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Midterm November 2019

Model Number 1

Choose only one answer for each of the following question:

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1   - Wave function will be orthogonal when it is:
i-parallel with another function ii-perpendicular iii- face to face iv-None of them

1   Electron looks like:
i-a particle ii-a wave iii-particle and wave iv-neither a particle nor a wave

1   According to Heisenberg, It is impossible to determine two properties:
i- precisely ii-simultaneously iii-at the same time iv-all

1   - Quantum chemistry is a branch of:
i-molecular mechanics ii- molecular dynamics iii- quantum mechanics iv- all

1   The wave function should be:
i-normalized ii-orthogonal iii-orthonormalized iv- all

1   Applying the separation of variables rule when the variables are:
i-dependent on each other ii- independent iii- imaginary iv- single value

1   - Particle-wave duality of light means:
i-it is a wave ii-it is a particle iii-it is a particle and wave iv- it is neither a particle nor a wave.

1   Normalization of function means:
i- complete interaction ii-zero interaction iii-half interaction iv-no interaction

1   Time in-dependent Schrodinger equation depends on:
i-time only ii- position only iii- time and position iv- neither time nor position

1   Wave function has no physical meaning because it has:
i-real value ii- one value iii- imaginary value iv- all

1   Square of the total wave function equals to:
i-square of ?(t) ii-square of ?(x) iii- ?(x,t) iv-none of them

1   - Probability density contains:
i-imaginary function ii-imaginary value iii-real value iv- all

1   - Both sides of time-dependent Schrodinger equation are equal:
i-constant ii- imaginary value iii- ?(x,t) iv- ?(t)

1   - Wave function is a probability of finding a particle at:
i-certain position ii-some time iii- certain position and certain time iv-some time and some position.

1   Complex conjugate wave function is:
i-exact function ii-different function iii-same function iv-all

Some of the following statements are true and others are false:

- Quantum chemistry deals with the macroscopic particles.
- certain time.
- H (x,y,z)=E (x,y,z) is time-dependent Schrodinger equation.
- The electron is either a particle or a wave.
- Complex conjugate wave function changes the wave function to imaginary function.
- Probability density has no physical meaning because it contains imaginary value.
- Probability density is the square of probability description.
- Noble prize 2019 was given to two scientists.
- ?(x,y,z,t) is an imaginary function.
- Complex conjugate wave function is a different function.
- State function should be solved mathematically.
- Wave function should be an orthonormalized function.
- Time-independent Schrodinger equation depends on time.
- The complex conjugate of wave function should be a normalized function.
- 11-The total wave function could be separated to four functions.