ARJUNA (NEET)

STRUCTURE OF ATOM

DPP-11

1. The wavelength associated with a ball of 200 g and moving with a speed of 5m/hour is of the order of
   (A) 10^{-10} m (B) 10^{-20} m
   (C) 10^{-30} m (D) 10^{-40} m

2. The set of quantum numbers not applicable to an electron
   (A) 1,1,1, +1/2 (B) 1,0,0, +1/2
   (C) 1,0,0, –1/2 (D) 2,0,0, +1/2

3. The principal and azimuthal quantum number of electrons in 4f orbitals are
   (A) 4,2 (B) 4,4
   (C) 4,3 (D) 3,4

4. How many 3d electrons can have spin quantum number $-\frac{1}{2}$?
   (A) 5 (B) 7
   (C) 8 (D) 10

5. The correct order of increasing energy of atomic orbital is
   (A) 5p < 4f < 6s < 5d
   (B) 5p < 6s < 4f < 5d
   (C) 4f < 5p < 5d < 6s
   (D) 5p < 5d < 4f < 6s

6. Which shell would be the first to have 'g' sub-shell?
   (A) L (B) M
   (C) N (D) O

7. For which one of the following set of quantum numbers an electron will have the highest energy?
   (A) 3,2,1, 1/2 (B) 4,2, –1, 1/2
   (C) 4,1,0, –1/2 (D) 5,0,0,1/2

8. The energies of orbitals of H-atom are in the order
   (A) 3s < 3p < 4s < 3d < 4p
   (B) 3s < 3p < 3d < 4s < 4p
   (C) 3s = 3p = 3d < 4s = 4p
   (D) 3s = 3p = 3d < 4s < 4p

9. Which of the following set of quantum number is possible?
   (A) n = 4, l = 2, m = – 2, s = – 2
   (B) n = 4. l = 4, m = 0. s = 1/2
   (C) n = 4, l = 3, m = –3, s = 1/2
   (D) n = 4. l = 0, m = 0, s = 0

10. The maximum number of electrons in an atom which can have n = 4 is
    (A) 4 (B) 8
    (C) 16 (D) 32

11. In the presence of magnetic field, the possible number of orientations for an orbital of azimuthal quantum number 3, is
    (A) Three (B) One
    (C) Five (D) Seven

12. For a 'p' electron, the orbital angular momentum is
    (A) $\sqrt{6}\hbar$ (B) $\sqrt{2}\hbar$
    (C) $\hbar$ (D) 2 $\hbar$

13. Which of the following electronic level would allow the hydrogen to absorb a photon but not emit a photon?
    (A) 3s (B) 2p
    (C) 2s (D) 1s

14. Which of the following transition will emit maximum energy in hydrogen atom?
(A) $4f \rightarrow 2s$
(B) $4d \rightarrow 2p$
(C) $4p \rightarrow 2s$
(D) All have same energy

15. In an atom, which has 2K, 8L, 18M and 2N electros in the ground state. The total number of electrons having magnetic quantum number, m = 0 is
(A) 6 (B) 10
(C) 7 (D) 14

16. A p-orbital can accommodate upto
(A) Four electrons (B) Six electrons
(C) Two electrons (D) Eight electrons

17. The number of radial nodes in 4s and 3p orbitals are respectively
(A) 2,0 (B) 3,1
(C) 2,2 (D) 3,2

18. Which of the following orbital is with the four lobes present on the axis?
(A) d_{x^2} (B) d_{xy}
(C) d_{yz} (D) $d_{x^2-y^2}$

19. Which of the following statement concerning the four quantum number is incorrect?
(A) n gives the size of an orbital
(B) *l* gives the shape of an orbital
(C) m gives the energy of the electron in Orbital
(D) s gives the direction of spin of electron in the orbital

20. Which of the following has maximum number of unpaired electrons?
(A) Mg^{2+} (B) Ti^{3+}
(C) Fe^{2+} (D) Mn^{2+}

20. Two electrons in K shall will not have
(A) Same principal quantum number
(B) Same azimuthal quantum number
(C) Same magnetic quantum number
(D) Same spin quantum number

21. Which of the following electronic configuration is not possible?
(A) $2p^3$ (B) $2d^5$
(C) $4s^1$ (D) $5f^8$

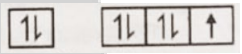
22. The orbital diagram in which both Pauli's exclusion principle and Hund's rule are violated is

2s 2p

(A) 

(B) 

(C) 

(D) 

23. The number of waves in the third orbit of H-atom
(A) 1 (B) 2
(C) 4 (D) 3

24. If kinetic energy of a proton is increased nine times, the wavelength of the de-Broglie wave associated with it would become
(A) 3 times (B) 9 times
(C) 1/3 times (D) 1/9 times

25. The de-Broglie wavelength of an electron travelling with 10% of velocity of light is equal to
(A) 242.4 pm (B) 24.2 pm
(C) 2.42 pm (D) 0.2424 pm

ANSWERS KEY

1. (C)
2. (A)
3. (C)
4. (A)
5. (B)
6. (D)
7. (B)
8. (C)
9. (C)
10. (D)
11. (D)
12. (B)
13. (D)
14. (D)
15. (D)
16. (C)
17. (B)
18. (D)
19. (C)
20. (D)
21. (D)
22. (B)
23. (A)
24. (D)
25. (C)
26. (B)

Note - If you have any query/issue

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