



Quantum number, Electronic configuration and Shape of orbitals

- 181.** Number of unpaired electrons in the ground state of beryllium atom is
 (a) 2
 (b) 1
 (c) 0
 (d) All the above
- 182.** How many unpaired electrons are present in Ni^{2+} cation (atomic number = 28)
 (a) 0
 (b) 2
 (c) 4
 (d) 6
- 183.** The number of unpaired electrons in an O_2 molecule is
 (a) 0
 (b) 1
 (c) 2
 (d) 3
- 184.** The number of unpaired electrons in a chromic ion Cr^{3+} (atomic number = 24) is
 (a) 6
 (b) 4
 (c) 3
 (d) 1
- 185.** $3d^{10}4s^0$ electronic configuration exhibits by
 (a) Zn^{++}
 (b) Cu^{++}
 (c) Cd^{++}
 (d) Hg^{++}
- 186.** Which of the following metal ions will have maximum number of unpaired electrons
 (a) Fe^{+2}
 (b) Co^{+2}
 (c) Ni^{+2}
 (d) Mn^{+2}
- 187.** Which of the metal ion will have highest number of unpaired electrons
 (a) Cu^+
 (b) Fe^{2+}
 (c) Fe^{3+}
 (d) Co^{2+}
- 188.** The maximum number of unpaired electron can be present in d orbitals are
 (a) 1
 (b) 3
 (c) 5
 (d) 7
- 189.** The molecule having one unpaired electron is
 (a) NO
 (b) CO
 (c) CN^-
 (d) O_2
- 190.** A filled or half-filled set of p or d - orbitals is spherically symmetric. Point out the species which has spherical symmetry
 (a) Na
 (b) C
 (c) Cl^-
 (d) Fe
- 191.** The atom of the element having atomic number 14 should have
 (a) One unpaired electron
 (b) Two unpaired electrons



- (c) Three unpaired electrons
(d) Four unpaired electrons
192. An atom has 2 electrons in K shell, 8 electrons in L shell and 6 electrons in M shell. The number of s -electrons present in that element is
(a) 6 (b) 5
(c) 7 (d) 10
193. The number of unpaired electrons in carbon atom in excited state is
(a) One (b) Two
(c) Three (d) Four
194. Maximum number of electrons present in ' N ' shell is
(a) 18 (b) 32
(c) 2 (d) 8
195. The number of d electrons in Fe^{+2} (atomic number of $Fe = 26$) is not equal to that of the
(a) p -electrons in Ne (At. No.= 10)
(b) s -electrons in Mg (At. No.= 12)
(c) d -electrons in Fe
(d) p -electrons in Cl^- (At. No. of $Cl = 17$)
196. A transition metal X has a configuration $[Ar]3d^4$ in its +3 oxidation state. Its atomic number is
(a) 25 (b) 26
(c) 22 (d) 19
197. The total number of electrons present in all the p -orbitals of bromine are
(a) Five (b) Eighteen
(c) Seventeen (d) Thirty five
198. Which of the following has the maximum number of unpaired electrons
(a) Mg^{2+} (b) Ti^{3+}
(c) V^{3+} (d) Fe^{2+}
199. Which of the following has more unpaired d -electrons
(a) Zn^+ (b) Fe^{2+}
(c) N^{3+} (d) Cu^+
200. Maximum electrons in a d -orbital are
(a) 2 (b) 10
(c) 6 (d) 14
201. The number of unpaired electrons in Fe^{3+} ($Z = 26$) are
(a) 5 (b) 6
(c) 3 (d) 4
202. How many unpaired electrons are present in cobalt $[Co]$ metal
(a) 2 (b) 3
(c) 4 (d) 7
203. The number of unpaired electrons in nitrogen is
(a) 1
(b) 3





- (c) 2
(d) None of these
204. Which of the following has the least energy
(a) $2p$ (b) $3p$
(c) $2s$ (d) $4d$
205. Pauli's exclusion principle states that
(a) Nucleus of an atom contains no negative charge
(b) Electrons move in circular orbits around the nucleus
(c) Electrons occupy orbitals of lowest energy
(d) All the four quantum numbers of two electrons in an atom cannot be equal
206. For the energy levels in an atom, which one of the following statements is correct
(a) There are seven principal electron energy levels
(b) The second principal energy level can have four sub-energy levels and contains a maximum of eight electrons
(c) The M energy level can have maximum of 32 electrons
(d) The $4s$ sub-energy level is at a higher energy than the $3d$ sub-energy level
207. The statements
(i) In filling a group of orbitals of equal energy, it is energetically preferable to assign electrons to empty orbitals rather than pair them into a particular orbital.
(ii) When two electrons are placed in two different orbitals, energy is lower if the spins are parallel.
are valid for
(a) Aufbau principle
(b) Hund's rule
(c) Pauli's exclusion principle
(d) Uncertainty principle
208. According to Aufbau's principle, which of the three $4d$, $5p$ and $5s$ will be filled with electrons first
(a) $4d$
(b) $5p$
(c) $5s$
(d) $4d$ and $5s$ will be filled simultaneously
209. The energy of an electron of $2p_y$ orbital is
(a) Greater than that of $2p_x$ orbital
(b) Less than that of $2p_x$ orbital
(c) Equal to that of $2s$ orbital
(d) Same as that of $2p_z$ orbital
210. Which of the following principles/rules limits the maximum number of electrons in an orbital to two
(a) Aufbau principle



- (b) Pauli's exclusion principle
- (c) Hund's rule of maximum multiplicity
- (d) Heisenberg's uncertainty principle

