

### Questions for Chapter 3

1. What is the difference between Faraday rotation and natural optical activity?
2. What types of Faraday rotation can be distinguished depending on the parameter influenced by the magnetic field?
3. What type of singularity at the resonance frequency can one expect in (Zeeman type) Faraday rotation spectra for: (i) a single absorption line, (ii) an absorption threshold and (iii) a squareroot absorption edge?
4. What are the arguments for the interband character of the giant Faraday rotation in CdMnTe?
5. What is the most important influence of magnetic field on band structure of large gap DMS at low temperature? Is electron wavevector still a good quantum number?
6. How can one determine sp-d exchange integrals in large gap DMS of zincblende structure?
7. Is it possible to measure Zeeman splittings for optical transitions at the L point of the Brillouin zone? Are they comparable to those at the  $\Gamma$  point?
8. How can we explain the Zeeman splitting values of energy bands at L point?