SVKM's NMIMS University

Mukesh Patel School of Technology Management & Engineering, Mumbai

Department of Electronics and Telecommunication Engineering

Syllabus for PhD Entrance Test

Effective from May, 2026

SECTION- A

Section A will include 25 compulsory objective-type questions, each carrying 2 marks. It will be focused on research aptitude. The section will be general in nature and aims to evaluate the candidate's research aptitude, with emphasis on reasoning ability, data interpretation, and quantitative skills.

SECTION-B

Section B will comprise 25 compulsory objective-type questions, each carrying 2 marks, based on the following syllabus:

UNIT I- Single and Systems

- Continuous and discrete-time signal analysis
- System properties (LTI, causality, stability)
- Convolution and correlation
- Fourier series and Fourier transform
- Laplace and Z-transform applications

UNIT II- Microprocessors and Microcontrollers

- 8-bit, 16-bit, and 32-bit microprocessors and microcontrollers
- ARM Cortex-M architecture
- Peripheral interfacing (GPIO, ADC, DAC, Timers)
- Interrupt handling and low-power design

Unit III - Wireless Communication & 5G/6G Systems

- MIMO systems
- OFDM and advanced modulation
- Millimetre wave communication
- 5G/6G architecture

Unit IV - VLSI Design & Embedded Systems

- CMOS design
- Low-power VLSI
- FPGA/SoC design

- Embedded system design

Unit V - Internet of Things (IoT) & Edge Computing

- IoT architectures
- Sensor networks
- Cloud/Edge integration
- Security challenges

Unit VI - Communication Networks & Protocols

- TCP/IP architecture
- Network optimization
- Software Defined Networking (SDN)

Unit VII- Control Systems & Automation

- State-space analysis
- Nonlinear and adaptive control
- Applications in communication systems

Unit VIII- RF & Microwave Engineering

- Microwave network analysis
- Antenna theory and design
- RF system design and measurements

Unit IX- Digital Image & Video Processing

- Image enhancement and restoration
- Feature extraction
- Video compression standards