

The simple Bohr model cannot be directly applied to calculate the energy levels of an atom with many electrons. This is because

- A. of the electrons not being subject to a central force.
- B. of the electrons colliding with each other
- C. of screening effects
- D. the force between the nucleus and an electron will no longer be given by Coulomb's law.

Answer:

The answer is the option (a).

The above-mentioned Bohr's model is not relevant for calculating energy levels of atoms containing multiple electrons because of the assumption that the centripetal force is provided by the nucleus' electrostatic force of attraction and it is also used as an assumption while deriving formulas for radius/energy levels, etc. Therefore, the model is only applicable to single-electron atoms. If applied in multiple electron atoms, another factor, repulsion due to the electrons need to be accounted for. This proves that the simple Bohr's model cannot be used to calculate the energy level of atoms with numerous electrons.