146. The process of successive addition of protons to the nucleus followed by an addition of the same number of electrons to the available orbitals in the sequence of increasing energy to obtain the electronic configuration of many electronic configuration of many electron atom, is known as

(a) Pauli's exclusion principle
(b) Hund's rule
(c) Heisenberg's uncertainty principal
(d) Aufbau principle

147. When the value of azimuthal quantum number is 3, the maximum and minimum values of spin multiplicity are

(a) 1, 8 (b) 8, 1
(c) 6, 1 (d) 7, 0

148. A completely filled *d*-orbital (d^{10}) is of

(a) Spherical symmetry
(b) Octahedral symmetry
(c) Tetrahedral symmetry
(d) Unsymmetry

149. An atom have d^8 configuration. The maximum number of electrons in the same spin is

(a) 5 (b) 3
(c) 8 (d) 2

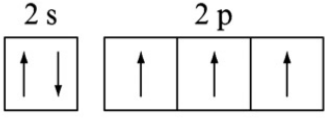
150. The number of orbitals having $(n + l) < 5$ is

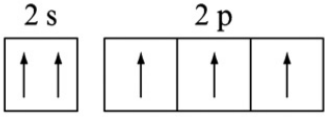
(a) 9 (b) 8
(c) 4 (d) 10

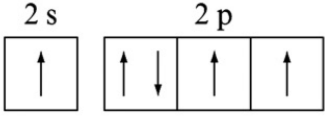
151. The total number of orbital for $(n+l)=4$ is

(a) 4 (b) 16
(c) 32 (d) 9

152. Which of the following configuration is violating Pauli's exclusion principle?

(a) 

(b) 

(c) 

(d) (b) and (c)

153. If there are three possible values (–1/2, 0, +1/2) for the spin quantum number, then the maximum capacity of second orbit will become of

(a) 8 electrons
(b) 6 electrons
(c) 12 electrons
(d) 27 electrons

154. The electrons, identified by quantum numbers n and l,

(i) $n = 4, l = 1$ (ii) $n = 4, l = 0$
(iii) $n = 3, l = 2$ (iv) $n = 3, l = 1$

can be placed in order of increasing energy, from the lowest to highest, as

(a) iv < ii < iii < i
(b) ii < iv < i < iii
(c) i < iii < ii < iv
(d) iii < i < iv < ii

155. If the numbers of orbitals of a particular type were $(3l+1)$, but spin quantum numbers were only +1/2 and –1/2, then d-type orbitals will contain a maximum of ___ electrons.

(a) 10 (b) 14
(c) 7 (d) 5

156. If the nitrogen atom has electronic configuration $1s^7$, it would have energy lower than that of the normal ground state configuration $1s^2 2s^2 2p^3$, because the electrons would be closer to the nucleus. Yet $1s^7$ is not observed because it violates

(a) Heisenberg's uncertainty principle
(b) Hund's rule
(c) Pauli's exclusion principle
(d) Bohr postulate of stationary orbits

157. Which quantum number differs for the two electrons present in K-shell of an atom?

(a) Principal quantum number
(b) Azimuthal quantum number
(c) Magnetic quantum number
(d) Spin quantum number

158. Correct set of four quantum numbers for the unpaired electron of chloride atom is

(a) 3, 2, 0, +1/2
(b) 3, 1, 0, +1/2
(c) 3, 1, +1, 0
(d) 3, 0, –1, +1/2

159. Correct set of four quantum numbers for the valence electron of rubidium ($Z = 37$) is

(a) 5, 0, 0, +1/2
(b) 5, 1, 0, +1/2
(c) 5, 1, 1, +1/2
(d) 6, 0, 0, +1/2

160. Correct set of quantum numbers defining the highest energy electron in scandium (I) ion is

(a) $n = 3, l = 1, m = 0, s = -1/2$
(b) $n = 3, l = 0, m = 0, s = -1/2$
(c) $n = 4, l = 0, m = 0, s = +1/2$
(d) $n = 3, l = 2, m = 2, s = +1/2$

161. How many unpaired electrons are present in ground state of chromium ($Z = 24$)?

(a) 1 (b) 5
(c) 6 (d) 0

162. K and L shell of an element are completely filled and there are 16 electrons in M-shell and 2-electrons in N-shell. The atomic number of the element is

(a) 18 (b) 28
(c) 22 (d) 26

163. The penultimate and outermost orbit of an element contains 10 and 2 electrons, respectively. If the outermost orbit is fourth orbit, the atomic number of the element should be

(a) 12 (b) 22
(c) 32 (d) 40

164. The number of unpaired electron in G. S., first E.S. and second E.S. of S (Z = 16) are, respectively,

(a) 0, 2 and 4 (b) 2, 4 and 6
(c) 0, 4 and 6 (d) 2, 4 and 4

165. The electronic structure of zinc ($Z = 30$) is 2, 8, 18, 2. The electronic structure of gallium ($Z = 31$) will be
(a) 2, 8, 18, 2, 1
(b) 2, 8, 19, 2
(c) 2, 8, 18, 3
(d) 2, 8, 19, 3

166. Which of the following ion have the same number of unpaired electrons as in Fe^{2+} ($Z = 26$)?
(a) Fe^{3+} ($Z = 26$)
(b) Ni^{2+} ($Z = 28$)
(c) Co^{3+} ($Z = 27$)
(d) Cr^{+} ($Z = 24$)

167. Which of the following will have magnetic moment, about 4.9 B.M.?
(a) Cr^{+} ($Z = 24$)
(b) Ti^{4+} ($Z = 22$)
(c) Fe^{2+} ($Z = 26$)
(d) Cu^{2+} ($Z = 29$)

168. Which of the following ion is diamagnetic?
(a) Sc^{3+} ($Z = 21$)
(b) Ti^{2+} ($Z = 22$)
(c) V^{3+} ($Z = 23$)
(d) Fe^{2+} ($Z = 26$)

169. Which of the following ion will have maximum magnetic moment?
(a) Fe^{3+} ($Z = 26$)
(b) Cr^{3+} ($Z = 24$)
(c) Ti^{4+} ($Z = 22$)
(d) Co^{3+} ($Z = 27$)

170. For which of the following element, all of its existing ion, M^{x+}, will be diamagnetic?
(a) Cu (b) Fe
(c) Cr (d) Na

171. The magnetic moment of Ni^{x+} ion ($Z = 28$) is about 2.82 B.M. The value of x is
(a) 2 (b) 4
(c) 1 (d) 3

172. A compound of vanadium has a magnetic moment of 1.73 BM. The electronic configuration of vanadium ion in the compound is
(a) $[Ar]3d^2$ (b) $[Ar]3d^1$
(c) $[Ar]3d^3$ (d) $[Ar]4s^1$

173. Which of the following is paramagnetic?
(a) Zn^{2+} ($Z = 30$)
(b) Ni^{2+} ($Z = 28$)
(c) Sc^{3+} ($Z = 21$)
(d) O^{2-} ($Z = 8$)

174. Which of the following ion is expected to be coloured?
(a) Zn^{2+} ($Z = 30$)
(b) Ca^{2+} ($Z = 20$)
(c) Sn^{2+} ($Z = 50$)
(d) V^{2+} ($Z = 23$)

175. Which of the following ion is expected to be colourless?
(a) Ni^{2+} ($Z = 28$) (b) Mn^{2+} ($Z = 25$)
(c) Zn^{2+} ($Z = 30$) (d) Cu^{2+} ($Z = 29$)

146. (d) 147. (b) 148. (a) 149. (a) 150. (d) 151. (a) 152. (b) 153. (c) 154. (a) 155. (b)
156. (c) 157. (d) 158. (b) 159. (a) 160. (c) 161. (c) 162. (b) 163. (b) 164. (b) 165. (c)
166. (c) 167. (c) 168. (a) 169. (a) 170. (d) 171. (a) 172. (b) 173. (b) 174. (d) 175. (c)