Electrical engineering syllabi

Electrical engineering examinations

Group A - Compulsory examinations (seven required)

16-Elec-A1 Circuits


Textbooks (most recent edition is recommended):


16-Elec-A2 Systems and Control


Textbooks (most recent edition is recommended):


16-Elec-A3 Signals and Communications


Textbooks (most recent edition is recommended):


Or


Or


16-Elec-A4 Digital Systems and Computers

Combinational, sequential, and synchronous logic circuits. Register level design of digital systems. Computer arithmetic, central processing unit, memory systems and peripherals. Embedded and higher-level (e.g. C) programming, interrupts, and
interfacing and communication. Computer architecture.

Textbooks (most recent edition is recommended):


16-Elec-A5 Electronics

Semiconductor devices; diodes and thyristors. Bipolar and field effect transistors as linear devices and switches. Bias circuits, basic amplifiers, small-signal equivalent circuits, transfer functions, and frequency response. Operational amplifiers and comparators. Digital integrated circuits and logic families: CMOS.

Textbooks (most recent edition is recommended):


16-Elec-A6 Power Systems and Machines

Magnetic circuits and transformers. Wye and delta connected three-phase systems. Generation, transmission, and distribution of electric power. Three-phase transformers. AC and DC machines. Three-phase synchronous machines and three phase induction motors.

Textbooks (most recent edition is recommended):


16-Elec-A7 Electromagnetics


Textbooks (most recent edition is recommended):


Group B - Optional examinations (two required)

16-Elec-B1 Digital Signal Processing

Discrete-time signals and systems: system input-output and convolution, Z-transform and transfer functions. Discrete-time Fourier transform (DFT) and Fast Fourier transform (FFT). Design of finite impulse response (FIR) and infinite impulse response (IIR) filters. DSP implementation considerations.

Textbooks (most recent edition is recommended):


16-Elec-B2 Advanced Control Systems


Textbooks (most recent edition is recommended):

16-Elec-B3 Digital Communications Systems

A/D conversion, source coding; signal sets, line codes, modulation, optimal reception, demodulation, performance in noisy channels, error detecting and correcting codes. Radio communications; link analysis and performance, terrestrial and satellite communications.

Textbooks (most recent edition is recommended):


16-Elec-B4 Information Technology Networks


Textbooks (most recent edition is recommended):


16-Elec-B5 Advanced Electronics


Textbooks (most recent edition is recommended):


16-Elec-B6 Integrated Circuit Engineering


Textbooks (most recent edition is recommended):


16-Elec-B7 Power Systems Engineering


Textbooks (most recent edition is recommended):

16-Elec-B8 Power Electronics and Drives


Textbooks (most recent edition is recommended):


16-Elec-B9 Electromagnetic Field, Transmission Lines, Antennas, and Radiation


Textbooks (most recent edition is recommended):


16-Elec-B10 Electro-Optical Engineering


Textbooks (most recent edition is recommended):