

- 1- What makes up most of the mass of a calcium atom?
 - a. only protons
 - b. protons and neutrons
 - c. only neutrons
 - d. protons and electrons

- 2- What is the electron configuration for a Mg-12 atom in the ground state?
 - a. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^7$
 - b. $1s^2 2s^2 2p^6 3s^2$
 - c. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^2$
 - d. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^2 4p^1$

- 3- The characteristic bright-line spectrum of an element is produced when electrons:
 - a. absorb quanta and move to higher energy levels.
 - b. release quanta and return to lower energy levels.
 - c. absorb quanta and return to lower energy levels.
 - d. release quanta and move to higher energy levels.

- 4- Knowing that red light has the frequency 4.567×10^{14} HZ its energy.....
 (knowing that Plank's constant 6.63×10^{-34} J.s)
 - a) 4.04×10^{-19}
 - b) 2.1×10^{-18}
 - c) 3.03×10^{-19}
 - d) 5×10^{-15}

- 5- How many electrons are there in the third shell (principal energy level) of the atom with atomic number 23?
 - a) 18
 - b) 8
 - c) 10
 - d) 11

- 6- A wavelength of light is 389.0 nm and its frequency (1 nm = 10^{-9} m)
 - a) $77 \times 10^{14} \text{ s}^{-1}$
 - b) $7.71 \times 10^{14} \text{ s}^{-1}$
 - c) $5.55 \times 10^{14} \text{ s}^{-1}$
 - d) 7.71

- 7 - What is the correct electron configuration for fluoride ion, F^-
 - a) $1s^2 2s^2 2p^6$
 - b) $1s^2 2p^6 2s^1$
 - c) $1s^2 2s^2 2p^4$
 - d) $1s^2 2s^2 2p^5$

- 8- spectrum of hydrogen analyzed into many visible colors , the red color caused by the movement of electrons from level
 - a) 5 to 2
 - b) 3 to 2
 - c) 7 to 2
 - c) 6 to 2

- 9- Which of the following pairs of compounds would give the same flame test ?
 - a) NaCl , Na_2CO_3
 - b) CaCl_2 , NiF_2
 - c) NiCl_2 , KBr
 - d) KCl , CaBr_2

- 10- The idea of glow in the dark objects based on phenomena .
 - a) glowing
 - b) fluorescence
 - c) phosphorescence .
 - d) photon

- 11- The 4 quantum number for gO are
 - a) 2,1,-1,1/2
 - b) 2,1,1,-1/2
 - c) 2,1,-1,-1/2
 - d) 2,1,1,1/2

- 12) 3,2,2,1/2 are four quantum numbers for an element with atomic number
 - a) 26
 - b) 29
 - c) 30
 - d) 25