

Name : _____ Date : _____

Score : _____

Electron Configuration Worksheet

1. Write the abbreviated ground state electron configuration for each neutral atom.

Na: _____ Sr: _____ B: _____

Ag: _____ Ti: _____ F: _____

2. Determine the possible elements that may represent the following electron configurations.

i. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^4$ _____

ii. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$ _____

iii. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ _____

iv. $[\text{Kr}] 5s^2 4d^{10} 5p^3$ _____

v. $[\text{Ne}] 3s^2 3p^1$ _____

3. Determine which of the following electron configurations are not valid.

i. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$: _____

ii. $1s^2 2s^2 2p^6 3s^3 3d^5$: _____

iii. $[\text{Ra}] 7s^2 5f^8$: _____

iv. $[\text{Kr}] 5s^2 4d^{10} 5p^5$: _____

v. $[\text{Xe}]$: _____

4. Identify the elements described below.

i. Which element contains a full second energy level? _____

ii. Which element contains three unpaired electrons in its third energy level? _____

iii. Which element contains five electrons in its 3d energy level? _____

iv. Which element contains two unpaired electrons in its fifth energy level? _____

v. Which element contains only two electrons in 5s? _____

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Electron Configuration Worksheet

Answers

1. Write the abbreviated ground state electron configuration for each neutral atom.

Na: [Ne] 3s¹

Sr: [Kr] 5s²

B: [He] 2s² 2p¹

Ag: [Kr] 4d¹⁰ 5s¹

Ti: [Ar] 3d² 4s²

F: [He] 2s² 2p⁵

2. Determine the possible elements that may represent the following electron configurations.

i. 1s² 2s² 2p⁶ 3s² 3p⁶ 4s² 3d¹⁰ 4p⁴ Selenium

ii. 1s² 2s² 2p⁶ 3s² 3p⁶ 4s² 3d⁵ Manganese

iii. 1s² 2s² 2p⁶ 3s² 3p⁶ 4s² 3d¹⁰ 4p⁶ 5s¹ Rubidium

iv. [Kr] 5s² 4d¹⁰ 5p³ Antimony

v. [Ne] 3s² 3p¹ Aluminum

3. Determine which of the following electron configurations are not valid.

i. 1s² 2s² 2p⁶ 3s² 3p⁶ 4s² 4d¹⁰ 4p⁵ : Not valid (take a look at "4d")

ii. 1s² 2s² 2p⁶ 3s³ 3d⁵: Not valid (3p comes after 3s and the 3s can only contain 2 electrons)

iii. [Ra] 7s² 5f⁸: Not valid (radium is not a noble gas)

iv. [Kr] 5s² 4d¹⁰ 5p⁵: Valid

v. [Xe]: Not valid (an element cannot be its electron configuration)

4. Identify the elements described below.

i. Which element contains a full second energy level? Ne

ii. Which element contains three unpaired electrons in its third energy level? N

iii. Which element contains five electrons in its 3d energy level? Mn

iv. Which element contains two unpaired electrons in its fifth energy level? Si

v. Which element contains only two electrons in 5s? Sr