

## Unit 9 - Week 8

## Course outline

## How to access the portal?

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## Week 2

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## Week 8

## UV-Vis Spectroscopy &amp; Its Application-II

## UV-Vis &amp; Fluorescence Spectroscopy

## Fluorescence Spectroscopy

## Quiz : Assignment 8

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## Download Videos (mp4,flv,3gp,mp3)

## Lecture Slides

## Assignment 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) The main advantage of fluorescence over UV-Vis spectroscopy is

1 point

- Its longer life time  
 Its compatibility with separation techniques  
 Its compatibility with most analytes  
 None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Its longer life time

2) Which of the following molecule does not show fluorescence

1 point

- Quinine sulphate  
 Chlorophyll  
 Ethidium bromide  
 Nucleic acid

No, the answer is incorrect.

Score: 0

Accepted Answers:

Nucleic acid

3) Which among the following class of compound shows intense fluorescence?

1 point

- Aromatic Compounds  
 Aliphatic carbonyl compounds  
 Allylic carbonyl compounds  
 Saturated aliphatic compounds

No, the answer is incorrect.

Score: 0

Accepted Answers:

Aromatic Compounds

4) Which of these is not a characteristic of a fluorophore:

1 point

- Rigid structure  
 Delocalized electrons  
 Intense absorption bands  
 Long excited state lifetime

No, the answer is incorrect.

Score: 0

Accepted Answers:

Long excited state lifetime

5) Effect of solvent polarity on the stokes shift if the dipole moment of a fluorescent molecule is higher in the excited state than in the ground state:

1 point

- Stokes shift increases  
 Stokes shift decreases  
 No effect on stokes shift  
 It may decrease or increase the stokes shift

No, the answer is incorrect.

Score: 0

Accepted Answers:

Stokes shift increases

6) The release of a photon as the molecule drops to a lower excited state is called:

1 point

- Excitation  
 Quenching  
 Emission  
 Stokes shift

No, the answer is incorrect.

Score: 0

Accepted Answers:

Emission

7) Radiative de-excitation is:

1 point

- Vibrational relaxation  
 Fluorescence  
 Internal conversion  
 Intersystem crossing

No, the answer is incorrect.

Score: 0

Accepted Answers:

Fluorescence

8) Fluorescence quenching can be due to:

1 point

- Excited-state reactions  
 Molecular rearrangements  
 Ground-state complex formation  
 All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

9) Stern-Volmer equation is:

1 point

- $\frac{F_0}{F} = 1 - K_{SV}[Q]$   
  $\frac{F_0}{F} = 1 + K_{SV}[Q]$   
  $\frac{F_0}{F} = 1 - K_{SV}/[Q]$   
  $\frac{F_0}{F} = 1 + K_{SV}/[Q]$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $\frac{F_0}{F} = 1 + K_{SV}[Q]$ 

10) Decay with the change in multiplicity known as ISC involves transition:

1 point

- $S_1 \rightarrow T_2$   
  $S_0 \rightarrow T_1$   
  $S_1 \rightarrow T_1$   
  $S_0 \rightarrow T_0$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $S_1 \rightarrow T_1$ 

11) Which one of the excited state has long life:

1 point

- $S_2$   
  $T_1$   
  $S_1$   
  $S_3$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $T_1$ 

12) Choose the Correct statements:

1 point

- I. In aldehyde both  $\pi \rightarrow \pi^*$  &  $n \rightarrow \pi^*$  transitions can be possible  
 II. The order of energy required for various electronic transition is  $\sigma \rightarrow \sigma^* > n \rightarrow \sigma^* > n \rightarrow \pi^* > \pi \rightarrow \pi^*$   
 III. In fluorescence,  $S_1 \rightarrow S_0$  decay of excited state takes place

- I and II  
 I and III  
 II and III  
 I, II and III

No, the answer is incorrect.

Score: 0

Accepted Answers:

I and III

13) Match the following and choose the correct option:

1 point

- |                               |                          |
|-------------------------------|--------------------------|
| 1. $S_1 \rightarrow S_0 + hv$ | I. Internal conversion   |
| 2. $S_1 \rightarrow S_0$      | II. Intersystem crossing |
| 3. $S_1 \rightarrow T_1$      | III. Phosphorescence     |
| 4. $T_1 \rightarrow S_0 + hv$ | IV. Fluorescence         |

- 1-(IV), 2-(II), 3-(I), 4-(I)  
 1-(IV), 2-(I), 3-(III), 4-(II)  
 1-(IV), 2-(I), 3-(II), 4-(III)  
 1-(IV), 2-(II), 3-(I), 4-(III)

No, the answer is incorrect.

Score: 0

Accepted Answers:

1-(IV), 2-(I), 3-(II), 4-(III)

14) Static quenching is due to

1 point

- Complex formation of Fluorophore in excited state with the Quencher  
 Complex formation of the Fluorophore in Ground state with the Quencher  
 Transfer of energy from the Fluorophore in Excited state to the Quencher  
 Transfer of energy from Quencher to the Fluorophore in the ground state

No, the answer is incorrect.

Score: 0

Accepted Answers:

Complex formation of the Fluorophore in Ground state with the Quencher

15) Protein concentration can not be determined using

1 point

- BCA assay  
 Lowry assay  
 Bradford assay  
 MTT assay

No, the answer is incorrect.

Score: 0

Accepted Answers:

MTT assay