Practice Questions

CCHEM 1411, Chapter 6

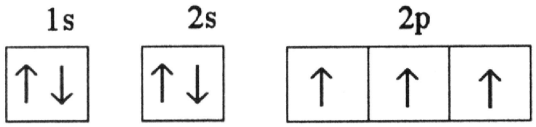
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which one of the following is correct? 1) _____

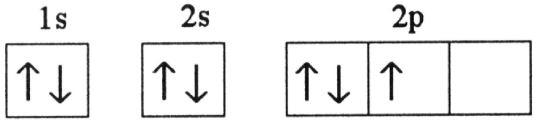
A) $\nu \div \lambda = c$ B) $\nu + \lambda = c$ C) $\nu\lambda = c$ D) $\nu = c\lambda$ E) $\lambda = c\,\nu$

2) Which one of the following is the correct electron configuration for a ground-state nitrogen atom? 2) _____

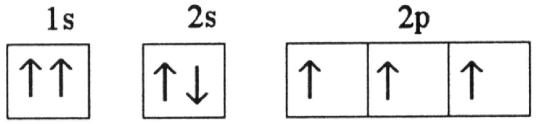
A)



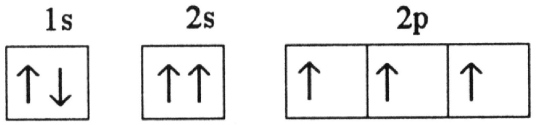
B)



C)



D)



E) None of the above is correct.

3) The ground state electron configuration of Fe is _____. 3) _____

A) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^6$

B) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$

C) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

D) $1s^2 2s^2 3s^2 3p^6 3d^6$

E) $1s^2 2s^2 3s^2 3p^{10}$

4) The ground-state electron configuration of the element _____ is $[Kr]5s^1 4d^5$. 4) _____

A) Tc B) Nb C) Mo D) Mn E) Cr

5) Which one of the following configurations depicts an excited oxygen atom? 5) _____

A) $1s^2 2s^2 2p^1$

B) $1s^2 2s^2 2p^2$

C) $1s^2 2s^2 2p^4$

D) $[He]2s^2 2p^4$

E) $1s^2 2s^2 2p^2 3s^2$

6) The ground state configuration of fluorine is _____. 6) _____

A) [He]$2s^2 2p^2$
B) [He]$2s^2 2p^3$
C) [He]$2s^2 2p^5$
D) [He]$2s^2 2p^6$
E) [He]$2s^2 2p^4$

7) The ground state configuration of tungsten is _____. 7) _____

A) [Ar]$4s^2 3d^3$
B) [Xe]$6s^2 4f^{14} 5d^4$
C) [Xe]$6s^2 4f^7$
D) [Kr]$5s^2 4d^{10} 5p^5$
E) [Ne]$3s^1$

8) The element that has a valence configuration of $4s^1$ is _____. 8) _____

A) K B) Cs C) Na D) Rb E) Li

9) Which two elements have the same ground–state electron configuration? 9) _____

A) Cl and Ar
B) Cu and Ag
C) Fe and Cu
D) Pd and Pt
E) No two elements have the same ground–state electron configuration.

10) How many different principal quantum numbers can be found in the ground state electron configuration of nickel? 10) _____

A) 2 B) 3 C) 4 D) 5 E) 6

11) The valence shell of the element X contains 2 electrons in a 5s subshell. Below that shell, element X has a partially filled 4d subshell. What type of element is X? 11) _____

A) alkali metal
B) halogen
C) main group element
D) transition metal
E) chalcogen

12) Of the following, _____ radiation has the shortest wavelength. 12) _____

A) radio
B) ultraviolet
C) X–ray
D) microwave
E) infrared

13) Which of the subshells below do not exist due to the constraints upon the angular momentum quantum number? 13) _____

A) 2p
B) 2d
C) 2s
D) all of the above
E) none of the above

14) Which one of the following is an incorrect orbital notation? 14) _____

A) 3f B) $3p_y$ C) 4s D) 2s E) $4d_{xy}$

15) The _____ orbital is degenerate with $5p_y$ in a many–electron atom. 15) _____

A) $4p_y$ B) $5d^2$ C) $5p_x$ D) 5s E) $5d_{xy}$

16) Which one of the following represents an acceptable set of quantum numbers for an electron in an atom? (arranged as n, l, m_l, and m_s) 16) _____

A) 3, 3, 3, –1/2
B) 2, 2, –1, –1/2
C) 1, 0, 0, 1/2
D) 3, 3, 3, 1/2
E) 5, 4,– 5, 1/2

Answer Key
Testname: UNTITLED1

1) C
2) A
3) B
4) C
5) E
6) C
7) B
8) A
9) E
10) C
11) D
12) C
13) B
14) A
15) C
16) C