Assignment 9

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

1. Excited state processes are often accompanied by:
   - soft vibrational fluorescence
   - prompt emission of absorption and fluorescence spectra
   - fast decay in more than one emission spectra
   - rise time in one and end of emission spectra
   Yes, the answer is incorrect.
   Accepted Answer:
   - soft vibrational fluorescence
   1 point

2. The fastest thermal process, according to the Lyman equation, would be associated with a time constant of:
   - 10⁻⁶ seconds
   - 10⁻¹⁰ seconds
   - 10⁻⁵ seconds
   - 10⁻⁸ seconds
   Yes, the answer is incorrect.
   Accepted Answer:
   - 10⁻⁷ seconds
   1 point

3. In experiments of Zewail, the bond breaking time and period of oscillation between bond dissociation and bonded states are, respectively:
   - 1 fs, 5 ps
   - 1 ps, 5 ps
   - 1 fs, 100 fs
   - 100 fs, 1 ps
   No, the answer is incorrect.
   Accepted Answer:
   - 200 fs, 1 fs
   1 point

4. Spectral rigidity function, CD:
   - 200 fs, 1 fs
   - 5 ps, 50 fs
   - 200 ps, 200 fs
   - 50 fs, 5 ps
   Yes, the answer is incorrect.
   Accepted Answer:
   - 200 fs, 1 fs
   1 point

5. Solvation time inside C60 has been found to be of the order:
   - 10⁻¹¹ seconds
   - 10⁻¹² seconds
   - 10⁻¹³ seconds
   - 10⁻¹⁴ seconds
   Yes, the answer is incorrect.
   Accepted Answer:
   - 10⁻¹³ seconds
   1 point

6. In vibrational aspects of liquid water:
   - Debye temperature (θ) = 2 times the OH stretching state occurs with 1 = 400 K, causing a single peak at temperature 1 = 400 K
   - Debye temperature (θ) = 3 times of OH stretching state occurs with 1 = 400 K, causing a single peak at temperature 1 = 400 K
   - Debye temperature (θ) = 1 times the OH stretching state occurs with 1 = 400 K, causing a single peak at temperature 1 = 400 K
   - Debye temperature (θ) = 1 times the OH stretching state occurs with 1 = 400 K, causing a single peak at temperature 1 = 400 K
   No, the answer is incorrect.
   Accepted Answer:
   - 1 times the OH stretching state occurs with 1 = 400 K, causing a single peak at temperature 1 = 400 K
   1 point

7. For density fluctuations of DEMF:
   - Dual emission is observed in all solvents
   - The maximum of the Solvatochromic transition is strongly temperature dependent
   - The position of maximum of the Solvatochromic transition is weakly temperature dependent
   - The height of the emission band of the excited state is temperature dependent
   No, the answer is incorrect.
   Accepted Answer:
   - The maximum of the Solvatochromic transition is weakly temperature dependent
   1 point

8. For 77K (K):
   - a dispersive potential
   - an intrinsically monochromatic
   - an intrinsically monochromatic potential of the absorption of a birefringent dye
   - is derived from the absorption of a birefringent dye
   No, the answer is incorrect.
   Accepted Answer:
   - a dispersive potential
   1 point

9. For molecules with ground and excited states with different dipole moments, the Solvatochromic shift between absorption and emission maxima is greater for:
   - less polar solvents
   - more polar solvents
   - molecules with greater excited state dipole moment
   - molecules with greater excited state dipole moment
   No, the answer is incorrect.
   Accepted Answer:
   - molecules with greater excited state dipole moment
   1 point

10. Decay of 500 nm cytochrome c:
    - faster than 1 ps
    - slower than 1 ps
    - slower than 10 ps
    - 1 ps
    No, the answer is incorrect.
    Accepted Answer:
    - 1 ps
    1 point

11. A glow SBR in water:
    - is single exponential
    - is multi-exponential
    - is multi-exponential
    Yes, the answer is incorrect.
    Accepted Answer:
    - is single exponential
    1 point

12. X-ray photoelectron spectra:
    - is a graph that is used in x-ray photoelectron spectroscopy
    - is a graph that is used in x-ray photoelectron microscopy
    - is a graph that is used in x-ray photoelectron spectroscopy
    - is a graph that is used in x-ray photoelectron microscopy
    No, the answer is incorrect.
    Accepted Answer:
    - is a graph that is used in x-ray photoelectron spectroscopy
    1 point