

Atomic Structure/History - Mixed Practice Answers

1.) The removal of an electron from which gaseous atom requires the greatest amount of energy?

- (A) Na (B) Cl (C) K (D) Br

2.) How many valence electrons are in a persulfate ion, SO_5^{2-} ?

- (A) 32 (B) 34 (C) 36 (D) 38

3.) Which has the highest ionization energy for the removal of the *second* electron?

- (A) F (B) Ne (C) Na (D) Mg

4.) What is the wavelength of a photon with an energy of 6.51×10^{-21} J?

- (A) 3.05×10^{-5} m (B) 9.82×10^{12} m (C) 4.61×10^{28} m (D) 2.17×10^{-29} m

5.) What is the maximum number of electrons that occupy the $n=3$ level?

- (A) 6 (B) 8 (C) 10 (D) 18

6.) Which atoms has the largest atomic radius?

- (A) Li (B) K (C) As (D) Br

7.) Which quantum numbers represent the orbitals being filled in the ground state for the elements Sc (21) to Zn (30)?

- (A) $n=3, l=1$ (B) $n=3, l=2$ (C) $n=4, l=1$ (D) $n=4, l=2$

8.) Which pair consists of species that are isoelectronic (Same number of electrons)?

- (A) Na^+ , K^+ (B) Cl , Cl^- (C) Fe^{2+} , Mn^{2+} (D) Ar , Ca^{2+}

9.) Which properties of electromagnetic radiation are inversely related?

- (A) amplitude and frequency
(B) frequency and wavelength
(C) energy and frequency
(D) wavelength and amplitude