

Multiple Choice Review #2

Key

Name: _____

- 1) 4 The total number of orbitals found in an *f* sublevel is
 - 1) 1
 - 2) 5
 - 3) 3
 - 4) 7
- 4) 2 In an atom that has an electron configuration of 2-5, what is the total number of electrons in its *highest* energy level?
 - 1) 8
 - 2) 2
 - 3) 7
 - 4) 5
- 3) 3 As an electron in an atom falls to a lower energy level, the potential energy of the electron
 - 1) increases
 - 2) remains the same
 - 3) decreases
- 3) 4) Electron *X* can change to a higher energy level or a lower energy level. Which of the following statements is true of electron *X*?
 - 1) Electron *X* absorbs energy when it changes to a lower energy level.
 - 2) Electron *X* neither emits nor absorbs energy when it changes energy level.
 - 3) Electron *X* absorbs energy when it changes to a higher energy level.
 - 4) Electron *X* emits energy when it changes to a higher energy level.
- 2) 5) An atom has 8 electrons in a *d* sublevel. How many *d* orbitals in this sublevel are half-filled?
 - 1) 1
 - 2) 2
 - 3) 3
 - 4) 4
- 2) 6) What is the total number of principal energy levels that are completely filled in an atom of magnesium in the ground state?
 - 1) 1
 - 2) 2
 - 3) 3
 - 4) 4

2-8-2
- 2) 7) Which electron transition represents the release of energy? *higher → lower.*
 - 1) ~~2p to 3s~~
 - 2) 3p to 1s
 - 3) ~~1s to 3p~~
 - 4) ~~2s to 2p~~
- 3) 8) Which represents the electron configuration of a silver atom in the excited state?
 - 1) ~~2-8-18-18-1 ground~~
 - 2) ~~2-8-18-18~~
 - 3) 2-8-18-17-2
 - 4) ~~2-7-7~~

2-8-18-18-1 (47e⁻)
- 3) 9) Which electron configuration represents an atom in an excited state?
 - 1) ~~2-7 F in ground state~~
 - 2) ~~2-8-2 Mg in ground state~~
 - 3) 2-7-1 Ne in excited state
 - 4) ~~2-8-1 Na in ground state~~
- 1) 10) Four valence electrons of an atom in the ground state would occupy the
 - 1) ~~s and p sublevels, only~~
 - 2) ~~s sublevel, only~~
 - 3) s, p, and d sublevels
 - 4) p sublevel, only
- 3) 11) Which principal energy level can hold a maximum of 18 electrons?
 - 1) 5
 - 2) 2
 - 3) 3
 - 4) 4

$2(3)^2 = 18$ $n = 3$
- 1) 12) What is the total number of valence electrons in an atom with the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^3$?
 - 1) 5
 - 2) 2
 - 3) 3
 - 4) 6

over
- 2) 13) What is the total number of sublevels in the second principal energy level?
 - 1) 1
 - 2) 2
 - 3) 3
 - 4) 4

s, p
- 1) 14) Which diagram correctly represents an atom of fluorine in an excited state?

$1s^2 2s^2 2p^5$

1)

3)

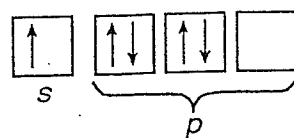
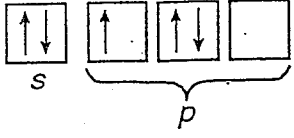
2)

ground

4)

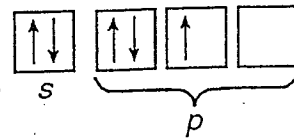
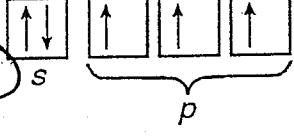
F

4 15) Which electron notation represents the valence electrons of a phosphorus atom in the ground state?

1)  $2-8-5$ 3) 

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

valence

2)  4) 

2 16) Which electron configuration represents an atom in an excited state?

- 1) $1s^2 2s^2 2p^6 3s^2$ Mg ~~3) $1s^2 2s^2 2p^6 3s^2 3p^2$ Si~~
 2) $1s^2 2s^2 2p^6 3p^1$ 4) $1s^2 2s^2 2p^6 3s^2 3p^1$ Al

2 17) The characteristic spectral lines of elements are caused when electrons in an excited atom move from

- 1) higher to lower energy levels, absorbing energy 3) lower to higher energy levels, absorbing energy
 2) higher to lower energy levels, releasing energy 4) lower to higher energy levels, releasing energy

1 18) When the electrons of an excited atom fall back to lower levels, there is an emission of energy that produces

- 1) spectral lines 3) alpha particles
 2) gamma radiation 4) beta particles

2 19) What is the electron configuration of a fluorine atom in the ground state? $2-7$

- 1) 2-8-7 2) 2-7 3) 2-9 4) 1-8

2 20) The total number of completely filled orbitals in an atom of nitrogen in the ground state is $1s^2 2s^2 2p^3$

- 1) 1 2) 2 3) 3 4) 5

3 21) In an atom that has an electron configuration of $1s^2 2s^2 2p^3$, what is the total number of electrons in its sublevel of highest energy? $1s^2 2s^2 2p^3$

- 1) 1 2) 2 3) 3 4) 4

2 22) The maximum number of electrons that a single orbital of the 3d sublevel may contain is

- 1) 5 2) 2 3) 3 4) 4

2 23) What is the total number of occupied sublevels in an atom of chlorine in the ground state? $1s^2 2s^2 2p^6 3s^2 3p^5$

- 1) 1 2) 5 3) 3 4) 9

1 24) Which electron configuration contains three half-filled orbitals?

- 1) $1s^2 2s^2 2p^3$ $1 \ 1 \ 1$ ~~2) $1s^2 2s^2 2p^5$~~ ~~3) $1s^2 2s^2 2p^6$~~ 4) $1s^2 2s^2 2p^4$

2 25) The total number of d orbitals in the third principal energy level is

- 1) 1 2) 5 3) 3 4) 7

- - - - -
d