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The Periodic Table and Periodic Law

31. Classification of the Elements: Electron Configuration

Lesson

Review

عرض جميع الأسئلة عرض التغذية الراجعة عرض المعلومات المساعدة

السؤال 1

Drag and drop the best answers to complete the sentence.

An atom’s electron-dot structure includes:

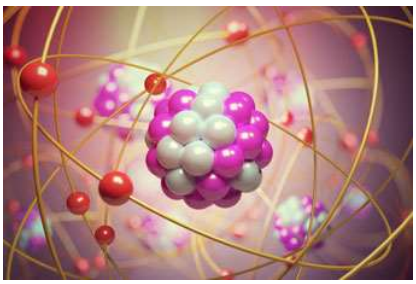
- the atom’s chemical symbol ✓ in the center, representing the nucleus and inner electrons
- surrounded by dots representing the atom's valence electrons ✓

atomic number | principal energy level | orbital levels | inner electrons

السؤال 2

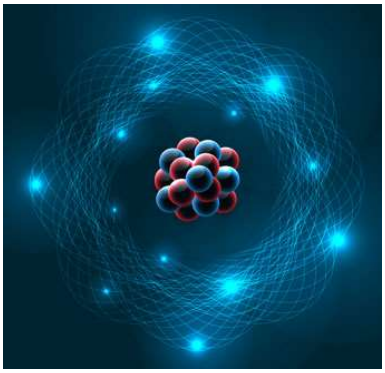
Select the best answer from the drop-down menu to complete the sentence.

An atom’s valence ✓ electrons are found in the highest principal energy level (*n*) of the atom.



السؤال 3

Select the best answer from the drop-down menu to complete the sentence.



Electron configuration ✓ refers to the specific arrangement of electrons in orbitals around the nucleus.

السؤال 4

Drag and drop the best answers to complete the sentences.

The electron configuration of a nitrogen atom is $1s^2\ 2s^2\ 2p^3$.

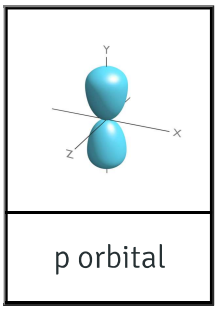
There are a total of five ✓ orbitals and seven ✓ electrons in one nitrogen atom. The highest principal energy number in a nitrogen atom is two ✓.

three eight four

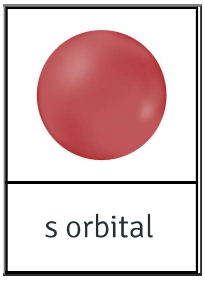
السؤال 5

Select the best answer.

Which type of these energy sublevels can accommodate the highest number of electrons?

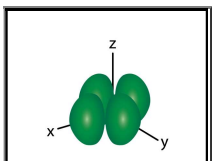


p orbital



s orbital

All of these orbitals can take the same number of electrons.



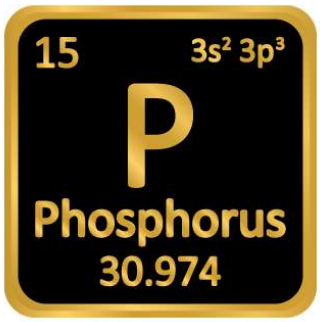
d orbital

السؤال 6

Select the best answer from the drop-down menu to complete the sentence.

This is the electron configuration for a phosphorus atom.

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$



Phosphorus atoms contain five ✓ valence electrons.

السؤال 7

Select the best answer.

Which of these electron configurations belongs to the **most** reactive element?

- [Ne] $3s^2\ 3p^6$
- [Ar] $4s^2\ 3d^{10}\ 4p^2$

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

$1s^2\ 2s^2\ 2p^6\ 3s^1$ ✓

السؤال 8

Select the best answer from the drop-down menu to complete the sentence.

This is the electron configuration for an atom of krypton [Ar] $4s^2\ 3d^{10}\ 4p^6$.



Based on its electron configuration, you can determine that krypton is a(n) noble gas ✓ .

السؤال 9

Select the best answer.

Which electrons does an electron-dot diagram represent?

all electrons in the lowest principal energy level

- [x] the electrons available for chemical reactions
- [ ] the electrons in the completely filled orbitals
- [ ] all electrons found in an atom of an element

السؤال 10

Enter the correct numbers in the spaces provided to complete the sentence.

Carbon is a nonmetal commonly found in living things. Carbon's atomic number is 6. Carbon is in group 14 and period 2.

السؤال 11

Enter the correct numbers in the spaces to complete the sentence.

Zinc is a metal with atomic number 30. Zinc's electron configuration is $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$.

Zinc is located in period

4 ✓ and in group

12 ✓ on the periodic table.



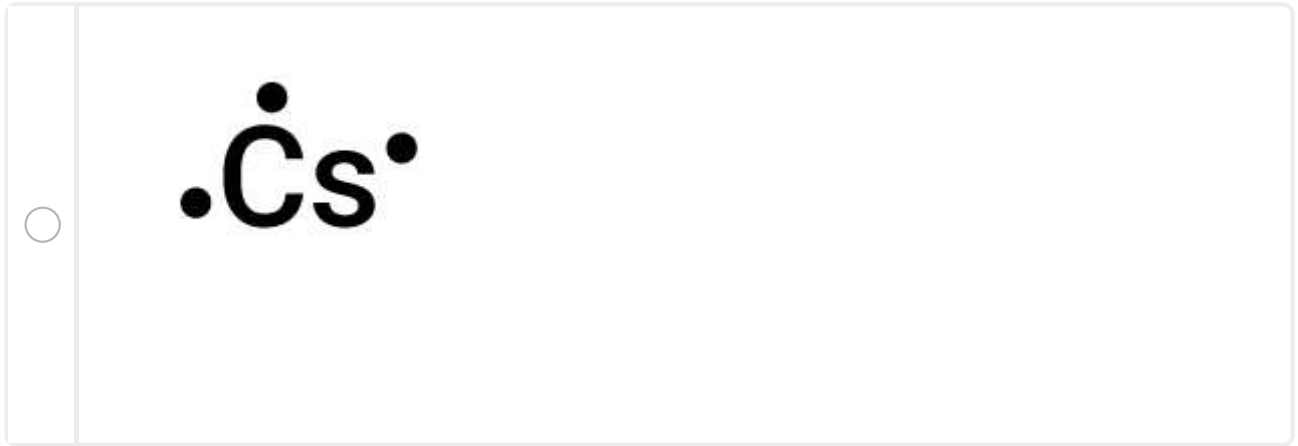
السؤال 12

Select the best answer.

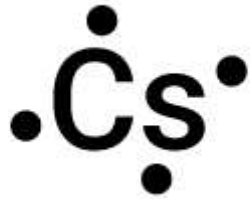
The element cesium is found in group 1, period 6 of the periodic table, and has the atomic number 55. What is the correct way to represent the electron-dot structure of an atom of cesium?



✓



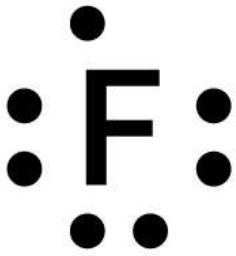




السؤال 13

Fill in the blanks with numbers to complete the sentence.

Fluorine has the atomic number 9 and the electron-dot structure shown. Based on this information, you can determine that fluorine is found in period



2 ✓ and group

17 ✓ on the periodic table.

السؤال 14

Enter the correct numbers in the spaces provided to complete the sentence.



The element manganese has the electron configuration $[Ar]4s^2\ 3d^5$. Argon has 18 electrons.
From this information, it can be determined that the atomic number for manganese is 25 ✓ and that it is found in period 4 ✓ and group 7 ✓ on the periodic table.

السؤال 15

Drag and drop the best answer to complete the sentence. Use the image to help:

Zinc (Zn) is a transition metal with atomic number 30. It is located in period 4 and in group 12 on the periodic table.

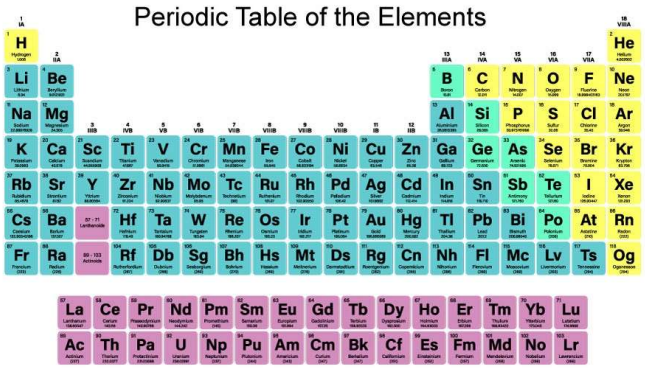
The electron configuration for zinc is: [Ar] $4s^2\ 3d^{10}$ ✓

[Ar] $4s^2\ 4p^{10}$ | [He] $4s^2\ 3d^{10}$ | [Ar] $4s^1\ 4d^{10}$

السؤال 16

Drag and drop the best answer to complete the sentences.

Beryllium is an alkaline earth metal with atomic number 4. Beryllium is located in period 2 and group 2 of the periodic table. The electron configuration of beryllium is [He] $2s^2$ ✓ .



[He] $2s^2\ 2p^6$ | $1s^2\ 2s^2\ 2p^2$ | [He] $2s^1$

السؤال 17

Select the correct answer from the drop-down menu to complete the sentence.

To determine which period an element can be found in, the

principal energy level ✓ of the valence electrons of that atom is examined.