Quantum number, Electronic configuration and Shape of orbitals

91. For azimuthal quantum number $l = 3$, the maximum number of electrons will be
(a) 2 (b) 6
(c) 0 (d) 14

92. An ion has 28 electrons, it is
(a) Cu^+ (b) Th^{4+}
(c) Cs^+ (d) K^+

93. The order of filling of electrons in the orbitals of an atom will be
(a) $3d, 4s, 4p, 4d, 5s$
(b) $4s, 3d, 4p, 5s, 4d$
(c) $5s, 4p, 3d, 4d, 5s$
(d) $3d, 4p, 4s, 4d, 5s$

94. The quantum number which may be designated by $s, \rightleftarrows p, d$ and f instead of number is
(a) n (b) l
(c) m_l (d) m_s

95. Which of the following represents the correct sets of the four quantum numbers of a $4d$ electron
(a) $4,3,2,\frac{1}{2}$ (b) 4, 2, 1, 0
(c) $4,3,-2,+\frac{1}{2}$ (d) $4,2,1,-\frac{1}{2}$

96. Which of the following statements is not correct for an electron that has the quantum numbers $n = 4$ and $m = 2$
(a) The electron may have the quantum number $s = +\frac{1}{2}$
(b) The electron may have the quantum number $l = 2$
(c) The electron may have the quantum number $l = 3$
(d) The electron may have the quantum number $l = 0,1,2,3$

97. The set of quantum numbers not applicable for an electron in an atom is
(a) $n = 1, l = 1, m_l = 1, m_s = +1/2$
(b) $n = 1, l = 0, m_l = 0, m_s = +1/2$
(c) $n = 1, l = 0, m_l = 0, m_s = -1/2$
(d) $n = 2, l = 0, m_l = 0, m_s = +1/2$

98. Correct configuration of Fe^{+3} [26] is
(a) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^5$
(b) $1s^2, 2s^2 sp^6, 3s^2 3p^6 3d^3, 4s^2$
(c) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^6, 4s^2$
(d) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^5, 4s^1$

99. Azimuthal quantum number for last electron of Na atom is
(a) 1 (b) 2
(c) 3 (d) 0

100. A $3p$orbital has
(a) Two spherical nodes
(b) Two non-spherical nodes

(c) One spherical and one non-spherical nodes
(d) One spherical and two non-spherical nodes

101. All electrons on the $4p$ sub-shell must be characterized by the quantum number(s)

(a) $n = 4, m = 0, s = \pm\frac{1}{2}$ (b) $l = 1$

(c) $l = 0, s = \pm\frac{1}{2}$ (d) $s = \pm\frac{1}{2}$

102. The electronic configuration of the element of atomic number 27 is

(a) $1s^2$, $2s^2 2p^6$, $3s^2 3p^6$, $4s$ (↑↓) $4p$ (↑↓)(↑↓)(↑↓) $5s$ (↑)

(b) $1s^2$, $2s^2 2p^6$, $3s^2 3p^6 3d$ (↑↓)(↑↓)(↑↓), $4s$ (↑↓) $4p$ (↑)

(c) $1s^2$, $2s^2 2p^6$, $3s^2 3p^6$, $3d$ (↑↓)(↑↓)(↑↓)(↑↓), $4s$ (↑)

(d) $1s^2$, $2s^2 2p^6$, $3s^2 3p^6$, $3d$ (↑↓)(↑↓)(↑)(↑)(↑) $4s$ (↑↓)

103. When the value of the principal quantum number n is 3, the permitted values of the azimuthal quantum numbers l and the magnetic quantum numbers m , are

	l	m
(a)	0 1 2	0 $+1,0,-1$ $+2,+1,0,-1,-2$
(b)	1 2 3	1 $+2,1,-1$ $+3,+2,1,-2,-3$
(c)	0 1 2	0 1,2,3 $+3,+2,1,-2,-3$
(d)	1 2 3	0,1 0,1,2 0,1,2,3

104. The number of possible spatial orientations of an electron in an atom is given by its

(a) Spin quantum number
(b) Spin angular momentum
(c) Magnetic quantum number
(d) Orbital angular momentum

105. Which of the following sets of orbitals may degenerate

(a) $2s, 2p_x, 2p_y$ (b) $3s, 3p_x, 3d_{xy}$
(c) $1s, 2s, 3s$ (d) $2p_x, 2p_y, 2p_z$

106. The set of quantum numbers $n = 3, l = 0, m = 0, s = -1/2$ belongs to the element

(a) Mg (b) Na
(c) Ne (d) F

107. An electron has principal quantum number 3. The number of its (i) sub-shells and (ii) orbitals would be respectively

(a) 3 and 5 (b) 3 and 7
(c) 3 and 9 (d) 2 and 5

108. What is the electronic configuration of $Cu^{2+}(Z = 29)$ of least position

(a) $[Ar]4s^1 3d^8$
(b) $[Ar]4s^2 3d^{10} 4p^1$
(c) $[Ar]4s^1 3d^{10}$
(d) $[Ar]3d^9$

109. The correct electronic configuration of $Ti(Z = 22)$ atom is

(a) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$

(b) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4$

(c) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4$

(d) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^3$

110. Which of the following configuration is correct for iron

(a) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5$

(b) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$

(c) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^7$

(d) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$

111. Which of the following set of quantum numbers belong to highest energy

(a) $n = 4, l = 0, m = 0, s = +\frac{1}{2}$

(b) $n = 3, l = 0, m = 0, s = +\frac{1}{2}$

(c) $n = 3, l = 1, m = 1, s = +\frac{1}{2}$

(d) $n = 3, l = 2, m = 1, s = +\frac{1}{2}$

112. Which quantum number will determine the shape of the subshell

(a) Principal quantum number

(b) Azimuthal quantum number

(c) Magnetic quantum number

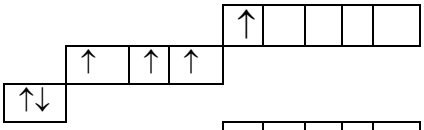
(d) Spin quantum number

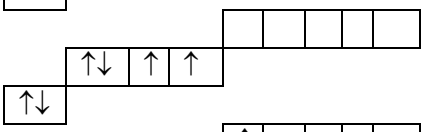
113. For the $n = 2$ energy level, how many orbitals of all kinds are possible

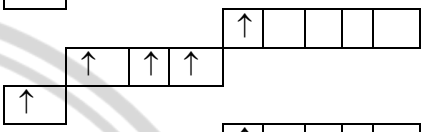
(a) 2 (b) 3

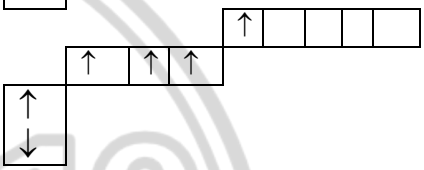
(c) 4 (d) 5

114. Which one is in the ground state

(a) 

(b) 

(c) 

(d) 

115. When the principal quantum number $(n = 3)$, the possible values of azimuthal quantum number (l) is

(a) 0, 1, 2, 3 (b) 0, 1, 2

(c) – 2, – 1, 0, 1, 2 (d) 1, 2, 3

(e) 0, 1

116. Which statement is not correct for $n = 5, m = 3$

(a) $l = 4$

(b) $l = 0,1,3; s = +\frac{1}{2}$

(c) $l = 3$

(d) All are correct

117. $1s^2 2s^2 2p^6 3s^1$ shows configuration of

(a) Al^{3+} in ground state

(b) Ne in excited state

(c) Mg^+ in excited state

(d) None of these

118. Five valence electrons of p^{15} are labelled as

AB	X	Y	Z
3s	3p		

If the spin quantum of B and Z is $+\frac{1}{2}$, the group of electrons with three of the quantum number same are

(a) AB, XYZ, BY (b) AB

(c) XYZ, AZ (d) AB, XYZ

119. Electronic configuration of Sc^{21} is

(a) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$

(b) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^2$

(c) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^0 3d^3$

(d) $1s^2 2s^2 2p^6 3s^2 3p^2 4s^2 3d^2$

120. If $n + l = 6$, then total possible number of subshells would be

(a) 3 (b) 4

(c) 2 (d) 5