

ENGR 145 Fall 2023
Homework Set #9
Due Tuesday, Nov. 28

CR Questions and Problems:

- 12.43** Briefly describe electron and hole motions in a p - n junction for forward and reverse biases; then explain how these lead to rectification.
- 12.49** A parallel-plate capacitor using a dielectric material having an ϵ_r of 2.2 has a plate spacing of 2 mm (0.08 in.). If another material having a dielectric constant of 3.7 is used and the capacitance is to be unchanged, what must the new spacing be between the plates?
- 17.17** Briefly explain why metals are typically better thermal conductors than ceramic materials.
- 19.22** Briefly explain why amorphous polymers are transparent, whereas predominantly crystalline polymers appear opaque or, at best, translucent.
- 19.14** Zinc selenide has a band gap of 2.58 eV. Over what range of wavelengths of visible light is it transparent?