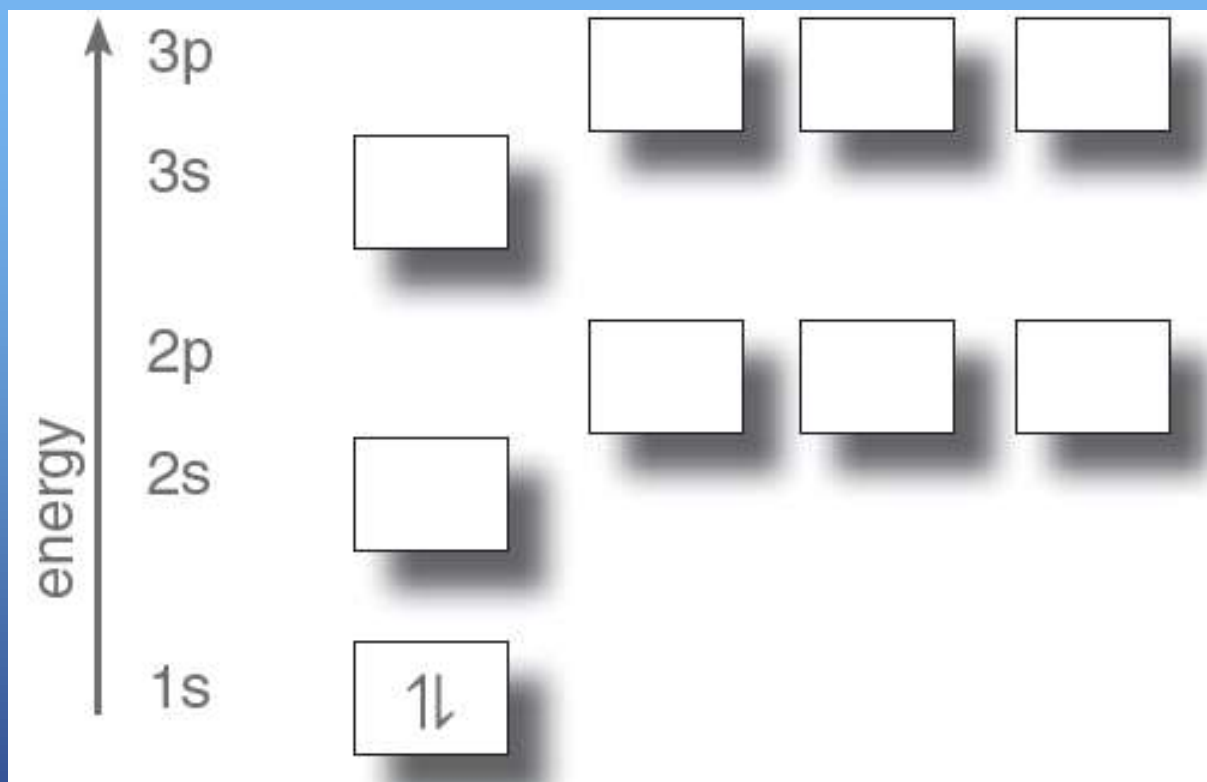


Spectroscopic electron configuration





4.15 He

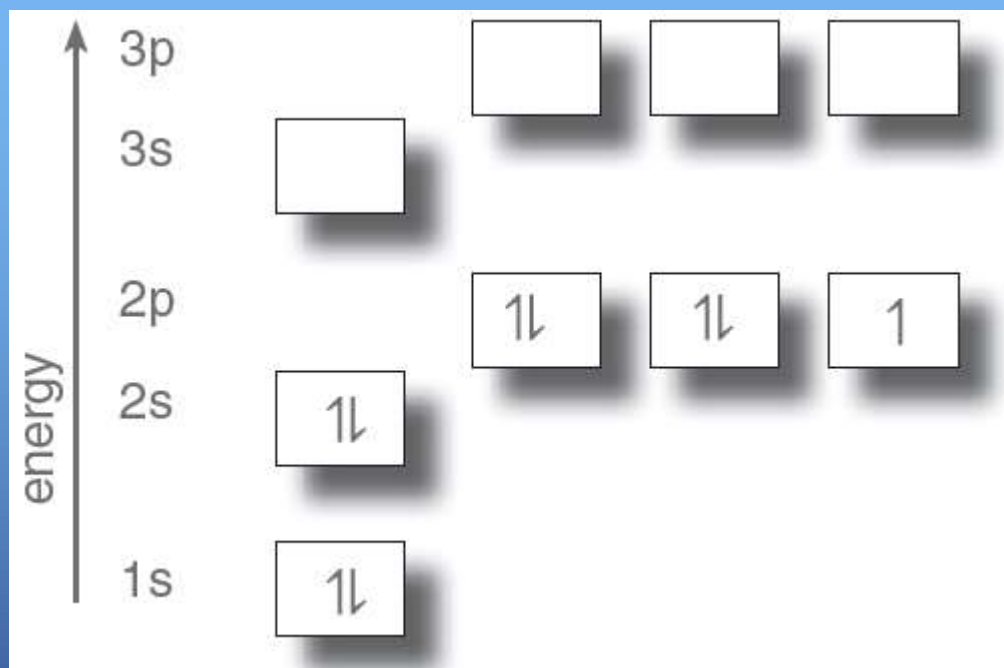


Spectroscopic electron configuration

$1s^2$



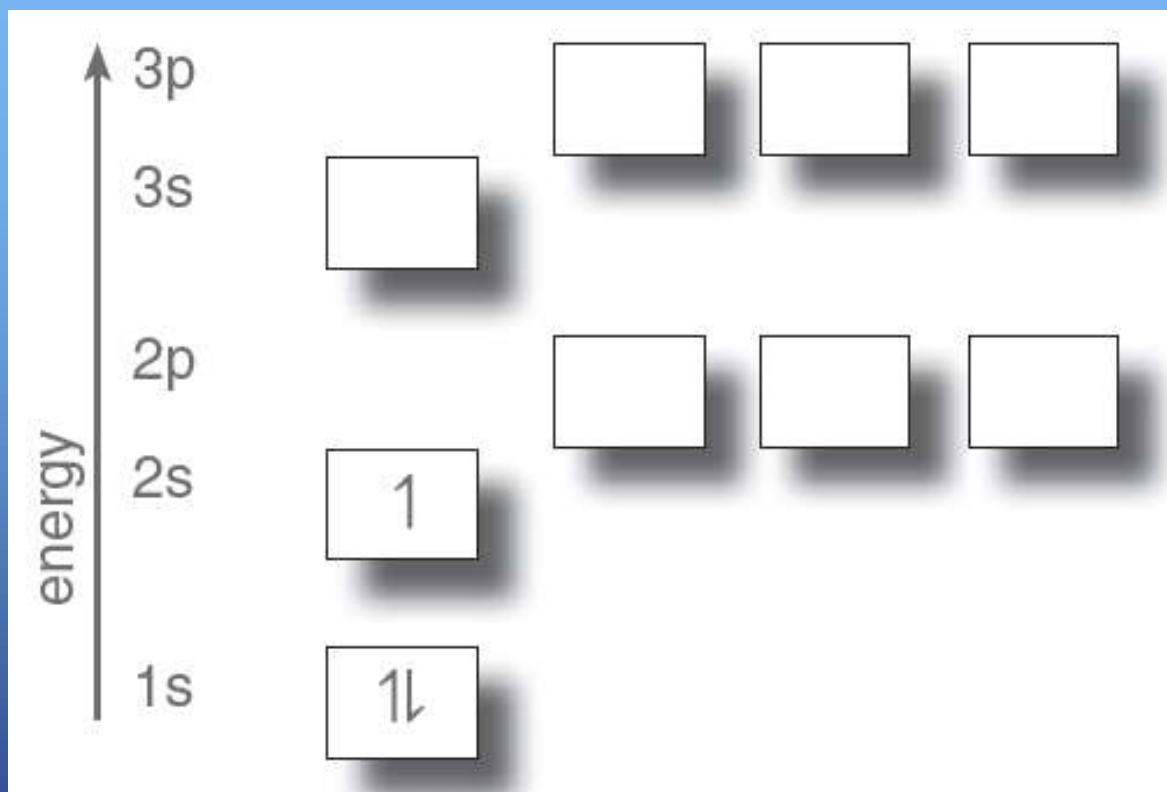
4.16 Fluorine



Spectroscopic electron configuration
 $1s^2 2s^2 2p^5$



4.17 Lithium

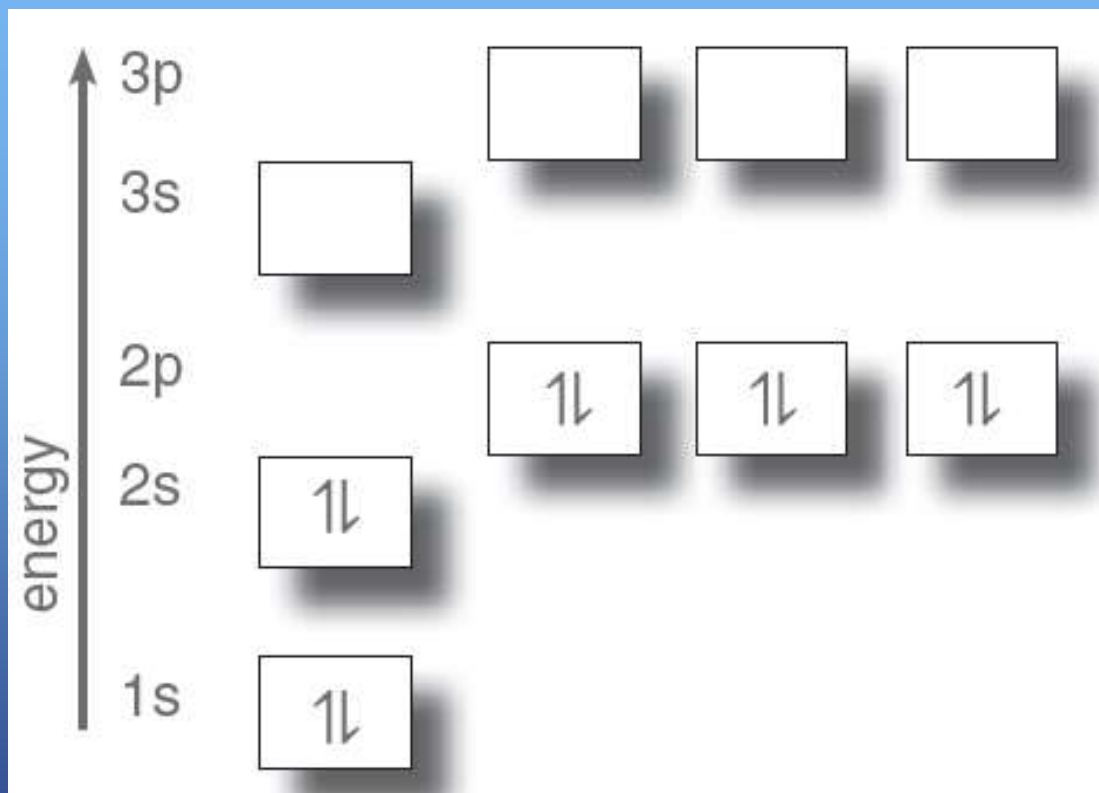


Spectroscopic electron configuration





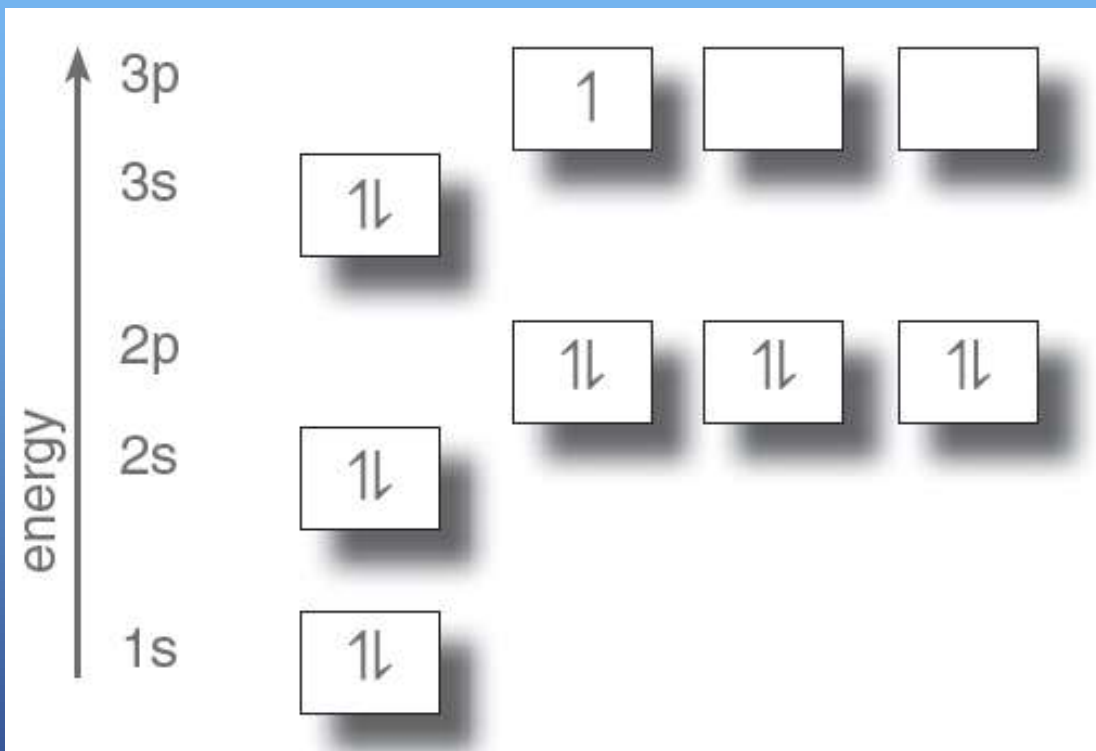
4.18 Neon



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6$



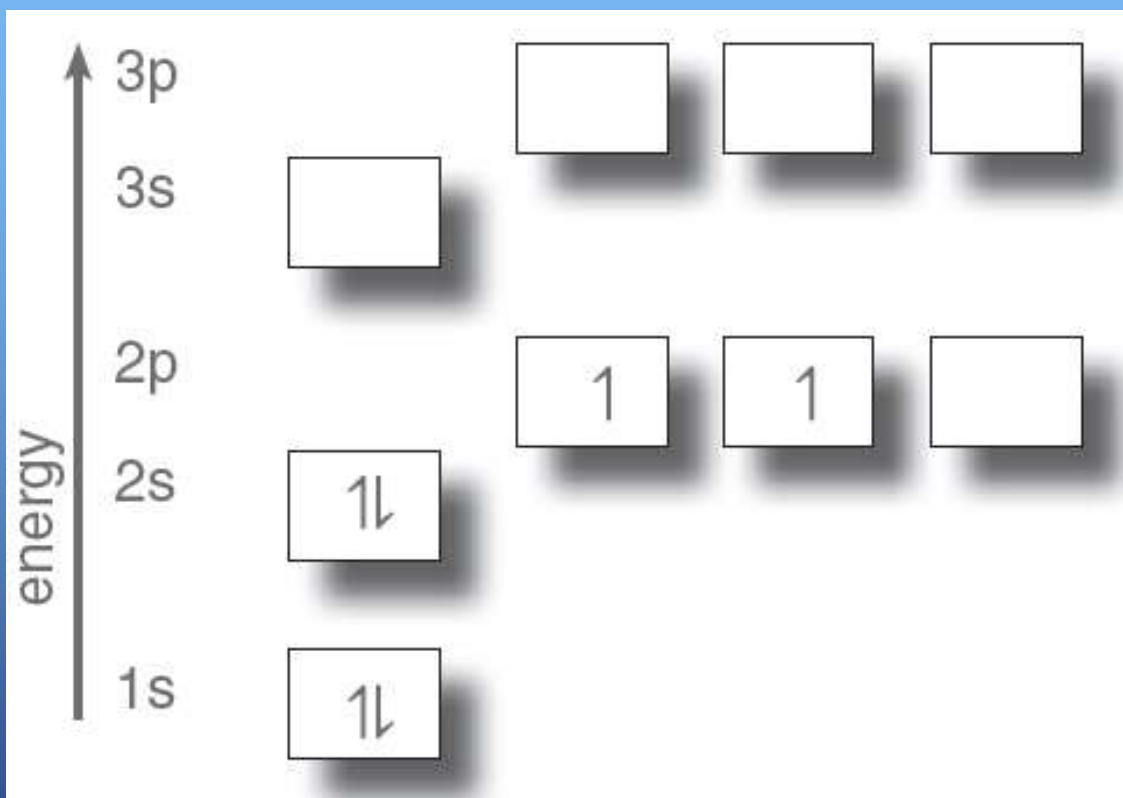
4.19 Al



Spectroscopic electron configuration
 $1s^2 2s^2 2p^6 3s^2 3p^1$



4.20 Carbon



Spectroscopic electron configuration
 $1s^2 2s^2 2p^2$