Chemistry

Standard level

Paper 1B

Practice paper

Topic: Electron Configuration (SL)

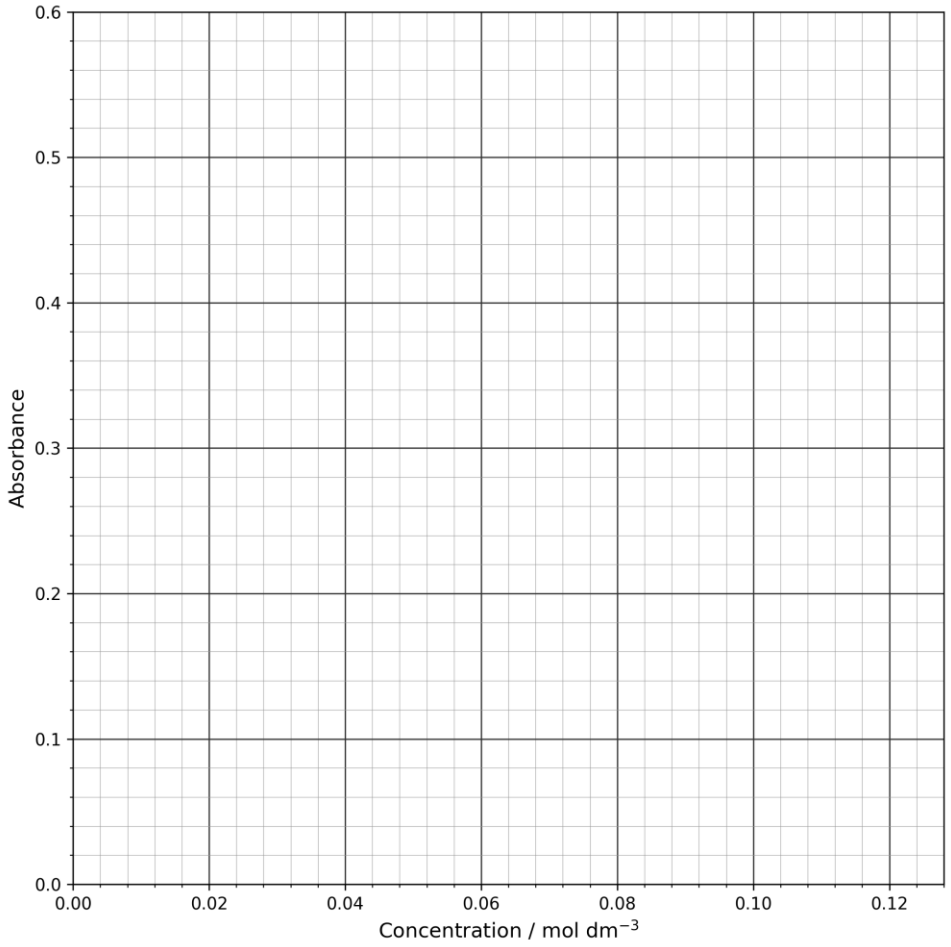
1. Students conducted an experiment to analyze a sample of $CuSO_4(aq)$ using a colorimeter. The following calibration data was obtained at a wavelength of 635 nm:

Concentration / mol dm^{-3}	**Absorbance**
0.02	0.10
0.04	0.20
0.06	0.30
0.08	0.40
0.10	0.50

(a) Plot the data above on the grid provided and draw a line of best fit. [4]

(b) An unknown solution of $CuSO_4$ gave an absorbance reading of 0.40. Use your graph to determine its concentration. [1]

(c) State why 635 nm was chosen as the wavelength for this analysis. **[1]**



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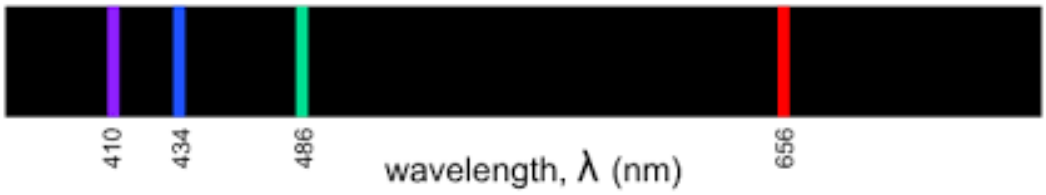
2. The emission spectrum of hydrogen is shown below.

(a) Calculate the energy of a photon emitted at 486 nm. Refer to the Data Booklet for relevant constants. [3]

(b) Identify the electron transition ($n_{initial}$ to n_{final}) corresponding to the visible Balmer series. **[1]**



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