

Unit 9 - Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 1

Course outline

How to access the portal?

Introduction and Mathematical Representation

Nonlinear Effects

Dispersion Effects and Transverse Electromagnetic Mode

Construction of Ultrafast Laser and Measurement of Pulses

Measurement Techniques in Ultrafast Spectroscopy, and their kinetic and quantum mechanical models

Ultrafast Processes in Physical Chemistry – Photophysics, Photochemistry, Solid State, Transition Metal Complexes and Biomolecules

Maxwell's Equations

Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 1

● Ab Initio Molecular Dynamics 1

● Ab Initio Molecular Dynamics 2

○ Quiz : Assessment week 8

Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 2

Attosecond Chemical Dynamics – Theoretical Point of View

Attosecond Chemical Dynamics – Experimental Point of View

Femtochemistry of Nanocatalysis

Assessment week 8

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

Due on 2019-09-25, 23:59 IST.

1) Ground vibrational state under simple harmonic oscillator approximation represents

1 point

- a Gaussian wavefunction
- an exponential wavefunction
- a linear wavefunction
- a Sine function

No, the answer is incorrect.
Score: 0

Accepted Answers:
a Gaussian wavefunction

2) If you make an attempt to view a 100 fs optical pulse using an oscilloscope and a photodiode, what would you see in the oscilloscope (revision):

1 point

- a 100 fs pulse
- a 100 ps pulse
- a 10 fs pulse
- a 10 ns pulse

No, the answer is incorrect.
Score: 0

Accepted Answers:
a 10 ns pulse

3) Which one is true?

1 point

- de Broglie wavelength is proportional to the momentum
- de Broglie wavelength is proportional to the velocity
- de Broglie wavelength is inversely proportional to the momentum
- de Broglie wavelength is proportional to the mass of the particle.

No, the answer is incorrect.
Score: 0

Accepted Answers:
de Broglie wavelength is inversely proportional to the momentum

4) What does it mean by traveling frozen Gaussian?

1 point

- It does not change momentum
- it does not change width
- it does not change velocity
- it does not change position

No, the answer is incorrect.
Score: 0

Accepted Answers:
it does not change width

5) At the atomic unit, reduced Planck constant is considered to be

1 point

- 2π
- 2
- 1
- $1/2\pi$

No, the answer is incorrect.
Score: 0

Accepted Answers:
1

6) Magnitude of wave vector is

1 point

- proportional to the wavelength
- equal to 2π
- equal to the wavelength
- inversely proposal to the wavelength

No, the answer is incorrect.
Score: 0

Accepted Answers:
inversely proposal to the wavelength

7) CPA scheme to create a short pulse includes (revision)

1 point

- compressed-pulse-amplification,
- stretch-amplify-compress
- directly amplify
- stretch-amplify

No, the answer is incorrect.
Score: 0

Accepted Answers:
stretch-amplify-compress

8) Deconvolution factor for an autocorrelation measurement of a Gaussian pulse is (revision)

1 point

- 1.32
- 1.22
- 1.41
- 0.44

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.41

9) In a FROG measurement, which detector do you need (revision)?

1 point

- a spectrometer
- a photodiode
- a PMT
- a CCD camera

No, the answer is incorrect.
Score: 0

Accepted Answers:
a spectrometer

10) In an autocorrelation measurement, which detector do you need (revision)?

1 point

- a spectrometer
- a photodiode
- a PMT
- either option (b) or (c)

No, the answer is incorrect.
Score: 0

Accepted Answers:
either option (b) or (c)

You were allowed to submit this assignment only once.