

numericals _infinite ...

Numerical Problems Infinite Potential Well and Energy Eigen Values

An electron is trapped in an infinite potential well of width 0.01m; find the principal quantum number for which energy is 1 eV. $m_e = 9.1 \times 10^{31} \text{ kg}$

A proton is confined in an infinite square well of width 10 fm. Calculate the energy and wavelength of the photon emitted, when the proton undergoes a transition from the first excited state to the ground state.

A particle is in the nth energy state of an infinite square well potential with width L

Determine the probability that the particle is confined to the first (1/a) of the width of the well The wave function for a certain particle is $\psi = A \cos^3 x$ for -, Find the value of A.

5.) The normalized wave function of a particle is ψ = A . Calculate the energy Eigen value of the particle.

64 An electron is moving freely with energy 2 eV. Calculate its de-Broglie Wavelength

An electron is trapped completely in a 1-D well of length 1 Angstrom. How much energy must be supplied to excite the electron from the first excited state to the 3rd excited state?

8. A quantum particle confined to a 1-dimensional box of width 'a' is in its first excited state. What is the probability of finding the particle over an interval of (a/2) marked symmetrically at the center of the box?

9. An electron is trapped in a 1-D potential well of infinite depth and width 1×10^{10} m. What is the probability of finding the electron in the region from $x_1 = 0.09 \times 10^{10}$ m to $x_2 = 0.11 \times 10^{10}$ m in the ground state?

60.) Find the probability that a particle trapped in an infinite well of width L can be found between 0.45L and 0.55L for the ground and first excited states?

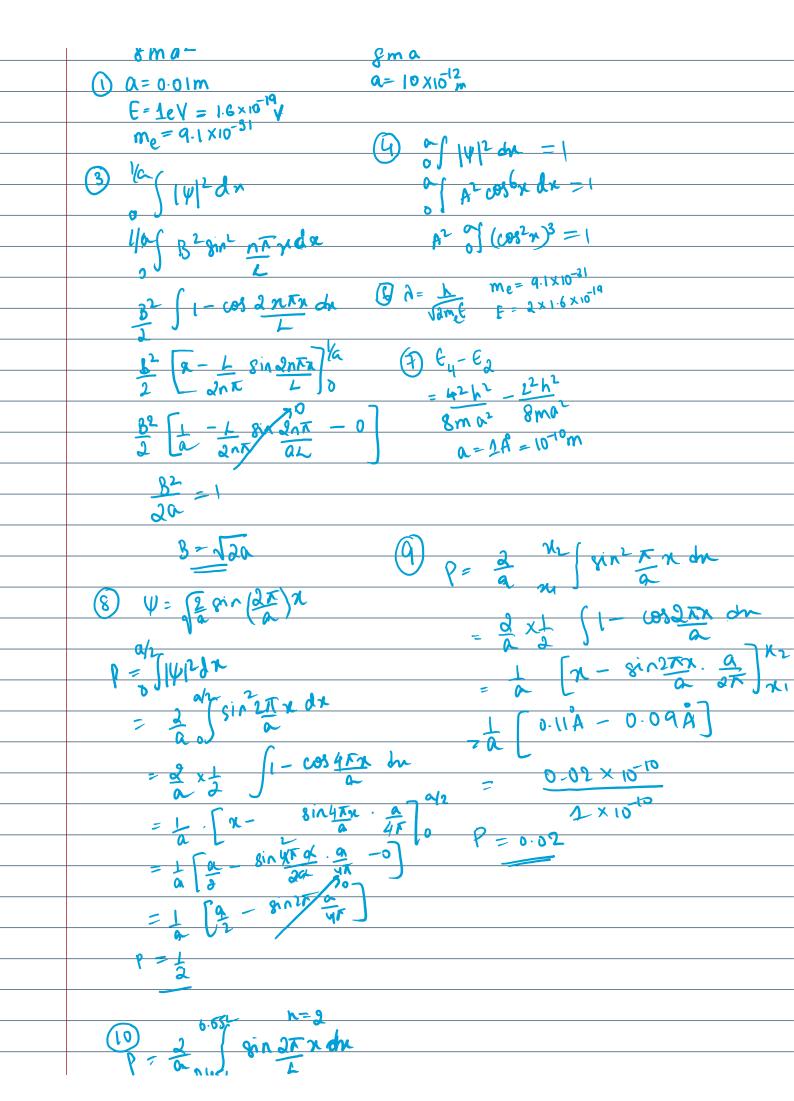
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 $\psi = B \sin n \pi x$ $\int |\psi^2| du = 1$ $b = \int \frac{2}{a} \sin n \pi x$ u = 0 u =

 $E = \Lambda^2 h^2$

 $Q \in = 2^2 h^2$ gma

(1) Q = 0.01m



(10) 2 7 gin 27 x du
P = a Dust A
2 (1-cos 4FX dr
2 1 - 003 41-1 VP
3 1x - 8in 4TX - L 4T 045L
T TOUSL
2 (0.562 - 0.452)
7 0.562 - 0.45
$= \partial(0.10)$
p = 0.90