

# Modern Physics

## Semiconductors

**Problem 1.-** A sample of pure silicon has been heavily doped with indium. What carriers do you expect to dominate electric transport, electrons, or holes? Explain the reason(s) for this behavior.

**Solution:** Indium has valence 3, so it behaves like an electron acceptor when doping silicon. Hole-carriers will dominate electron transport. This is because the three electrons leave a hole in the valence band.