Syllabus for Ph.D. Entrance Examination

Unit 1: Semiconductor Devices Diodes, Transistors, JFET, MOSFETS, IGBT, SCR, TRIAC and its applications.

Unit 2: OP-amp, Op-amp applications, Timer (IC 555)

Unit 3: AC to DC converter, AC to AC converter, DC to AC converter and DC to DC converter DC motors, Induction motor.

Unit 4: Logic families, combinational and sequential Circuits, Introduction to PIC microcontroller, PIC Microcontroller core architecture, MPLAB, PIC resources, introduction to embedded and its development , Embedded 'C' programming.

Unit 5: Units and standard measurement system, static and dynamic characteristics of the system, level transducers, displacement, pressure, temperature, electro-chemical transducers, signal conditioning for resistive capacitive, Inductive, Optical sensors.

Unit 6: Basic of control system and time domain analysis, process dynamics and process control, process controllers and tuning control schemes, stability analysis, root locus techniques and frequency domain analysis.

Unit 7: Open control Network, Network at different level , safety Instrumentation system Automation fundamental , PLC Hardware , supervisory control and data acquisition, Nonlinear system, multivariable and intelligent control, distributed control system.

Unit 8: Radioactive Instrumentation and refractometry, optical absorption and transmission and IR spectroscopy, optical sources and detectors, fiber optic and their applications, principals of lasers and laser types.