Written Test Syllabus for Admission to MS and PhD
in Power Systems, Power Electronics and drives
School of Computing and Electrical Engineering,
Indian Institute of Technology Mandi

Electrical Machines: Transformers-basic concepts, dc machines – separately excited, series and compound machines, induction machines – basic concepts, cylindrical rotor synchronous machines and speed control of dc and induction machines.

Power Electronics: power semiconductor devices and characteristics, inverters basic principles — single phase and three phase, ac-dc converters – single and three phase and operation of basic dc-dc converters.

Power Systems: Transmission lines, Series and shunt compensation, Per-unit quantities, Bus admittance matrix, load flow methods, Power factor correction, Symmetrical components, Basics of fault analysis, System stability concepts, Equal area criterion.

Control Systems: Transfer function of a dynamic system, positive and negative feedback, transient and steady state response, Time and frequency response stability analysis, lead, lag and lead-lag compensation, State space model, Eigen values.