Questions based on Raman Spectroscopy

Marks-20

Multiple choice Questions (6 X 1)

Q1. Raman spectroscopy is a special kind of _____

(a) Absorption spectroscopy (b) Emission spectroscopy (c) Both Absorption and emission spectroscopy (d) Inelastic scattering spectroscopy in between the molecule and the incident photon.

Q2. In Raman spectroscopy _____ light source is used for the excitation of the molecule.

(a) LED light source (b) Visible light s (c) LASER light (d) None of these

Q3. In the Rayleigh Scattering spectroscopy is a of _____

(a) Absorption spectroscopy (b) Emission spectroscopy (c) Elastic scattering spectroscopy (d) Inelastic scattering spectroscopy in between the molecule and the incident photon.

Q4. With increasing the temperature, the intensity of the Raman spectra changes accordingly_____

(a) Stokes line more intense but Antistokes line less intense (b) Antistokes line more intense but stokes line less intense (c) Both stokes and antistokes lines more intense (d) Both stokes and antistokes lines less intense.

Q5. Find out the correct statement. A Centro-symmetric molecule carbon dioxide having Symmetric mode shows _____

(a) both Raman active and IR-active. (b) both Raman inactive but IR-inactive (c) Raman active but IR-inactive (d) Raman inactive but IR-active

Q6. In SERS (Surface enhanced Raman spectroscopy) intensity of the Raman spectral lines increased million times due to the _____

(a) Plasmons are created on the surface of metal nanoparticles which enhances SERS-effect (b) higher Raman scattering cross section area of the asymmetric nanoparticles (c) Electromagnetic enhancement factor and chemical enhancement for (d) All of these.

Write true or false (4 X 1).

Q7. STATEMENT- Resonance Raman Spectroscopy is a selective probe for the specific chromophoric group. **_____(T/F)**

Q8. STATEMENT- SERS spectroscopy is independent on the LASER power. **_____(T/F)**

Q9. STATEMENT- Roughed metal surface of a nanoparticle showed more scattering intensity than a normal metal nanoparticle. **_____(T/F)**

Q10. STATEMENT- To be a Raman active molecule must have anisotropic polarizability**. _____(T/F)**

Q11. In Raman spectroscopy Stokes lines are more intense than the antistokes lines. Justify the above statement and give reasons. **1+1**

Q12. What do you mean by the term “Raman shift”? **2**

Q13. A sample was excited by the 4358 A^o line of mercury. A Raman line was observed at 4447 A^o. Calculate the Raman shift (in cm^{-1}) and the types of observed spectral line.
2 + 1

Q14. Make a compare in between the **normal Raman Spectroscopy** and **Resonance Raman Spectroscopy** of a Raman active molecule. **3**