Midterm November 2019

# Choose only one answer for each of the following question:

1. - Probability density contains:

i-imaginary function ii-imaginary value iii-real value iv- all

1. Wave function has no physical meaning because it has:

i-real value ii- one value iii- imaginary value iv- all

1. The wave function should be:

i-normalized ii-orthogonal iii-orthonormalized iv- all

1. Electron looks like:

i-a particle ii-a wave iii-particle and wave iv-neither a particle nor a wave

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. Time in-dependent Schrodinger equation depends on:

i-time only ii- position only iii- time and position iv- neither time nor position

1. According to Heisenberg, It is impossible to determine two properties:

i- precisely ii-simultaneously iii-at the same time 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. - Quantum chemistry is a branch of:

i-molecular mechanics ii- molecular dynamics iii- quantum mechanics iv- all

1. Complex conjugate wave function is:

i-exact function ii-different function iii-same function 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. - Wave function will be orthogonal when it is:

i-parallel with another function ii-perpendicular iii- face to face iv-None of them

1. Applying the separation of variables rule when the variables are:

i-dependent on each other ii- independent iii- imaginary iv- single value

1. Normalization of function means:

i- complete interaction ii-zero interaction iii-half interaction iv-no interaction

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

1. Complex conjugate wave function is a different function.
2. Noble prize 2019 was given to two scientists.
3. Wave function should be an orthonormalized function.
4. The complex conjugate of wave function should be a normalized function.
5. Complex conjugate wave function changes the wave function to imaginary function.
6. Quantum chemistry deals with the macroscopic particles.
7. The electron is either a particle or a wave.
8. ?(x,y,z,t) is an imaginary function.
9. Probability description is the probability of finding a particle at certain position and certain time.
10. State function should be solved mathematically.
11. Probability density is the square of probability description.
12. Time-independent Schrodinger equation depends on time.
13. 11-The total wave function could be separated to four functions.
14. Probability density has no physical meaning because it contains imaginary value.
15. H (x,y,z)=E (x,y,z) is time-dependent Schrodinger equation.