Problem Set 2023-2
Physics 265
First Semester, AY 2023– 2024
Release Date: 22 September 2023
Due: 6 January 2024
Ten points per number

1. Recast the n(λ) expressions of your assigned glass materials (for n_1 and n_2) into its equivalent n(ω) where angular frequency $\omega = 2\pi\nu = 2\pi c/\lambda$, and c is the speed oflight in vacuum.

2. Plot (at 0.5 nm resolution) the refractive index n(λ) for n_1 and n_2 within their corresponding non-dispersive wavelength ranges (in nanometer units). Refer tothe attached Dispersion Formula Table 23 (Handbook of Optics Vol 2, Sec 33.67, 2nd Edition, OSA) for details.

3. Plot the equivalent n(ω) expressions within their corresponding non-dispersive ω-range bounded by ω_{max} and ω_{min}.

4. Plot for both n_1 and n_2 the pertinent n($\omega - \omega_o$) curves in the presence of a resonant frequency $\omega_o = (\omega_{max} + \omega_{min})/2$. Please be guided by the discussion in Section 2.3.4 of Born & Wolf particularly Figure 2.3.

DIELECTRIC MATERIAL ASSIGNMENT

Student Number	n_1	n_2
2014-72686	BaLK1	BK7
2015-02056	SF6	LaF2
2012-29166	ZnSe	PK2
2015-13015	FK5	K5
2018-21484	Ultran 30	F2
2015-04622	BaSF10	BaK1
2011-00242	Fused Silica	CORTRAN 9753
2013-73980	Fused Germania	CORTRAN 9754
2015-01971	Arsenic Trisulfide	IRG2

END.