

# Unit 8 - Maxwell's Equations

## 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

● Maxwell's Equations

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○ Quiz : Assessment week 7

Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 1

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 7

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

**Due on 2019-09-18, 23:59 IST.**

1) Which one of the following is true? 1 point

- Electronic Hamiltonian does not include nuclear kinetic energy  
 Electronic Hamiltonian includes electrostatic interaction between electron and nucleus  
 Electronic Hamiltonian does not include electron kinetic energy  
 Both (a) and (b) are true

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Both (a) and (b) are true*

2) Equilibrium point on a potential energy surface indicates a point 1 point

- where no force acting on any nucleus  
 where potential energy is in equilibrium  
 where kinetic energy is in equilibrium  
 where vibration stops

No, the answer is incorrect.

Score: 0

Accepted Answers:

*where no force acting on any nucleus*

3) Which one of the following is true? 1 point

- Force represents an equilibrium point  
 Force represents a point where vibration stops  
 Force represents gradient of potential  
 Force represents velocity

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Force represents gradient of potential*

4) Mixed quantum classical method represents 1 point

- electrons quantum chemically  
 nuclei quantum chemicall  
 both electrons and nuclei quantum chemically  
 either electrons or nuclei quantum chemically

No, the answer is incorrect.

Score: 0

Accepted Answers:

*electrons quantum chemically*

5) Which one of the following is true? 2 points

- Born-Oppenheimer approximation does not include all electronic states  
 Born expansion of total wavefunction includes different electronic states  
 Conical intersection cannot be explored using Born-Oppenheimer approximation  
 All three are true

No, the answer is incorrect.

Score: 0

Accepted Answers:

*All three are true*

6) What is 6-31G? 1 point

- a basis set  
 nuclear kinetic energy  
 electronic kinetic energ  
 just a number

No, the answer is incorrect.

Score: 0

Accepted Answers:

*a basis set*

7) Which one of the following is true in a dispersive medium (revision from earlier chapter): 1 point

- red light travels faster than blue light  
 blue light travels faster than red light  
 red and blue light travels with equal velocity  
 Green light travels faster than red light

No, the answer is incorrect.

Score: 0

Accepted Answers:

*red light travels faster than blue light*

8) In a birefringent crystal, ordinary and extraordinary rays experience (revision from earlier chapter) 1 point

- the same refractive index  
 different refractive index  
 different direction of reflection  
 all above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*different refractive index*

9) For a plane wave, magnitude of wave vector is (revision from earlier chapter) 1 point

- proportional to the wavelength  
 inversely proportional to the wavelength  
 proportional to the square of wavelength  
 inversely proportional to the square of wavelength

No, the answer is incorrect.

Score: 0

Accepted Answers:

*inversely proportional to the wavelength*

You were allowed to submit this assignment only once.