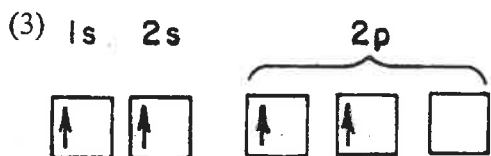


- What is the total number of occupied sublevels in the third principal energy level of a zinc atom in the ground state?
(1) 1 (3) 3
(2) 2 (4) 4
- Which represents the electron configuration of an isotope of oxygen in the ground state?
(1) $1s^2 2s^2 2p^2$ (3) $1s^2 2s^2 2p^4$
(2) $1s^2 2s^2 2p^1$ (4) $1s^2 2s^2 2p^2$
- Which principal energy level can hold a maximum of 18 electrons?
(1) 5 (3) 3
(2) 2 (4) 4
- Which principal energy level of an atom contains an electron with the lowest energy?
(1) $n = 1$ (3) $n = 3$
(2) $n = 2$ (4) $n = 4$
- What causes the emission of radiant energy that produces characteristic spectral lines?
(1) return of electrons to lower energy levels
(2) movement of electrons to higher energy levels
(3) gamma ray emission from the nucleus
(4) neutron absorption by the nucleus
- Which electron configurations represent the first two elements in Group 17 (VIIA) of the Periodic Table?
(1) $1s^2 2s^1$ and $1s^2 2s^2$
(2) $1s^2 2s^2$ and $1s^2 2s^2 2p^1$
(3) $1s^2 2s^2 2p^5$ and $[\text{Ne}]3s^2 3p^5$
(4) $1s^2 2s^2 2p^6$ and $[\text{Ne}]3s^2 3p^5$
- What is the maximum number of electrons that may be present in the second principal energy level of an atom?
(1) 8 (3) 18
(2) 2 (4) 32
- How does the ground state electron configuration of the hydrogen atom differ from that of a ground state helium atom?
(1) Hydrogen has one electron in a higher energy level.
(2) Hydrogen has two electrons in a lower energy level.
(3) Hydrogen contains a half-filled orbital.
(4) Hydrogen contains a completely filled orbital.
- In an aluminum atom in the ground state, which energy level contains the most electrons?
(1) 1 (3) 3
(2) 2 (4) 4
- The maximum number of electrons that a single orbital of the $3d$ sublevel may contain is
(1) 5 (3) 3
(2) 2 (4) 4
- In an atom of lithium in the ground state, what is the total number of orbitals that contain only 1 electron?
(1) 1 (3) 3
(2) 2 (4) 4
- A neutral atom in the ground state contains 16 electrons. What is the total number of electrons in the $2p$ sublevel?
(1) 6 (3) 8
(2) 2 (4) 16

13. Which orbital notation represents an atom of beryllium in the ground state?



14. An atom of which element in the ground state contains electrons in the fourth principal energy level?

- (1) He (3) Ar
(2) Ne (4) Kr

15. The modern model of the atom shows that electrons are

- (1) orbiting the nucleus in fixed paths
(2) found in regions called orbitals
(3) combined with neutrons in the nucleus
(4) located in a solid sphere covering the nucleus

16. A maximum of 6 electrons can occupy

- (1) a *p* sublevel (3) an *s* sublevel
(2) a *p* orbital (4) an *s* orbital

17. Which of the following sublevels contains the greatest number of orbitals?

- (1) *f* (3) *p*
(2) *d* (4) *s*

18. A neutral atom of an element has an electron configuration of 2–8–2. What is the total number of *p* electrons in this atom?

- (1) 6 (3) 10
(2) 2 (4) 12

19. In which subshell would an electron have the highest energy?

- (1) 3*p* (3) 3*s*
(2) 2*p* (4) 4*s*

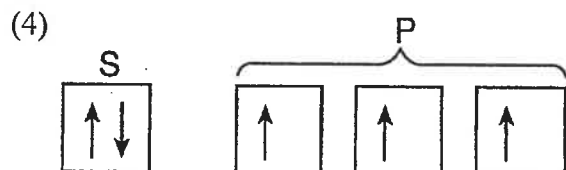
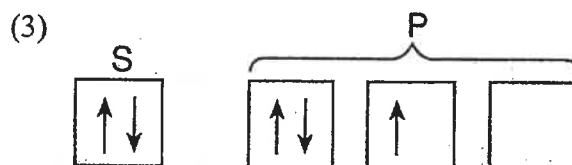
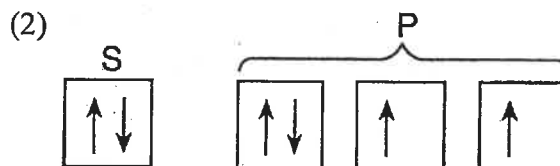
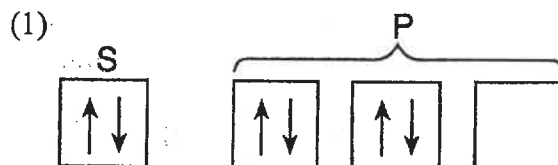
20. Which atom in the ground state has only 3 electrons in the 3*p* sublevel?

- (1) argon (3) phosphorus
(2) aluminum (4) potassium

21. What is the total number of sublevels that contain electrons in the third principal energy level of a nickel atom in the ground state?

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

22. Which orbital notation correctly represents the outermost principal energy level of a nitrogen atom in the ground state?



NAME:

Answer Key

1. 3
2. 3
3. 3
4. 1
5. 1
6. 3
7. 1
8. 3
9. 2
10. 2
11. 1
12. 1
13. 1
14. 4
15. 2
16. ~~1~~
17. 1
18. 1
19. 4
20. 3
21. 3
22. 4
23. 2
24. 4

25. 3
26. 4
27. 2