PHYSICS

BOOKS - DISHA PHYSICS (HINGLISH)

ATOMS

Physics

1. If the following atoms and molecylates for the transition from $n = 2$ to $n = 1$, the

spectral line of minimum wavelength will be produced by

A. Hydrogen atom

B. Deuterium atom

C. Uni-ionized helium

D. Di-ionized lithium

Answer:

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2. The Lyman series of hydrogen spectrum lies in the region :

A. Infrared

B. Visible

C. Ultraviolet

D. X-rays

Answer:

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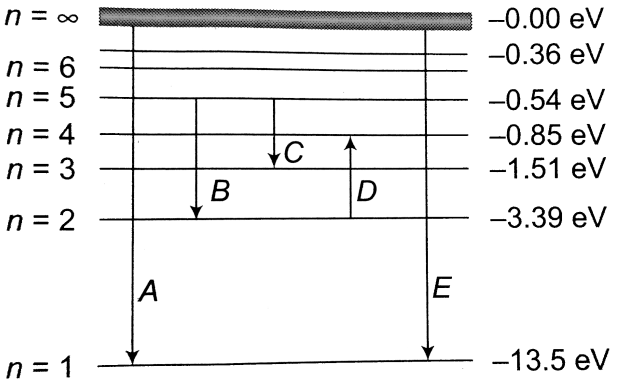
3. The energy levels of the hydrogen spectrum is shown in figure. There are some transitions A, B, C, D and E. Transition $A, B,$ and C respectively represent



A. First specral line of Lyman series, third spectral line of Balmer series and the second spectral line of Paschen series.

B. Ionization potential of hydrogen, second spectral line of Balmer series and third spectral line of Paschen series

C. Series limit of Lyman series, third spectral line of Balmer series and second spectral line of Paschen series.

D. Series limit of Lyman series, second spectral line of Balmer series and third spectral line of Paschen series.

Answer:

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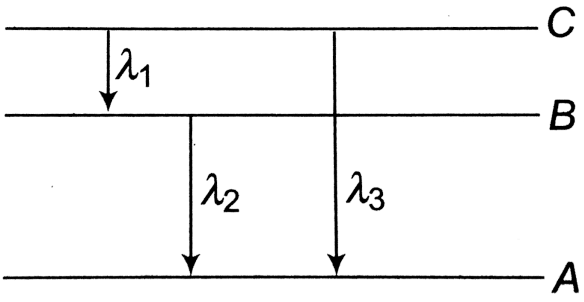
4. Energy levels A, B, C of a certain atom corresponding to increasing values of energy i.e., $E_A < E_B < E_C$. If $\lambda_1, \lambda_2, \lambda_3$ are the wavelengths of radiations correspnding to the transitions C to B, B to A and C to A respectively, which o fthe following statements

is correct?



A. $\lambda_3 = \lambda_1 + \lambda_2$

B. $\lambda_3 = \dfrac{\lambda_1 + \lambda_2}{\lambda_1 + \lambda_2}$

C. $\lambda_1 + \lambda_2 + \lambda_3 = 0$

D. $\lambda_3^2 = \lambda_1^2 + \lambda_2^2$

Answer:

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5. If m is mass of electron, v its velocity, r the radius of stationary circular orbit around a nucleus with charge Z_e, then from Bohr's first postulate, the kinetic energy $k = \frac{1}{2}mv^2$ of the electron in $C.G.S.$ system is equal to

A. $\frac{1}{2}\frac{Ze^2}{r}$

B. $\frac{1}{2}\frac{Ze^2}{r^2}$

C. $\frac{Ze^2}{r}$

D. $\frac{Ze}{r^2}$

Answer:

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6. when a hydrogen atom is raised from the ground state to an excited state

A. P.E. increases and K.E. decrease

B. P.E. decreases and K.E. increases

C. Both kinetic energy and potential energy increase

D. Both K.E. and P.E. decrease.

Answer:

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7. The ratio of the kinetic energy to the total energy of an eelctron in a Bohr orbit is

A. -1

B. 2

C. 0.5

D. None of these

Answer:

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8. The ratio of the frequencies of the long wavelenght limits of Lyman and Balmer series of hydrogen spectrum is

A. $27:5$

B. $5:27$

C. $4:1$

D. $1:4$

Answer:

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9. Ratio of the wavelength of first line of Lyaman series and first line of Balmer series is

A. $1:3$

B. $27:5$

C. $5:27$

D. $4:9$

Answer:

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10. According to Bohr's theory the moment of momentum of an electron revolving in second orbit of hydrogen atom will be

A. $2\pi h$

B. πh

C. $\frac{\pi}{h}$

D. $\frac{h}{\pi}$

Answer:

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11. In the Bohr model of a hydrogen atom, the centripetal force is furnished by the Coulomb attraction between the proton and the electrons. If a_0 is the radius of the ground

state orbit, m is the mass and e is the charge on the electron and e_0 is the vacuum permittivity, the speed of the electron is

A. 0

B. $\frac{e}{\sqrt{\varepsilon_0 \alpha_0 m}}$

C. $\frac{e}{\sqrt{4\pi\varepsilon_0 \alpha_0 m}}$

D. $\frac{\sqrt{4\pi\varepsilon_0 \alpha_0 m}}{e}$

Answer:

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12. Which of the following transition in hydrogen atom emit photons of biggest frequency ?

A. n=1 to n=2

B. n=2 to n=6

C. n=6 to n=2

D. n=2 to n=1

Answer:

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13. As par Bohr model, the minimum energy (in eV) required to remove an electron from the ground state of doubly ionized Li atom $(Z = 3)$ is

A. 1.51

B. 13.6

C. 40.8

D. 122.4

Answer:

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14. The third line of Balmer series of an ion equivalent to hydrogen atom has wavelength of $108.5mm$. The ground state energy of an electron of this ion will e

A. 3.4 eV

B. 13.6 eV

C. 54.4 eV

D. 122.4 eV

Answer:

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15. The wavelength of radiation emitted is λ_0 when an electron jumps from the third to the second orbit of hydrogen atom. For the electron jump from the fourth to the second orbit of hydrogen atom, the wavelength of radiation emitted will be

A. $\frac{16}{25}\lambda_0$

B. $\frac{20}{27}\lambda_0$

C. $\frac{27}{20}\lambda_0$

D. $\frac{25}{16}\lambda_0$

Answer:

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16. The energy of electron in the nth orbit of hydrogen atom is expressed as $E_n = \frac{-13.6}{n^2} eV$. The shortest and longest wavelength of Lyman series will be

A. $910\overset{\circ}{A} 1214\overset{\circ}{A}$

B. $5463\overset{\circ}{A}, 7858\overset{\circ}{A}$

C. $1315\overset{\circ}{A}, 1530\overset{\circ}{A}$

D. None of these

Answer:

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17. Consider a hydrogen-like atom whose energy in nth excited state is given by

$$E_n = \frac{13.6Z^2}{n^2}$$

When this excited makes a transition from

excited state to ground state , most energetic photons have energy $E_{\max} = 52.224eV.$ and least energetic photons have energy $E_{\max} = 1.224eV$

Find the atomic number of atom and the intial state or excitation.

A. 2

B. 5

C. 4

D. None of these

Answer:

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18. In the Bohr model of the hydrogen atom, let R, v and E represent the radius of the orbit, the speed of electron and the total energy of the electron respectively. Which of the following quantity is proportional to the equantum number n

A. R/E

B. E/v

C. RE

D. vR

Answer:

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19. An α-particle of $5MeV$ energy strikes with a nucleus of uranium at stationary at an scattering angle of 108°. The nearest distance

up to which αparticle reaches the nuvles will be of the order of

A. $1\overset{\circ}{A}$

B. $10^{-10}cm$

C. $10^{-12}cm$

D. $10^{-15}cm$

Answer:

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20. In a hypotherical Bohr hydrogen, the mass of the electron is doubled. The energy E_0 and the radius r_0 of the first orbit will be (a_0 is the Bohr radius)

A. $E_0 = -24.2eV, r_0 = \alpha_0/2$

B. $E_0 = -27.2eV, r_0 = \alpha_0$

C. $E_0 = -13.6eV, r_0 = \alpha_0/2$

D. $E_0 = -13.6eV, r_0 = \alpha_0$

Answer:

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21. The electron in a hydrogen atom makes a transition $n_1 \rightarrow n_2$, where n_1 and n_2 are the principle quantum numbers of the two states. Assume the Bohr model to be valid. The time period of the electron in the initial state is eight times that in the final state. the possible values of n_1 and n_2 are

A. 1,2 and 3 are correct

B. 1 and 2 are correct

C. 2 and 4 are correct

D. 1 and 3 are correct

Answer:

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22. A free hydrogen atom in gourn state is at rest. A neutron of kinetic energy K collides with the hydrogen atom. After collision hydrogen atom eits two photons in succession one of which has energy 2.55eV. Assume that

the hydrogen atom and neutron has same mass.

(1) Minimum value of K is 25.5eV

(2) Minimum value of K is 12.75 eV

(e) The other photon has energy 10.2eV

(4(The upper energy level is of excitation energy 12.5 eV

A. 1,2 and 3 are correct

B. 2 and 2 are correct

C. 3 and 4 are correct

D. 2 and 3 are correct

Answer:

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23. Which of the series of hydrogen spectrun are not in the visible region?

A. 1,2 and 3 are correct

B. 3 and 2 are correct

C. 4 and 4 are correct

D. 3 and 3 are correct

Answer:

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24. A gas of identical hydrogen like atomos has some atoms in ground state and some atoms in a particular exceited state and dthere are no atoms in any other energy level. The atoms of the gas make transition to a higher energy stte by absrobing monochromatic light of wavelenght 304 $\overset{\circ}{A}$. Subsequencly, the atoms emit radiation of only six different photon

energies. Some of emitted photons have wavelenght $304\overset{\circ}{A}$, some wavelength more and some have less that $304overeset(\circ)A$ (Take he=12420eV$-\overset{\circ}{A}$)

Find the principal quantum number of the initially excicted state.

A. 1

B. 2

C. 3

D. 4

Answer:

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25. A gas of identical hydrogen like atomos has some atoms in ground state and some atoms in a particular exceited state and dthere are no atoms in any other energy level. The atoms of the gas make transition to a higher energy stte by absrobing monochromatic light of wavelenght 304 $\overset{\circ}{A}$. Subsequencly, the atoms emit radiation of only six different photon energies. Some of emitted photons have wavelenght $304\overset{\circ}{A}$, some wavelength more and

some have less that $304overeset{\circ}{A}$ (Take he=12420eV$-\overset{\circ}{A}$)

Identify the gas (Z=?)

A. 1

B. 2

C. 3

D. 4

Answer:

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26. A gas of identical hydrogen like atomos has some atoms in ground state and some atoms in a particular exceited state and dthere are no atoms in any other energy level. The atoms of the gas make transition to a higher energy stte by absrobing monochromatic light of wavelenght 304 $\overset{\circ}{A}$. Subsequencly, the atoms emit radiation of only six different photon energies. Some of emitted photons have wavelenght $304\overset{\circ}{A}$, some wavelength more and some have less that $304overereset(\circ)A$ (Take he=12420eV$-\overset{\circ}{A}$)

Find the maximum and minimum energies of emitted photosn (in eV)

A. 20.4,10.6

B. 10.4,3.6

C. 40.8,10.6

D. None of these

Answer:

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27. Assertion: Bohr had to postulate that the electrons in stationary orbits around the nucleus do not radiate.

Reason: According to classical physical all moving electrons radiate.

A. Statement-1 is True, Statement, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True: Statement-2 is NOT a correct explanation

for Statement-1.

C. Statement-1 is Faslse, Statement-2 is True.

D. Statement-1 is True, Statement-2 is False.

Answer:

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28. Assertion: The force of repulsion between atomic nucleus and α-particle varies with distance according to inverse square law.

Reason: Rutherford did α-particles scattering experiment.

A. Statement-1 is True, Statement, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True: Statement-2 is NOT a correct explanation for Statement-1.

C. Statement-1 is Faslse, Statement-2 is True.

D. Statement-1 is True, Statement-2 is False.

Answer:

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29. Assertion: Hydrogen atom consists of anly one electron but its emission spectrum has may lines.

Reason: Only Lyman series is found in the absorption spectrum of hydrogen atom

whereas in the emission spectrum, all the series are found.

A. Statement-1 is True, Statement, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True: Statement-2 is NOT a correct explanation for Statement-1.

C. Statement-1 is Faslse, Statement-2 is True.

D. Statement-1 is True, Statement-2 is False.

Answer:

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30. The potential energy associated with an electron in the orbit

A. increases with the increases in radii of the orbit

B. decreases with the increase in the radii of the orbit

C. remains the same with the change in the radii of the orbit

D. None of these

Answer:

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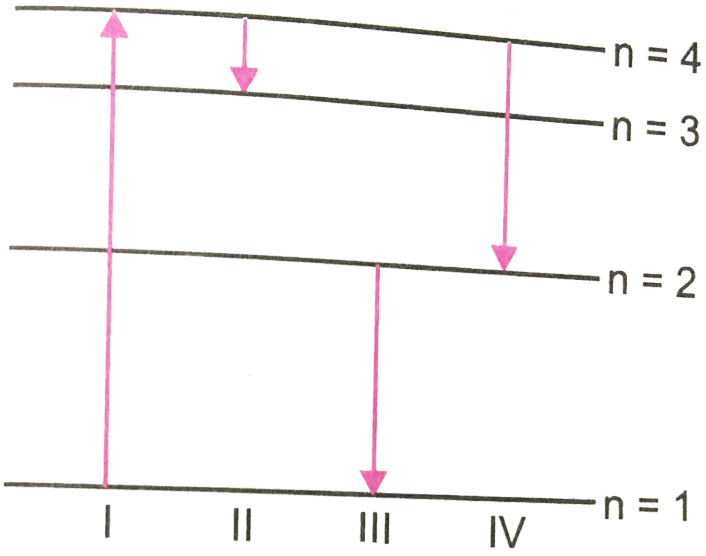
31. Shows the energy levels for an electron in a certain atom. Which transition shown represented the emission of a photon with the most energy?



A. IV

B. III

C. II

D. I

Answer:

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32. Electrons in a certain energy level $n = n_1$ can emit 3 spectral lines. When they are in another energy level, $n = n_2$, they can emit 6

spectral lines. The orbital speed of the electrons in the two orbits are in the ratio

A. $4:3$

B. $3:4$

C. $2:1$

D. $1:2$

Answer:

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33. In Rutherford scattering experiment, the number of α-particles scattered at 60° is 5×10^6. The number of α-particles scattered at 120° will be

A. 15×10^6

B. $\frac{3}{5} \times 10^6$

C. $\frac{5}{9} \times 10^6$

D. None of these

Answer:

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34. In the Bohr model an electron moves in a circular orbit around the proton. Considering the orbiting electron to be a circular current loop, the magnetic moment of the hydrogen atom, when the electron is in nth excited state, is :

A. $\left(\frac{e}{2m}\frac{n^2h}{2\pi}\right)$

B. $\left(\frac{e}{m}\right)\frac{nh}{2\pi}$

C. $\left(\frac{e}{2m}\right)\frac{nh}{2\pi}$

D. $\left(\frac{e}{m}\right)\frac{n^2h}{2\pi}$

Answer:

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35. A $12.5eV$ electron beam is used to excite a gaseous hydrogen atom at room temperature. Determine the wavelengths and the corresponding series of the lines emitted.

A. 2 lines in the Lyman series and 1 line in the Balmar series

B. 3 lines in the Lyman series

C. 1 line in the Lyman series and 2 lines in the Balmar series

D. 3 lines in the Balmer series

Answer:

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36. A hydrogen atom and a Li^{2+} ion are both in the second excited state. If l_H and l_{Li} are their respective electronic angular momenta, and E_H and E_{Li} their respective energies, then

(a) $l_H > l_{Li}$ and $|E_H| > |E_{Li}|$

(b) $l_H = l_{Li}$ and $|E_H| < |E_{Li}|$

(C) $l_H = l_{Li}$ and $|E_H| > |E_{Li}|$

(d) $l_H < l_{Li}$ and $|E_H| < |E_{Li}|$

A. $l_H > l_{Li}$ and $|E_H| > |E_{Li}|$

B. $l_H = l_{Li}$ and $|E_H| < |E_{Li}|$

C. $l_H = l_{Li}$ and $|E_H| > |E_{Li}|$

D. $l_H < l_{Li}$ and $|E_H| < |E_{Li}|$

Answer:

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37. The radius of hydrogen atom in its ground state is $5.3 \times 10^{-11} m$. After collision with an electron it is found to have a radius of $21.2 \times 10^{-11} m$. What is the principle

quantum number of n of the final state of the atom ?

A. $n = 4$

B. $n = 2$

C. $n = 16$

D. $n = 3$

Answer:

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38. When hydrogen atom is in first excited level, its radius is....its ground state radius

A. four times its ground state atom

B. twice

C. same

D. half

Answer:

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39. Consider $3rd$ orbit of He^+ (Helium) using nonrelativistic approach the speed of electron in this orbit will be (given $K = 9 \times 10^9$ constant $Z = 2$ and h (Planck's constant) $= 6.6 \times 10^{-34} Js$.)

A. $1.46 \times 10^6 m/s$

B. $0.73 \times 10^6 m/s$

C. $3.0 \times 10^8 m/s$

D. $2.92 \times 10^6 m/s$

Answer:

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40. An electron in the hydrogen atom jumps from excited state n to the ground state. The wavelength so emitted illuminates a photo-sensitive material having work function $2.75eV$. If the stopping potential of the photoelectron is $10V$, the value of n is

A. 3

B. 4

C. 5

D. 2

Answer:

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41. The electron in a hydrogen atom makes a transition from an excited state to the ground state. Which of the following statements is true?

A. Its kinetic energy increases and its potential energy decreases.

B. Its kinetic energy decreases, potential energy increases

C. Its kinetic and its potential energy increases.

D. Its kinetic, potential energy decrease

Answer:

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42. As energy of $24.6eV$ is required to remove one of the required to remove both the electrons from a nuture brfore alon is

A. 38.2

B. 49.2

C. 51.8

D. 79.0

Answer:

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43. One of the lines in the emission spectrum of Li^{2+} has the same wavelength as that of the $2nd$ line of Balmer series in hydrogen spectrum. The electronic transition corresponding to this line is:

A. 8

B. 6

C. 7

D. 5

Answer:

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44. If the atom$(\ _{}100)Fm^{257}$ follows the Bohr model the radius of $\ _{}(100)Fm^{257}$ is n time the Bohr radius , then find n .

A. 100

B. 200

C. 4

D. $1/4$

Answer:

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45. The energy of He+ in the ground state is $-54.4eV$, then the energy of Li^{++} in the first excited state will be

A. $-30.6eV$

B. $27.2eV$

C. $-13.6eV$

D. $-27.2eV$

Answer:

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46. If the angular momentum of an electron in an orbit is J then the K.E. of the electron in that orbit is

A. $\frac{J^2}{2mr^2}$

B. $\frac{Jv}{r}$

C. $\frac{J^2}{2m}$

D. $\frac{J^2}{2\pi}$

Answer:

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47. Suppose an electron is attracted toward the origin by a force $\frac{k}{r}$ where k is a constant and r is the distance of the electron from the origin .By applying Bohr model to this system the radius of the n^{th} orbital of the electron is found to be r_n and the kinetic energy of the electron to be T_n , Then which of the following is true ?

A. $T_n \propto \frac{1}{n^2}, r_n \propto n^2$

B. T_n independent of n, $r_n \propto n$

C. $T_n \propto \frac{1}{n}, r_n \propto n$

D. $T_n \propto \frac{1}{n}, r_n \propto n^2$

Answer:

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48. In hydrogen spectrum the wavelength of H_a line is $656nm$, where in the spectrum of a distance galaxy H_a line wavelength is $706nm$.

Estimated speed of the galaxy with respect to earth is ,

A. $2 \times 10^8 m/s$

B. $2 \times 10^7 m/s$

C. $2 \times 10^6 m/s$

D. $2 \times 10^5 m/s$

Answer:

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49. In the hydrogen atom, an electron makes a transition from n=2 to n=1. The magnetic field produced by the circulating electron at the nucleus

A. decreases 16 times

B. increases 4 times

C. decreases 4 times

D. increases 32 times

Answer:

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50. What is the radius of iodine atom (at no. 53, mass number 126)?

A. $2.5 \times 10^{-11} m$

B. 2.5×10^{-9} m

C. 7×10^{-9} m

D. 7×10^{-6} m

Answer:

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51. When an $\alpha -$ 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 :

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

B. $\frac{1}{\sqrt{m}}$

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

D. m

Answer:

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

A. n = 3 to n = 1 states

B. n = 2 to n = 1 states

C. n = 4 to n = 2 states

D. n = 3 to n = 2 states

Answer:

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53. The wavelength involved in the spectrum of deuterium $_{}(1)^{2}D$ are slightly different from that of hydrogen spectrum because

A. the size of the two nuclei are different

B. the nuclear forces are different in the two cases

C. the masses of the two nuclei are different

D. the attraction between the electron and the nucleus is differernt in the two cases

Answer:

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54. The electron in a hydrogen atom makes a transition $n_1 \rightarrow n_2$, where n_1 and n_2 are the principle quantum numbers of the two states. Assume the Bohr model to be valid. The time period of the electron in the initial state is eight times that in the final state. the possible values of n_1 and n_2 are

A. $n_1 = 4 \text{ and } n_2 = 2$

B. $n_1 = 6 \text{ and } n_2 = 2$

C. $n_1 = 8 \text{ and } n_2 = 1$

D. $n_1 = 8$ and $n_2 = 2$

Answer:

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55. In a hydrogen like atom electron make transition from an energy level with quantum number n to another with quantum number $(n-1)$ if $n>>1$, the frequency of radiation emitted is proportional to :

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

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

C. $\frac{1}{n^3/2}$

D. $\frac{1}{n^3}$

Answer:

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56. The spectrum obtained from a sodium vapour lamp is an example of

A. band spectrum

B. continuous spectrum

C. emission specturm

D. absorption spectrum

Answer:

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57. Ionization potential of hydrogen atom is $13.6V$. Hydrogen atoms in the ground state are excited by monochromatic radiation of photon energy $12.1eV$. The spectral lines

emitted by hydrogen atoms according to Bohr's theory will be

A. three

B. four

C. one

D. two

Answer:

58. The Bohr model of atoms

A. predicts the same emission spectra for all types of atoms

B. assumes that the angular momentum of electrons is quantised

C. uses Einstein's photoelectric equation

D. predicts continuous emission spectra for atoms

Answer:

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59. The largest wavelength in the ultraviolet region of the hydrogen spectrum is 122 nm. The smallest wavelength in the infrared region of the hydrogen spectrum (to the nearest integer) is

A. 802 nm

B. 823 nm

C. 1882 nm

D. 1648 nm

Answer:

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60. A doubly ionised Li atom is excited from its ground state(n = 1) to n = 3 state. The wavelengths of the spectral lines are given by λ_{32}, λ_{31} and λ_{21}. The ratio l_{32}/λ_{31} and l_{21}/l_{31} are, respectively

A. 8.1,0.67

B. 8.1,1.2

C. 6.4,1.2

D. 6.4,0.67

Answer:

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61. In Rutherford scattering experiment, what will b ethe correct angle for α scattering for an impact parameter $b = 0$?

A. 90°

B. 270°

C. 0°

D. 180°

Answer:

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62. Consider $3rd$ orbit of He^+ (Helium) using nonrelativistic approach the speed of electron in this orbit will be (given $K = 9 \times 10^9$

constant $Z = 2$ and h (Planck's constant) $= 6.6 \times 10^{-34} Js.$)

A. $1.46 \times 10^6 m/s$

B. $0.73 \times 10^6 m/s$

C. $3.0 \times 10^8 m/s$

D. $2.92 \times 10^6 m/s$

Answer:

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63. The ionisation energy of hydrogen atom is $13.6eV$. Following Bohr's theory, the energy corresponding to a transition between the 3rd and the 4th orbit is

A. 3.40 eV

B. 1.51 eV

C. 0.85 eV

D. 0.66 eV

Answer:

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64. The transition form the state $n = 3$ to $n = 1$ in a hydrogen-like atom results in ultraviolet radiation. Infared radiation will be obtained in the transition from

A. $2 \rightarrow 1$

B. $3 \rightarrow 2$

C. $4 \rightarrow 2$

D. $4 \rightarrow 3$

Answer:

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

A. $0.025 \times 10^4 m^{-1}$

B. $0.5 \times 10^7 m^{-1}$

C. $0.25 \times 10^7 m^{-1}$

D. $2.5 \times 10^7 m^{-1}$

Answer:

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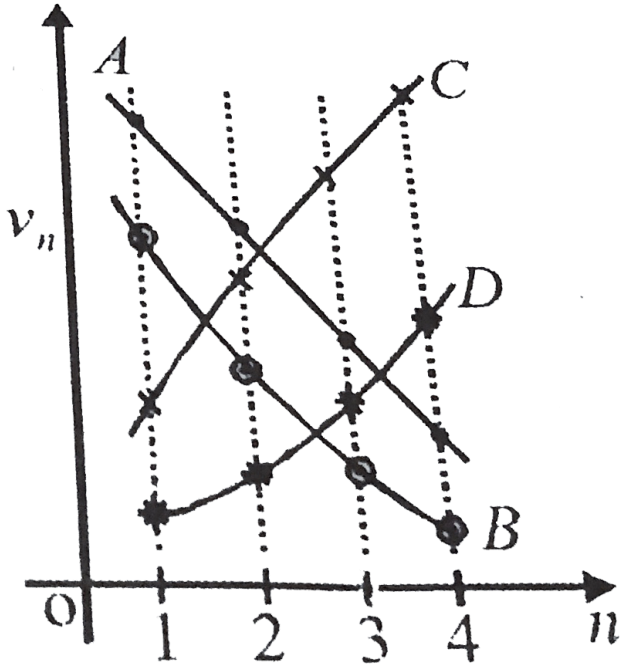
66. Which of the plots shown in the figure represents speed (v_n) of the electron in a hydrogen atom as a function of the principal

quantum number (n)?



A. B

B. D

C. C

D. A

Answer:

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67. The ionisation potential of H-atom is $13.6eV$. When it is excited from ground state by monochromatic radiations of 970.6Å, the number of emission lines will be (according to Bohr's theory)

A. 10

B. 8

C. 6

D. 4

Answer:

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68. If the energy of a hydrogen atom in nth orbit is E_n, then energy in the nth orbit of a singly ionised helium atom will be

A. $4E_n$

B. $E_n / 4$

C. $2E_n$

D. $E_n / 2$

Answer:

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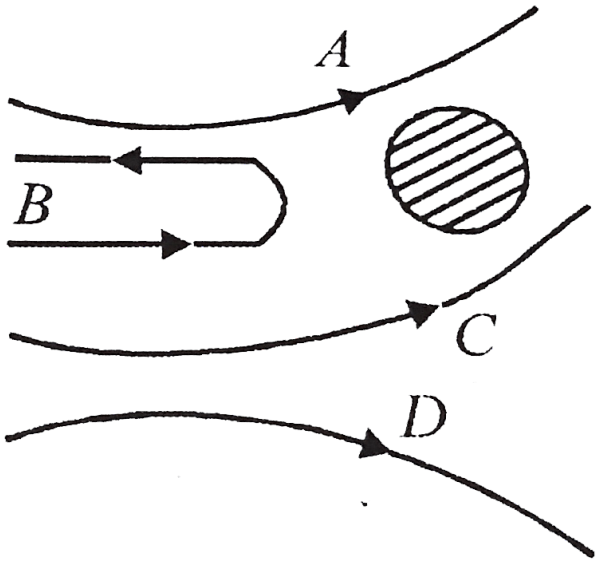
69. In the Rutherford experiment, α-particles are scattered from a nucleus as shown. Out of

the four paths, which path is not possible?



A. D

B. B

C. C

D. A

Answer:

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70. An electron changes its position from orbit $n = 4$ to the orbit $n = 2$ of an atom. The wavelength of the emitted radiation's is ($R =$ Rydberg's constant)

A. $\frac{16}{R}$

B. $\frac{16}{3R}$

C. $\frac{16}{5R}$

D. $\frac{16}{7R}$

Answer:

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71. In a Rutherford scattering experiment when a projectile of change Z_1 and mass M_1 approaches s target nucleus of change Z_2 and mass M_2, te distance of closed approach is r_0. The energy of the projectile is

A. directly proportional to $Z_1 Z_2$

B. inversely proportional to Z_1

C. directly proportional to mass M_1

D. directly proportional to $M_1 \times M_2$

Answer:

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72. The wavelength of the first spectral line in the Balmer series of hydrogen atom is $6561A^\circ$. The wavelength of the second spectral line in

the Balmer series of singly - ionized helium atom is

A. 1215 Å

B. 1640 Å

C. 2430 Å

D. 4687 Å

Answer:

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73. Let v_1 be the frequency of series limit of Lyman series, v_2 the frequency of the first line of Lyman series and v_3 the frequency of series limit of Balmer series. Then which of the following is correct ?

A. $v_1 - v_2 = v_3$

B. $v_1 = v_2 - v_3$

C. $\frac{1}{v_2} = \frac{1}{v_1} + \frac{1}{v_3}$

D. $\frac{1}{v_1} = \frac{1}{v_2} + \frac{1}{v_3}$

Answer:

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74. In a hypotherical Bohr hydrogen, the mass of the electron is doubled. The energy E_0 and the radius r_0 of the first orbit will be (a_0 is the Bohr radius)

A. $-11.2eV$

B. $-6.8eV$

C. $-13.6eV$

D. $-27.2eV$

Answer: