

DEPARTMENT OF ELECTRONICS ENGINEERING, AMU, ALIGARH
Syllabus of Section B for PhD Admission test, Session 2018-19

Section B: Subject specific, there shall be two parts in this section

Part I - There shall be 20 Multiple Choice Questions of 1 mark each covering from the following topics:

Network Theorems, Circuit Analysis, LTI Systems, Continuous and Discrete Time Signals and transforms, P.N Junction, BJT, MOSFET Op Amps, Logic Circuits, Random Signals, Analog and Baseband Communications, Communication Receivers.

Part II- Eight Descriptive type questions in each area of specializations out of which the candidate will be required to answer 05 questions of 04 marks each. Candidate is required to opt a question paper of one specialization (as per the choice he/she had given in application form).

Syllabus for Specialization 1: Communication Systems and Signal processing

Circuit Analysis in Time and Frequency Domain; LTI Systems and Their Properties in Time and Frequency Domain Analysis of Continuous and Discrete Time System; Digital Filters and their Frequency Response.

Random Signals; Analysis of LTI System with Random Inputs; Concept of Modulations and Demodulations; Sampling Theorem; Analog and Digital Pulse Modulation Techniques; Baseband Communication; Digital Modulation and Demodulation Techniques.

Information Theory and Channel Coding; Communication Networks; Wireless Communication; Wave Propagation in Different Media; Antenna Theory; Microwave Devices and Components.

Syllabus for Specialization 2: Microelectronic Circuits and Systems

Circuits, Signals and Systems: Network theorems-Superposition, Thevenin and Norton's theorem, maximum power transfer, Circuit analysis in time domain and frequency domain; LTI Systems-casuality stability impulse response, convolution, poles and zeros, frequency response, group delay, phase delay; Continuous and Discrete time signals and transforms; Linear two port network parameters;

Electronic Devices: Carrier transport in semiconductors; P-N junction, BJT, MOSFET-fabrication, Operation and device model;

Analog & Digital Electronics: Amplifiers- biasing stability, feedback, single stage and multistage; Op amps and applications-Active filters, Oscillators, Wave Shaping circuits, Boolean Algebra, Minimization of functions, Combinational circuits, sequential circuits; Logic families; ADCs and DACs; Semiconductor memories; Microprocessor and Microcontroller, CMOS Digital and Analog Design.