Name:_____ section: ____ date: _____

Atomic emission spectra (Lab data sheet)

Table 1: Helium Emission spectrum (Calibration of the spectroscope) Spectroscope used: _____

COLOUR	RELATIVE INTENSITY	WAVELENGTH (nm)	SCALE READING
Red	70	706.5	
Red	100	667.8	
Yellow	**reference**	587.6	
Light green	15	504.8	
Light green	**100**	501.6	
Dark green	50	492.2	
Blue	40	471.3	
Blue-violet	**100**	447.1	
Violet	30	438.8	
Violet	25	412.1	
Violet	70	402.6	
Violet	50	396.4	

Table 2. Hydrogen emission spectrum

COLOUR	SCALE READING	Wavelength (from calibration curve)	λ (literature)
Red			656.1
Turquoise			486.0
violet			433.9
violet			410.0

Table-3. Rydberg constant calculation

Colour	n(out)	n(in)	wavelength λ (lab value)	R_H (calculated)
Red	3	2		
Turquoise	4	2		
violet	5	2		
violet	6	2		

Calculations
average R_H value
%error R_H

R_H literature = 1.09737×10^7 m^{-1} $\quad \frac{1}{\lambda}=R_H\left(\frac{1}{n(\text{in})^2}-\frac{1}{n(\text{out})^2}\right)$ $\quad \%\text{error}=\frac{\left|R_H(\text{lab})-R_H(\text{literature})\right|}{R_H(\text{literature})}\times100\%$