Plasma Diagnostic Techniques Practical Class 1

1. For applying optical emission spectroscopy to a plasma:
   (a) Briefly discuss the basic underlying principles.
   (b) Outline which plasma parameters the technique can measure.
   (c) Draw a diagram clearly detailing how you could implement OES in a plasma reactor. Highlight the necessary components of the setup.
   (d) Outline challenges and limitations with implementing OES.

2. For a weakly ionised plasma not in thermodynamic equilibrium name a suitable model to describe the emission from a plasma reactor.
   (a) Using a simple diagram explain the main processes for such as system.
   (b) If the collisionality of the plasma increases describe a more suitable model, including how any additional processes, may be taken into account.
   (c) For the situation of high collisionality derive a steady state equation for the number density in a level *i.* Discuss the parameters this depends on.