



CHEMISTRY

BOOKS - SAI CHEMISTRY (TELUGU ENGLISH)

ATOMS

Mcqs

1. If an electron has an energy such that its de Broglie wavelength is 5500\AA , then the energy value of that electron is ($h = 6.6 \times 10^{-34}$) Js, $m_e = 9.1 \times 10^{-31}$ kg

A. $8 \times 10^{-20} \text{ J}$

B. $8 \times 10^{-10} J$

C. $8J$

D. $8 \times 10^{-25} J$

Answer: d



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2. The following statements are given about hydrogen atom

(A) The wavelength of the spectral lines of Lyman series are greater than the wavelength of the second spectral line of Balmer series.

(B) The orbits correspond to circular standing waves in

which circumference of the orbit equals a whole number of wavelengths.

A. A is false, B is true

B. A is true, B is false

C. A is false, B is false

D. A is true, B is true

Answer: A



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3. The ratio of the De-Broglie wavelength for the electron and proton moving the same velocity is

m_p – Mass of proton, m_e – Mass of electron)

A. $m_p : m_e$

B. $m_p^2 : m_e^2$

C. $m_e : m_p$

D. $m_e^2 : m_p^2$

Answer: c



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4. The ratio of longest wavelength line in the Balmer and aschen series of hydrogen spectrum is

A. $\frac{5}{36}$

B. $\frac{7}{20}$

C. $\frac{7}{144}$

D. $\frac{5}{27}$

Answer: b



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5. the energy of photon is equal to the kinetic energy of a porton, If λ_1 is the De-Broglie wavelength of a proton, λ_2 the wavelength associated with the proton and if the energt of the protonis E, then (λ_1/λ_2) is proportional to

A. E^4

B. $E^{1/2}$

C. E^2

D. E

Answer: b



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6. The radius of the first orbit of hydrogen is r_H and the energy in the ground state is $-13.6eV$. considering a μ - particle with the mass $207m_e$ revolving round a proton as in hydrogen atom, the energy and radius of

proton and μ -combination respectively in the first orbit
are (assume nucleus to be stationary)

A. $-14.6 \times 207 eV, \frac{r_H}{207}$

B. $-207 \times 13.6 eV, 207 r_H$

C. $-\frac{13.6}{207} eV, \frac{r_H}{207}$

D. $-\frac{13.6}{207} eV, 207 r_H$

Answer: a



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7. The De-Broglie wavelength of an electron moving with a velocity of $1.5 \times 10^8 \text{ m/s}$ is equal to that of a

photon The ratio of kinetic energy of the electron to that of the photon ($c = 3 \times 10^8 m/s$)

A. 2

B. 4

C. $\frac{1}{2}$

D. $\frac{1}{4}$

Answer: d



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8. A proton when accelerated through a potential difference of V , has a De-Broglie wavelength λ

associated with it. if an α -particle is to have the same De-Broglie wavelength λ , it must be accelerated through a potential difference of

A. $\frac{V}{8}$

B. $\frac{V}{4}$

C. $4V$

D. $8V$

Answer: a



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9. The work function of a certain metal is $3.31 \times 10^{-19} \text{ J}$ then, the maximum kinetic energy of photoelectrons emitted by incident radiation of wavelength 5000 \AA (GIVEN, $h = 6.62 \times 10^{-34} \text{ J}\cdot\text{s}$, $c = 3 \times 10^8 \text{ m s}^{-1}$, $e = 1.6 \times 10^{-19} \text{ C}$)

A. 2.48 eV

B. 0.41 eV

C. 2.07 eV

D. 0.82 eV

Answer: b



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10. the ratio of the maximum and minimum wavelengths in Brackett series of hydrogen spectra is

A. $\frac{25}{9}$

B. $\frac{17}{6}$

C. $\frac{9}{5}$

D. $\frac{4}{3}$

Answer: A



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11. in bohr model of hydrogen atom, the ratio of period of revolution of an electron in $n = 2$ and $n = 1$ orbits

is

A. 2: 1

B. 4: 1

C. 6: 1

D. 16: 1

Answer: c



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12. In hydrogen spectrum the shortest wavelength in Balmer series is λ . The shortest wavelength in Brackett series will be

A. 2λ

B. 4λ

C. 9λ

D. 16λ

Answer: b



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13. the radius of Bohr orbit depends on as

A. $\frac{1}{n}$

B. $\frac{1}{n^2}$

C. n

D. n^2

Answer: d



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14. When the electron in hydrogen atom is excited from the 4^{th} stationary orbit to the 5^{th} stationary orbit, the change in the angular momentum of the electron in $J-s$ is (Planck's constant $h = 6.64 \times 10^{-34} J-s$)

A. 4.16×10^{-34}

B. 3.32×10^{-34}

C. 1.05×10^{-34}

D. 2.08×10^{-34}

Answer: c



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15. The age of potterey is determaind by archlogists using a radio isotope of

A. carbon

B. Cobalt

C. Iodine

D. Phosphorus

Answer: a



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16. The first line in the Lyman series has wavelength λ .
The first line in the Balmer series has wavelength

A. $\frac{27}{5} \lambda$

B. $\frac{5}{27} \lambda$

C. $\frac{9}{2} \lambda$

D. $\frac{2}{9} \lambda$

Answer: a



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17. Neutron was discovered by

A. Madam Curie

B. Moseley

C. Rutherford

D. handwick

Answer: d



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18. The radius of the hydrogen atom in the ground state is of the order of

A. 10^{-4} cm

B. 10^{-5} cm

C. 10^{-7} cm

D. 10^{-8} cm

Answer: d



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19. The Balmer's general formula for hydrogen is obtained by putting n_1 equal to

A. 2

B. 1

C. 3

D. ∞

Answer: a



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20. if a is the radius of first Bohr orbit in hydrogen atom, the radius of 3^{rd} orbit is

A. $3a$

B. $9a$

C. 27a

D. 81a

Answer: b



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21. In neutron discovery experiment,berillium is bombareded by

A. α -particle

B. beta`-particle

C. neutron

D. protons

Answer: a



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22. for an electron in H-atom the frequency of photon for transition between levels 1 and 2 is ν . The photon frequency for transition between levels 2 and 3 is closet to

A. 0.2ν

B. 0.1ν

C. ν

D. A is true,B is true

Answer: a



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23. The closet distance of approach of an α -particle travelling with a velocity v to a certain nucleus is x . the distance of closet approach of α -particle travelling with a velocity $3v$ to the same nucleus is

A. $\frac{X}{5}$

B. $\frac{X}{6}$

C. $\frac{X}{9}$

D. $\frac{X}{10}$

Answer: c



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24. The two elements have their atomic numbers as Z_1 and Z_2 . The ratio of the wavelength λ_1 and λ_2 corresponding to their K_α lines is

A. $\frac{(Z_2 - 1)}{(Z_1 - 1)}$

B. $\frac{Z_1}{Z_2}$

C. $\frac{Z_2}{Z_1}$

D. $\frac{(Z_2 - 1)^2}{(Z_1 - 1)^2}$

Answer: d



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25. From Bohr's theory when electrons jump from high energy orbit to second orbit spectral lines that occur belongs to

- A. Lyman series
- B. Balmer series
- C. Paschen series
- D. Pfund series

Answer: b



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