Assignment 12

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

1. Detection generation
   - requires high intensity of pump light
   - area covered by line of excitation
   - is sometimes followed by relaxation from S1 state
   - depends on the output of pump light
   - No, the answer is incorrect.
   - Bohr's selection rule
   - No, the answer is incorrect.
   - Both are incorrect. Selection rule depends on the color of pump light
   - No, the answer is incorrect.

2. Detection generation is manifested in
   - net recovery of ground state bleach
   - rise in ground state bleach
   - net decay in excited state absorption
   - rise in excited state absorption
   - No, the answer is incorrect.
   - Net recovery of ground state bleach
   - No, the answer is incorrect.

3. Detectors can be used to achieve
   - second harmonic generation
   - synchronous detection
   - wide light generation
   - multiplication of number of photons
   - No, the answer is incorrect.
   - Second harmonic generation
   - No, the answer is incorrect.

4. Two peaks in an OR spectrum
   - necessarily imply two excited modes
   - necessarily imply two coupled modes
   - may be observed for isolated or coupled modes
   - usually results in an ionization
   - No, the answer is incorrect.
   - Necessarily imply two coupled modes
   - No, the answer is incorrect.

5. 2D-IR spectra of a normal mode would have
   - a positive feature
   - a negative feature
   - a positive and a negative feature
   - no sets of positive and negative features
   - No, the answer is incorrect.
   - Positive and a negative feature
   - No, the answer is incorrect.

6. 2D-IR spectrum of two propanol, non-degenerate normal modes would have
   - two positive features
   - two negative features
   - a positive and a negative feature
   - no sets of positive and negative features
   - No, the answer is incorrect.
   - Two sets of positive and negative features
   - No, the answer is incorrect.

7. In addition to the above, 2D IR spectrum of two coupled, non-degenerate normal modes would have
   - two sets of positive and negative features along the diagonal
   - two sets of off diagonal positive and negative features
   - more or less sets of positive and negative features along the diagonal
   - more or more sets of off diagonal positive and negative features
   - No, the answer is incorrect.
   - Two sets of off diagonal positive and negative features
   - No, the answer is incorrect.

8. The function of the Fabry-Perot interferometer in frequency-frequency domain 2D-IR spectroscopy is to
   - produce short pulses
   - provide a broadband probe
   - issue a narrow range of pump frequencies
   - provide a reference signal
   - No, the answer is incorrect.
   - broadband probe
   - No, the answer is incorrect.

9. A probe pair is used in time -time domain 2D-IR to
   - as it changes, it is transformed in a time-domain distribution of wavelengths
   - as it changes, it is transformed in a frequency-domain distribution of wavelengths
   - in order to estimate the need for a probe pulse
   - to determine the strength of the probe
   - No, the answer is incorrect.
   - As it changes, it is transformed in a frequency-domain distribution of wavelengths
   - No, the answer is incorrect.

10. Processing involved with detection formation issue
    - Auger recombination
    - Auger transfer
    - Impact ionization
    - Upconversion
    - No, the answer is incorrect.
    - Auger recombination
    - No, the answer is incorrect.

11. The fourth part of the basic pulse is time -time domain 2D-IR spectroscopy is
    - the synchronous timing pulse
    - the broad reference pulse
    - necessary to extract the intensity of probe
    - necessary to extract the electric field of the probe
    - No, the answer is incorrect.
    - To determine the strength of the probe
    - No, the answer is incorrect.

Accredited Answers:
- Week 12 (6 points each)
- Week 11 (6 points each)
- Week 10 (6 points each)
- Week 9 (6 points each)
- Week 8 (6 points each)
- Week 7 (6 points each)
- Week 6 (6 points each)
- Week 5 (6 points each)
- Week 4 (6 points each)
- Week 3 (6 points each)
- Week 2 (6 points each)
- Week 1 (6 points each)

Total: 72 points

Due on 2020-04-28, 23:59 IST.