

CHEMISTRY

17. When an atom goes from an excited state to the ground state, the total energy of the atom
- a) increases b) decreases c) remains the same
18. The lowest sublevel in each principal energy level is represented by the symbol
- a) f b) p c) s d) d e) n
19. What is the maximum number of electrons in the n th principal energy level
- a) n b) $2n$ c) n^2 d) $2n^2$
20. What is the number of kinds of sublevels in the energy level that has the principal quantum number of 2?
- a) 2 b) 3 c) 4 d) 8
21. What is the number of electrons permitted in the d sublevel of the third energy level?
- a) 3 b) 9 c) 10 d) 14 e) 18
22. What is the number of orbitals in the 4f sublevel?
- a) 1 b) 4 c) 7 d) 16 e) 14
23. The arrangement that represents the lowest energy of electrons in an atom is called the
- a) ground state b) excited state c) valence electrons d) kernel electrons
24. When an orbital is occupied by two electrons, the electrons must have
- a) the same charge and the same spin b) opposite charge and the same spin
c) the same charge and opposite spin d) opposite charge and opposite spin
25. The part of the atom that contains electrons that are not the valence electrons
- a) nucleus b) standing wave c) orbital d) kernel
26. In the charge-cloud model, energy sublevels are divided into
- a) energy levels b) orbits c) orbitals d) configurations
27. An orbital may contain more than one
- a) electron b) proton c) energy level d) orbit
28. According to the Heisenberg uncertainty principle, which two characteristics of a small particle cannot be known precisely at the same time?
- a) mass and velocity b) location and motion
c) wavelength and diameter d) radius and distance from its nearest neighbor
29. Which sublevel contains electrons with the highest energy?
- a) 3p b) 2p c) 3s d) 4s

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30. Which electron transition is accompanied by the emission of energy?

- a) 1s to 2s b) 2s to 2p c) 3p to 3s d) 3p to 4p

31. What is the number of completely filled orbitals in an atom of fluorine in the ground state?

- a) 4 b) 5 c) 6 d) 9

32. What is the total number of occupied principal energy levels in an atom of Aluminum in the ground state?

- a) 2 b) 3 c) 4 d) 5

33. Which electron configuration represents a neutral atom of carbon in an excited state?

- a) $1s^2 2s^2 2p^2$ b) $1s^2 2s^2 2p^3$ c) $1s^2 2s^1 2p^3$ d) $1s^2 2s^2 2p^6$

34. Compared to an atom of chlorine in an excited state, a chloride ion has

- a) one more electron b) one fewer electron c) the same number of electrons

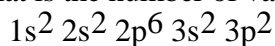
35. Which particle contains a total of 2 protons, 2 neutrons, and 2 electrons

- a) a cation b) an anion c) the kernel of an atom d) a neutral atom

36. The electron configuration $1s^2 2s^2 2p^5$ could represent the

- a) ground state of a fluorine atom b) ground state of a magnesium ion
c) excited state of a magnesium atom d) excited state of a fluoride ion

37. What is the number of valence electrons in an atom that has the electron configuration



- a) 2 b) 3 c) 4 d) 6

38. Which is the electron configuration of a neutral atom in the ground state with a total of six valence electrons?

- a) $1s^2 2s^2 2p^2$ b) $1s^2 2s^2 2p^4$ c) $1s^2 2s^2 2p^6$ d) $1s^2 2s^2 2p^6 3s^2 3p^6$

39. Which applies to an atom that has taken on one additional electron?

- a) It has entered the excited state b) It has become an ion
c) It has absorbed energy d) It has acquired an additional valence shell

40. What additional information must be known in order to determine whether or not an atom with 8 protons and 8 electrons is in the ground state?

- a) the number of neutrons b) the electron configuration
c) the atomic mass d) the mass number