MPHY 344
Problem set 1
Due date: 4th of Dhul Qe'da

Name:
Computer No:

Problem 1:
Two lines in the emission spectrum of calcium (Ca) appear at wavelengths of 443.567 and 443.495 nm. What is the minimum value of the resolving power of a prism or diffraction grating necessary to resolve these two lines?

Problem 2:
How would you label the axes of a graph of:

(a) Length, l, in centimeters versus time, t, in minutes
(b) Frequency, ν, in kilohertz, versus magnetic field, H, in Gauss (G)

Problem 3:
Use prefixes, attached to the units, to express in convenient form:

(a) 13.5×10^{-1} s
(b) 253×10^{-5} g
(c) 1743×10^{7} Hz
(d) 12.6×10^{-10} m

Problem 4:

(a) Convert to wavenumber, with units of cm^{-1},
    i. A frequency of 9.74832 GHz
    ii. A wavelength of 6437.846 Å
(b) Converty 12.488 eV to energy with units of J and J mol^{-1} .