

**School of Chemistry and Biochemistry,
TIET, Patiala Applied Chemistry (UCB008)
Tutorial Sheet (Atomic Spectroscopy -Part-II)**

1. Which analytical technique AAS or AES is more sensitive to change in temperature and Why?
2. In AAS, sometime it is imperative to use O_2 or N_2O oxidant for the fuel-oxidant mixture. What is that condition when we need to use such strong oxidants?
3. What is the principle of atomic absorption spectrometer?
4. What is the role of a monochromator in the atomic absorption spectrometer?
5. Describe the process sputtering.
6. What is the role of inert gas (He or Ne) in the Hollow Cathode?
7. For the same concentration of Nickel, the absorbance at 352.4 nm was found to be about 30% greater for a solution that contained 50% ethanol than for an aqueous solution in AA. Explain?
8. What type of metals can't be easily detected by AAS? Give two examples.
9. Why does Beer's law apply in the case of AA, but not in the case of flame photometry?
10. What are the essential differences between atomic absorption and flame photometry?
11. Sodium atom absorbs at 589 nm. Calculate the energy gap between the ground and excited state. At a temperature of 2000 K, what is the ratio of excited state to ground state population (N^*/N_0)? Given that $A = 2$, $k_B = 1.38 \times 10^{-23} \text{ J K}^{-1} \text{ mol}^{-1}$

$$[N^*/N_0 = 1.3 \times 10^{-5}]$$
