

AIPMT 2009

1. Maximum number of electrons in a subshell of an atom is determined by the following :-
 (1) $2n^2$ (2) $4\ell + 2$
 (3) $2\ell + 1$ (4) $4\ell - 2$
2. Which of the following is not permissible set of quantum numbers in an atom ?
 (1) $n = 3, \ell = 2, m = -2, s = -1/2$
 (2) $n = 4, \ell = 0, m = 0, s = -1/2$
 (3) $n = 5, \ell = 3, m = 0, s = +1/2$
 (4) $n = 3, \ell = 2, m = -3, s = -1/2$

AIPMT 2010

3. A 0.66 kg ball is moving with a speed of 100 m/s. The associated wavelength will be ($h = 6.6 \times 10^{-34}$ Js) :-
 (1) 6.6×10^{-34} m (2) 1.0×10^{-35} m
 (3) 1.0×10^{-32} m (4) 6.6×10^{-32} m

AIPMT Pre-2011

4. The total number of atomic orbitals in fourth energy level of an atom is :-
 (1) 8 (2) 16 (3) 32 (4) 4
5. The energies E_1 and E_2 of two radiations are 25 eV and 50eV respectively. The relation between their wavelengths i.e. λ_1 and λ_2 will be :
 (1) $\lambda_1 = \lambda_2$ (2) $\lambda_1 = 2\lambda_2$
 (3) $\lambda_1 = 4\lambda_2$ (4) $\lambda_1 = \frac{1}{2}\lambda_2$
6. If $n = 6$, the correct sequence for filling of electrons will be :
 (1) $ns \rightarrow (n-2)f \rightarrow (n-1)d \rightarrow np$
 (2) $ns \rightarrow (n-1)d \rightarrow (n-2)f \rightarrow np$
 (3) $ns \rightarrow (n-2)f \rightarrow np \rightarrow (n-1)d$
 (4) $ns \rightarrow np \rightarrow (n-1)d \rightarrow (n-2)f$

AIPMT Mains 2011

7. According to the Bohr Theory, which of the following transitions in the hydrogen atom will give rise to the least energetic photon ?
 (1) $n = 5$ to $n = 3$ (2) $n = 6$ to $n = 1$
 (3) $n = 5$ to $n = 4$ (4) $n = 6$ to $n = 5$

AIPMT PRE 2012

8. Maximum number of electrons in a subshell with $\ell = 3$ and $n = 4$ is :-
 (1) 10 (2) 12 (3) 14 (4) 16
9. The correct set of four quantum numbers for the valence electron of rubidium atom ($Z = 37$) is:-
 (1) 5, 0, 0, $+\frac{1}{2}$ (2) 5, 1, 0, $+\frac{1}{2}$
 (3) 5, 1, 1, $+\frac{1}{2}$ (4) 6, 0, 0, $+\frac{1}{2}$

AIPMT MAINS 2012

10. The orbital angular momentum of a p-electron is given as :-
 (1) $\sqrt{\frac{3}{2}} \frac{h}{\pi}$ (2) $\sqrt{6} \cdot \frac{h}{2\pi}$
 (3) $\frac{h}{\sqrt{2}\pi}$ (4) $\sqrt{3} \frac{h}{2\pi}$

NEET UG 2013

11. The value of Planck's constant is 6.63×10^{-34} Js. The speed of light is 3×10^{17} nm s^{-1} . Which value is closest to the wavelength in nanometer of a quantum of light with frequency of 6×10^{15} s^{-1} ?
 (1) 75 (2) 10
 (3) 25 (4) 50
12. Based on equation $E = -2.178 \times 10^{-18} \text{ J } \left(\frac{Z^2}{n^2} \right)$ certain conclusions are written. Which of them is **not** correct ?
 (1) For $n = 1$, the electron has a more negative energy than it does for $n = 6$ which means that the electron is more loosely bound in the smallest allowed orbit.
 (2) The negative sign in equation simply means that the energy of electron bound to the nucleus is lower than it would be if the electrons were at the infinite distance from the nucleus
 (3) Larger the value of n , the larger is the orbit radius
 (4) Equation can be used to calculate the change in energy when the electron change orbit

13. What is the maximum numbers of electrons that can be associated with the following set of quantum numbers $\Rightarrow n = 3; \ell = 1$ and $m = -1$?

(1) 2 (2) 10
(3) 6 (4) 4

AIPMT 2014

14. What is the maximum number of orbitals that can be identified with the following quantum numbers. $n = 3, \ell = 1, m_\ell = 0$?

(1) 1 (2) 2
(3) 3 (4) 4

15. Calculate the energy in joule corresponding to light of wavelength 45 nm : (Planck's constant $h = 6.63 \times 10^{-34}$ Js; speed of light $c = 3 \times 10^8$ ms⁻¹)

(1) 6.67×10^{15} (2) 6.67×10^{11}
(3) 4.42×10^{-15} (4) 4.42×10^{-18}

16. Magnetic moment 2.83 BM is given by which of the following ions ?

(At. no. Ti = 22, Cr = 24, Mn = 25, Ni = 28):-

(1) Ti³⁺ (2) Ni²⁺
(3) Cr³⁺ (4) Mn²⁺

AIPMT 2015

17. Which of the following pairs of ions are isoelectronic and isostructural ?

(1) ClO₃⁻, CO₃²⁻ (2) SO₃²⁻, NO₃⁻
(3) ClO₃⁻, SO₃²⁻ (4) CO₃²⁻, SO₃²⁻

18. The number of d-electrons in Fe²⁺ (Z = 26) is not equal to the number of electrons in which one of the following?

(1) p-electrons in Cl (Z = 17)
(2) d-electrons in Fe (Z = 26)
(3) p-electrons in Ne (Z = 10)
(4) s-electrons in Mg (Z = 12)

19. Magnetic moment 2.84 B.M. is given by :-

(At. no.), Ni = 28, Ti = 22, Cr = 24, Co = 27)

(1) Ti³⁺ (2) Cr²⁺
(3) Co²⁺ (4) Ni²⁺

20. The angular momentum of electron in 'd' orbital is equal to :-

(1) $\sqrt{2} \hbar$ (2) $2\sqrt{3} \hbar$
(3) $0 \hbar$ (4) $\sqrt{6} \hbar$

RE-AIPMT 2015

21. Which is the correct order of increasing energy of the listed orbitals in the atom of titanium ?

(At. no. Z = 22)

(1) 3s 3p 3d 4s
(2) 3s 3p 4s 3d
(3) 3s 4s 3p 3d
(4) 4s 3s 3p 3d

NEET-I 2016

22. Two electrons occupying the same orbital are distinguished by :-

(1) Principal quantum number
(2) Magnetic quantum number
(3) Azimuthal quantum number
(4) Spin quantum number

NEET-II 2016

23. Which of the following pairs of d-orbitals will have electron density along the axis ?

(1) d_{z²}, d_{x²-y²} (2) d_{xy}, d_{x²-y²}
(3) d_{z²}, d_{xz} (4) d_{xz}, d_{yz}

24. How many electrons can fit in the orbital for which $n = 3$ and $\ell = 1$?

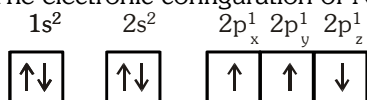
(1) 10 (2) 14
(3) 2 (4) 6

25. Which one is the wrong statement ?

- (1) The uncertainty principle is $\Delta E \times \Delta t \geq h/4\pi$
- (2) Half filled and fully filled orbitals have greater stability due to greater exchange energy, greater symmetry and more balanced arrangement.
- (3) The energy of 2s orbital is less than the energy of 2p orbital in case of Hydrogen like atoms
- (4) de-Broglie's wavelength is given by $\lambda = \frac{h}{mv}$,
where m = mass of the particle, v = velocity of the particle

26. Which one is a **wrong** statement ?

- (1) Total orbital angular momentum of electron in 's' orbital is equal to zero
- (2) An orbital is designated by three quantum numbers while an electron in an atom is designated by four quantum numbers.
- (3) The electronic configuration of N atom is



- (4) The value of m for d_7^2 is zero

27. Which of the following series of transitions in the spectrum of hydrogen atom falls in visible region ?

- (1) Lyman series (2) Balmer series
(3) Paschen series (4) Brackett series

28. Orbital having 3 angular nodes and 3 total nodes is :-

- (1) 5 p (2) 3 d
(3) 4 f (4) 6 d

- 29.** In hydrogen atom, the de Broglie wavelength of an electron in the second Bohr orbit is :-
[Given that Bohr radius, $a_0 = 52.9 \text{ pm}$]
- (1) 211.6 pm (2) $211.6 \pi \text{ pm}$
(3) $52.9 \pi \text{ pm}$ (4) 105.8 pm

30. The number of protons, neutrons and electrons in ${}^{175}_{71}\text{Lu}$, respectively, are :

- (1) 175, 104 and 71 (2) 71, 104 and 71
(3) 104, 71 and 71 (4) 71, 71 and 104

31. The number of angular nodes and radial nodes in 3s orbital are

- (1) 0 and 2, respectively
- (2) 1 and 0, respectively
- (3) 3 and 0, respectively
- (4) 0 and 1, respectively

32. A particular station of All India Radio, New Delhi, broadcasts on a frequency of 1,368 kHz (kilohertz). The wavelength of the electromagnetic radiation emitted by the transmitter is :

- [speed of light $c = 3.0 \times 10^8 \text{ ms}^{-1}$]
- (1) 219.3 m (2) 219.2 m
(3) 2192 m (4) 21.92 cm

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	2	2	2	1	4	3	1	3	4	1	1	1	4
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	2	3	1	4	4	2	4	1	3	3	3	2	3	2	2
Que.	31	32													
Ans.	1	1													