Assignment 9

Due date: 2020-11-18, 23:59 IST

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) In atomic units, unit of mass is the mass of a
   • electron
   • proton
   • neutron
   • nucleus
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

2) In atomic units, the angular momentum of l = 4 is ________
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

3) $\frac{1}{2}$ Hartree $\times$ n times ionisation energy of hydrogen atom, $n = \ldots$
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

4) The unperturbed Hamiltonian for H atom, in atomic units, is $\tilde{H} =$
   \[-\frac{1}{2} \tilde{p}_1^2 - \frac{1}{2} \tilde{p}_2^2 - \frac{1}{2} \tilde{r}_1^2 - \frac{1}{2} \tilde{r}_2^2\]
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

5) Using as the trial function, the expected value of energy for the ground state of harmonic oscillator turns out to be
   $E_{\text{mean}} = \ldots$
   The value of $n$ is ________
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

6) For H atom, a good variational parameter would be
   • distance of each electron from the nucleus
   • distance between the two electrons
   • nuclear charge
   • electronic charge
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

7) Let the functional $c(\phi) = \phi^2 - 7\phi$ for H. Shielding constant in this case would have a value of ______
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

8) In Slater type orbitals, in order to get the variational parameter(s), scaling is performed on
   • atomic number
   • principal quantum number
   • azimuthal quantum number
   • atomic mass
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1

9) Slater type orbitals
   • have mutually orthogonal radial parts
   • have radial nodes
   • have angular nodes
   • form a complete set
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: Number) 1