Week 5 Assignment

1. In the radiation induced excitation of a ground state singlet state, excitation occurs to singlet or triplet state. The latter is a forbidden transition, which occurs in
   a) Photoluminescence
   b) Fluorescence
   c) Phosphorescence
   d) Chemiluminiscence
2. An excited molecule in a fluorescence phenomena can return to ground state via
   a) Vibrational relaxation
   b) External conversion
   c) Inter system crossing
   d) All of these
3. A comparison of bridged compounds with rigid structures exhibits …… than non rigid molecules.
   a) Weaker fluorescence
   b) Stronger fluorescence
   c) Almost same fluorescence
   d) Cannot predict the fluorescence
4. The fluorescence efficiency Q_F is defined as the
   a) Ratio of number of photons emitted as fluorescence to the number of photons absorbed.
   b) Ratio of number of molecules excited as fluorescence to the number of molecules relaxed.
   c) Ratio of number of molecules excited as fluorescence to the number of molecules decomposed.
   d) All of these.
5. In the fluorescence expression, $F = 2.303P_o f_\phi g_\lambda Q_F \varepsilon bc$, the term b refers to
   a) The path length of the molecular cross section.
   b) The path length of the cuvette.
   c) The solid volume of the beam reaching the sample.
   d) The solid volume of the beam along with the slit width and the beam geometry
6. High pressure xenon lamps are preferred in the fluorescence measurements because
   a) The output is continuous from 300 – 1300 nm
   b) It is stable output
   c) The radiation is very intense
   d) All of these
7. In fluorescence emission filters are required to be sharp cut off type because
   a) Longer wavelengths need to be passed and alternate the shorter wavelength
   b) Shorter wavelengths need to be passed and alternate the longer wavelength
   c) Both longer and shorter wavelengths need to be passed and alternated.
   d) None of these.
8. In all fluorescence measurements, the results are expressed with reference to a standard sample because
   a) It gives credibility to scientific data
   b) Each measurement depends upon the type and make of the instrument
   c) The readings vary with each standard
   d) The readings vary with the standard concentration and instruments settings
9. Fluorimetry and phosphorimetry tend to be complementary because
   a) All fluorescing compounds also exhibit phosphorescence
   b) Some fluorescing compounds also exhibit phosphorescence
   c) All phosphorescing compounds need not exhibit fluorescing
   d) Both fluorescence and phosphorescence can be measured in the same instrument.

10. Fluorescence indicators are used as ion probes in biological events because
    a) Individual molecular events can be recorded
    b) A group of neurons can be detected for fluorescence
    c) In vitro analysis can be carried out.
    d) None of these.