

**Q21. Which of the following statements concerning the quantum numbers are correct?**

- (a) Angular quantum number determines the three dimensional shape of the orbital.**
- (b) The principal quantum number determines the orientation and energy of the orbital.**
- (c) Magnetic quantum number determines the size of the orbital.**
- (d) Spin quantum number of an electron determines the orientation of the spin of electron relative to the chosen axis.**

**Sol:** (a, d)

- (a) Azimuthal quantum number  $l$  is also known as orbital angular momentum or subsidiary quantum number. It determines three-dimensional shape of the orbital.
- (b) The principal quantum number determines the size of the orbit.
- (c) Magnetic quantum number determines the orientation of the electron cloud in a subshell.
- (d) An electron spins around its own axis, much in a similar way as earth spins around its own axis while revolving around the sun. In other words, an electron has, besides charge and mass, intrinsic spin angular quantum number.