EE 236 Lab Report
Basic Electronic Devices

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Batch: Monday
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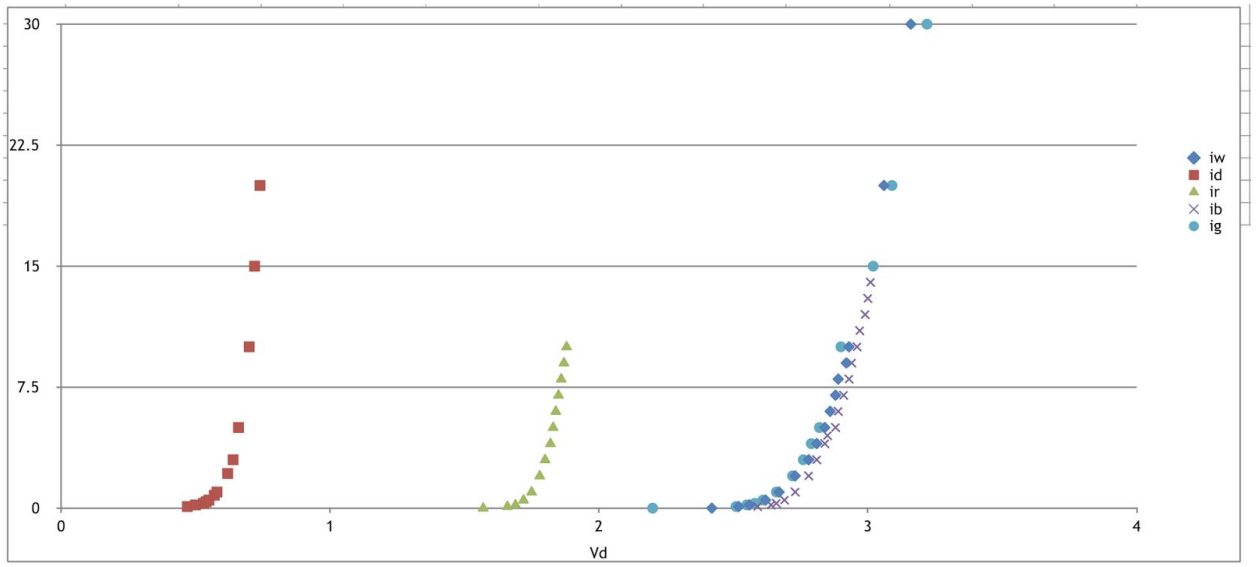
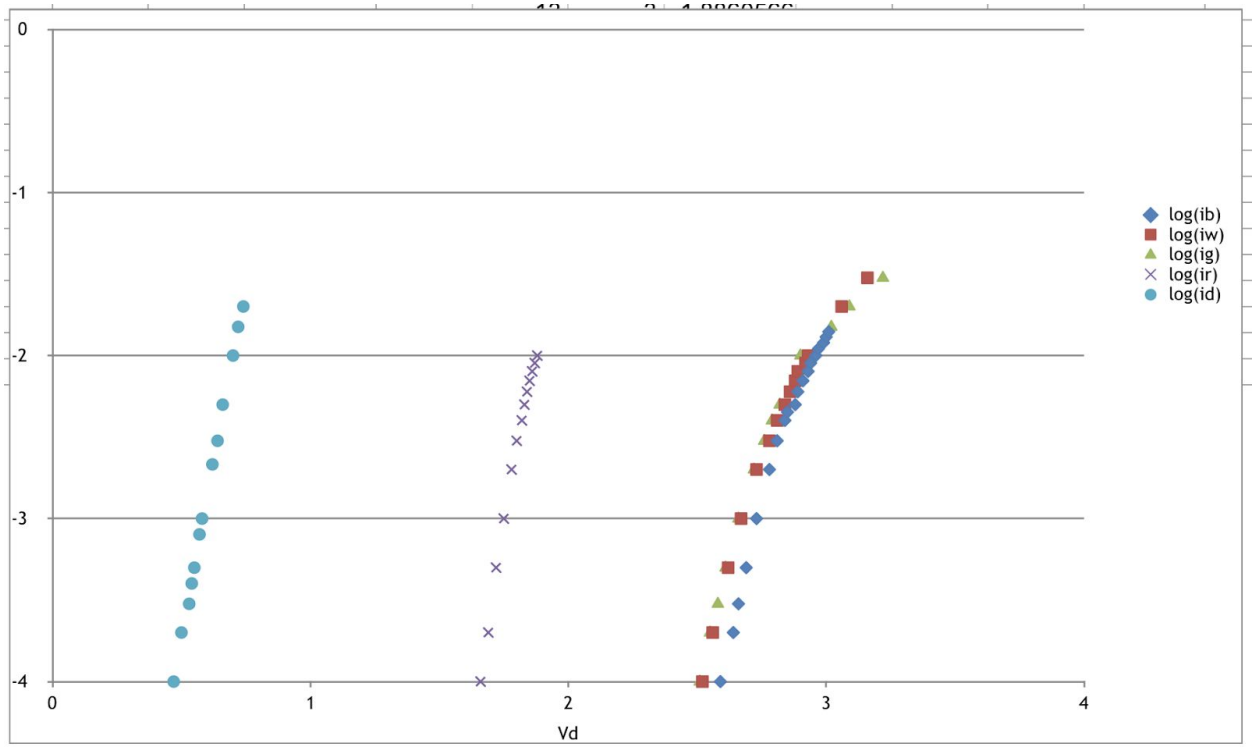
EXPERIMENT :3

q1)Plot a graph of I_D v/s V_D for all LEd



q2)Now plot a graph of log I_D v/s V_D for all LEDs. Call this Plot 2.

Calculate the ideality factor η of each LED from the slope. Also calculate the saturation current I_S from the y-intercept.



	slope	n	Y intercept
white	8.664339757	4.616624131	-13.435
green	7.52236167	5.317478972	-11.545
blue	8.941321736	4.473611529	-12.99
red	20.300441	1.970400545	-18.46
diode	21.0477387	1.900441685	-8.30

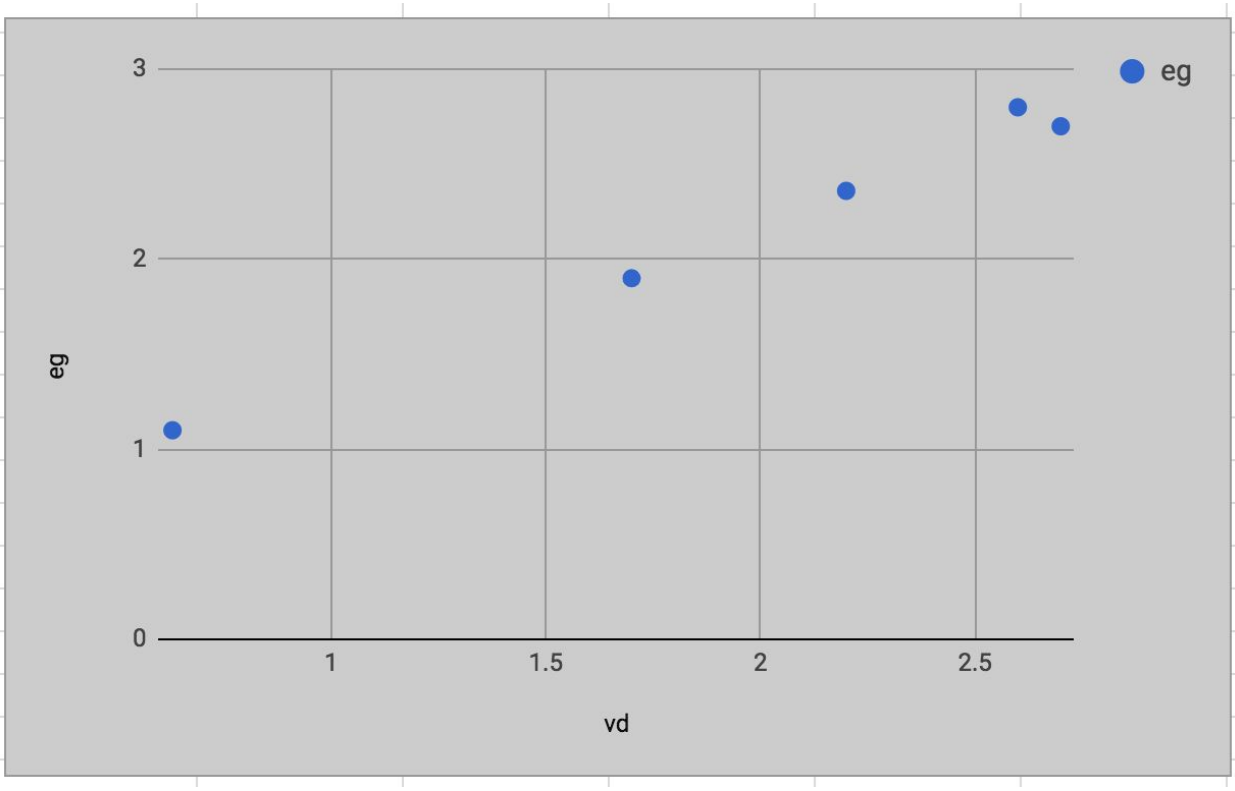
q3)Calculate the bandgap E_g for each LED using the emission wavelengths from the figure on page 4 and putting them in equation (1).

diode	Eg
red	1.9
blue	2.7
green	2.36
white	2.8

q4)From Plot 1, choose a constant value of I_D, say 1 mA, to define the cut-in voltage (V_γ). For each LED, find out the value of V_γ corresponding to I_D = 1 mA.

diode	vd (i=1mA)
red	1.7
blue	2.7
green	2.2
white	2.6
diode(1N914)	0.63

q6)Now plot a graph of V_γ v/s E_g for the LEDs as well as 1N914. For the chosen value of I_D , you should get one point (V_γ , E_g) on the graph for each diode and hence you can plot all five points (for the different diodes) on a single graph.



q7)From the graph, try to find a relation between V_γ and E_g . What is the expected correlation? Do you observe any variation practically? If yes, why?
V and Eg should have a linear relation with slope almost equal to 1 .
Yes ,there is slight variation due to real physical attributes of diode
The value of Eg has been taken from broad peaks ,this increases the error

q8)What value of E_g will you choose for the white LED? (Hint: Look at the spectrum closely. Which is the stronger emission wavelength?)

I will consider lambda with taller peak ,taller peak implies stronger emission.lower wavelength satisfy this condition