TIME : 20 MIN. **CLASS TEST-01**

1. An electron cannot have the quantum numbers n = ..., l = ..., m_l = **.....**

(A) 1, 1, 1 (B) 2, 0, 0 (C) 3, 2, 1 (D) 2, 1, –1

2. In a p_x orbital, the subscript x denotes the.....

(A) spin of the electrons (B) size of the orbital

(C) energy (D) axis along which the orbital is aligned

3. The..... orbital is degenerate with $5p_y$ in a many electron atom.

(A) $5d_{z^2}$ (B) $4\ p_y$ (C) $5\ p_x$ (D) $5d_{xy}$

4. Which one of the following orbitals can hold two electrons?

(A) 3s (B) $2p_x$ (C) $4d_{xy}$ (D) All of these

5. All of the orbitals in a given electron shell have the same value of the ..... quantum number.

(A) azimuthal (B) principal (C) magnetic (D) spin

6. Which one of the following is not a valid value for the magnetic quantum number of an electron in a 5d subshell?

(A) 2 (B) 1 (C) 0 (D) 3

7. Which of the subshells below do not exist due to the constraints upon the azimuthal quantum number?

(A) 2s (B) 2p (C) 2d (D) All of these

8. In which one of the following pairs of the species are isoelectronic as well as isotopic?

(At. no. of Ca = 20, Ar = 18, K = 19, Mg = 12, Fe = 26, Na = 11)

(A) $^{40}Ca^{2+}$, ^{40}Ar (B) $^{39}K^{+}$, $^{40}K^{+}$ (C) $^{24}Mg^{2+}$, ^{25}Mg (D) ^{23}Na, $^{24}Na^{+}$

9. Which one of the following represents an acceptable set of quantum numbers for an electron in an atom? (arranged as n, l, m_l, m_s)

(A) 5, 4, –5, 1/2 (B) 1, 0, 0, 1/2 (C) 2, 2, –1, –1/2 (D) 3, 3, 3, 1/2

10. Which of the following is a valid set of four quantum numbers? (n, l, m_l, m_s)

(A) 2, 1, +2, +1/2 (B) 2, 1, 0, +1/2 (C) 1, 1, 0, –1/2 (D) 2, 2, 1, –1/2

11. Which one of the following configurations depicts an excited carbon atom?

(A) $1s^2\ 2s^2\ 2p^1\ 3s^1$ (B) $1s^2\ 2s^2\ 2p^1$ (C) $1s^2\ 2s^2\ 2p^3$ (D) $1s^2\ 2s^2\ 2p^2$

12. The ground state electronic configuration of..... is [Ar] $4s^1$ $3d^5$.

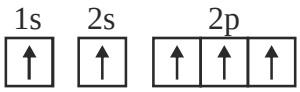
(A) Mn (B) V (C) Fe (D) Cr

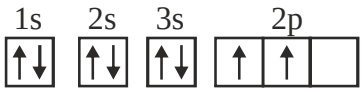
13. The ground state electronic configuration of Fe is.....

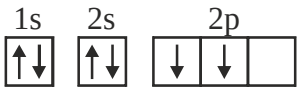
(A) $1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$ $3d^6$ $4s^2$ (B) $1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$ $4s^2$ $4d^6$

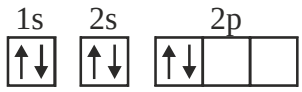
(C) $1s^2$ $2s^2$ $3s^2$ $3p^{10}$ (D) $1s^2$ $2s^2$ $3s^2$ $3p^6$ $3d^6$

14. Which electronic configuration represents correct electronic configuration for an atom in its ground state?

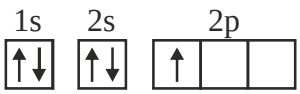
(A) 

(B) 

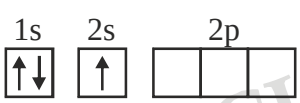
(C) 

(D) 

15. Which electronic configuration represents a violation of the (n + *l*) rule?

(A) 

(B) 

(C) 

(D)