AIPMT 2008

1. The ground state energy of hydrogen atom is –13.6eV. When its electron is in the first excited state, its excitation energy is:-

(1) 10.2 eV (2) 0

(3) 3.4 eV (4) 6.8 eV

AIPMT 2009

2. The ionization energy of the electron in the hydrogen atom in its ground state is 13.6 eV. The atoms are excited to higher energy levels to emit radiations of 6 wavelengths. Maximum wavelength of emitted radiation corresponds to the transition between :-

(1) n = 4 to n = 3 states

(2) n = 3 to n = 2 states

(3) n = 3 to n = 1 states

(4) n = 2 to n = 1 states

3. In a Rutherford scattering experiment when a projectile of charge z_1 and mass M_1 approaches a target nucleus of charge z_2 and mass M_2, the distance of closest approach is r_0. The energy of the projectile is :-

(1) directly proportional to mass M_1

(2) directly proportional to M_1M_2

(3) directly proportional to z_1z_2

(4) inversely proportional to z_1

AIPMT 2010

4. The energy of a hydrogen atom in the ground state is –13.6 eV. The energy of a He^+ ion in the first excited state will be :-

(1) –6.8 eV (2) –13.6eV

(3) –27.2 eV (4) –54.4 eV

AIPMT (Pre) 2011

5. The wavelength of the first line of Lyman series for hydrogen atom is equal to that of the second line of Balmer series for a hydrogen like ion. The atomic number Z of hydrogen like ion is :-

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

AIPMT (Mains) 2011

6. Out of the following which one is not a possible energy for a photon to be emitted by hydrogen atom according to Bohr's atomic model ?

(1) 0.65 eV (2) 1.9 eV

(3) 11.1 eV (4) 13.6 eV

AIPMT (Mains) 2012

7. The transition from the state n = 3 to n = 1 in a hydrogen like atom results in ultraviolet radiation. Infrared radiation will be obtained in the transition from :

(1) $4 \rightarrow 2$ (2) $4 \rightarrow 3$

(3) $2 \rightarrow 1$ (4) $3 \rightarrow 2$

NEET-UG 2013

8. Ratio of longest wavelengths corresponding to Lyman and Balmer series in hydrogen spectrum is:-

(1) $\frac{9}{31}$ (2) $\frac{5}{27}$ (3) $\frac{3}{23}$ (4) $\frac{7}{29}$

AIPMT 2014

9. Hydrogen atom is ground state is excited by a monochromatic radiation of $\lambda = 975$ Å. Number of spectral lines in the resulting spectrum emitted will be :-

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

AIPMT 2015

10. Consider 3^{rd} orbit of He^+ (Helium), using non-relativistic approach, the speed of electron in this orbit will be [given K = 9×10^9 constant, Z = 2 and h (Planck's Constant) = 6.6×10^{-34} J s]

(1) 1.46×10^6 m/s (2) 0.73×10^6 m/s

(3) 3.0×10^8 m/s (4) 2.92×10^6 m/s

RE-AIPMT 2015

11. In the spectrum of hydrogen, the ratio of the longest wavelength in the Lyman series to the longest wavelength in the Balmer series is :

(1) $\frac{5}{27}$ (2) $\frac{4}{9}$ (3) $\frac{9}{4}$ (4) $\frac{27}{5}$

NEET-I 2016

12. When an α-particle of mass 'm' moving with velocity 'v' bombards on a heavy nucleus of charge 'Ze', its distance of closest approach from the nucleus depends on m as :

(1) $\frac{1}{m}$ (2) $\frac{1}{\sqrt{m}}$ (3) $\frac{1}{m^2}$ (4) m

13. Given the value of Rydberg constant is $10^7 m^{-1}$, the wave number of the last line of the Balmer series in hydrogen spectrum will be :-

(1) 0.025×10^4 m^{-1} (2) 0.5×10^7 m^{-1}

(3) 0.25×10^7 m^{-1} (4) 2.5×10^7 m^{-1}

NEET-II 2016

14. Electrons of mass m with de-Broglie wavelength λ fall on the target in an X-ray tube. The cutoff wavelength (λ_0) of the emitted X-ray is :-

(1) $\lambda_0 = \frac{2m^2c^2\lambda^3}{h^2}$ (2) $\lambda_0 = \lambda$

(3) $\lambda_0 = \frac{2mc\lambda^2}{h}$ (4) $\lambda_0 = \frac{2h}{mc}$

15. If an electron in a hydrogen atom jumps from the 3rd orbit to the 2nd orbit, it emits a photon of wavelength λ. When it jumps from the 4th orbit to the 3rd orbit, the corresponding wavelength of the photon will be :-

(1) $\frac{20}{7}\lambda$ (2) $\frac{20}{13}\lambda$ (3) $\frac{16}{25}\lambda$ (4) $\frac{9}{16}\lambda$

NEET(UG) 2017

16. The ratio of wavelengths of the last line of Balmer series and the last line of Lyman series is :-

(1) 1 (2) 4 (3) 0.5 (4) 2

NEET(UG) 2018

17. The ratio of kinetic energy to the total energy of an electron in a Bohr orbit of the hydrogen atom, is :-

(1) 1 : 1 (2) 1 : –1

(3) 2 : –1 (4) 1 : –2

NEET(UG) 2019

18. The total energy of an electron in an atom in an orbit is –3.4 eV. Its kinetic and potential energies are, respectively:

(1) –3.4 eV, –3.4 eV

(2) –3.4 eV, –6.8 eV

(3) 3.4 eV, –6.8 eV

(4) 3.4 eV, 3.4 eV

NEET(UG) 2019 (Odisha)

19. The radius of the first permitted Bohr orbit for the electron, in a hydrogen atom equals 0.51 Å and its ground state energy equals –13.6 eV. If the electron in the hyrogen atom is replaced by muon (μ^-) [charge same as electron and mass 207 m_e], the first Bohr radius and ground state energy will be :

(1) 0.53×10^{-13} m, –3.6 eV

(2) 25.6×10^{-13} m, –2.8 eV

(3) 2.56×10^{-13} m, –2.8 keV

(4) 2.56×10^{-13} m, –13.6 eV

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	3	2	4	3	2	2	3	1	1	1	3	3	1
Que.	16	17	18	19											
Ans.	2	2	3	3											