

# Ion Identification

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## A. Identifying atoms with spectral line:

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Our work is easier since we only have to check for hydrogen, carbon, nitrogen, oxygen

1. A: Oxygen (II), with wavelength in vacuum  $\sim 844.6$  Angstroms
2. B: Carbon (II), with wavelength in vacuum  $\sim 850.0$  Angstroms
3. C: Hydrogen (I), with wavelength in vacuum  $\sim 911.3$  Angstroms
4. D: Oxygen (I), with wavelength in vacuum  $\sim 1039.4$  Angstroms
5. E: Nitrogen (II), with wavelength in vacuum  $\sim 1085.0$  Angstroms
6. F: Hydrogen (I), with wavelength in vacuum  $\sim 1215.0$  Angstroms
7. G: Oxygen (I), with wavelength in vacuum  $\sim 1306.4$  Angstroms
8. H: Carbon (I), with wavelength in vacuum  $\sim 1329.1$  Angstroms

## B.

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1. Lines in C are related since they all belong to Hydrogen's spectrum for other energy transitions.
2. Plunge near 900 Angstroms is caused by limiting line of Lyman series of Hydrogen. The limiting line is explained by setting the final transition state as infinity in Rydberg's formula for Hydrogen.