

NOTIFICATION

Admission Notification for M.Tech. and Ph. D. programmes in the Department of Electronics and Communication Engineering, Mizoram University

The Department of Electronics and Communication Engineering, Mizoram University (A Central University) is inviting applications for admission in Master of Technology (M. Tech) and Ph. D in Electronics and Communication Engineering for the session 2019-2020.

Intake Capacity

School	Department	M.Tech	Ph. D
Engineering & Technology	Electronics & Communication Engineering	12+3 (Sponsored)	Subjected to Vacancy

Eligibility Criteria

(i) M. Tech programmes in Electronics & Communication Engineering.

- (a) A candidate who has passed B.Tech/M.Sc. Or Equivalent Examination in relevant branch from any recognized institute or university having a minimum 55% marks (relaxable by 5% for SC/ST candidates) in aggregate shall be eligible for admission.
- (b) A candidate must have a valid GATE score or must qualify Mizoram University Master of Technology Entrance Examination (MZU-MTEE).
- (c) The selection of the candidates will be based on the GATE score or Mizoram University Master of Technology Entrance Examination (MZU-MTEE) followed by personal interview.

(ii) Ph. D programmes in Electronics & Communication Engineering.

- (a) The candidates with at least 60% marks in their Master's Degree in the subject concerned/allied subject/cognate subject will be required to appear in an entrance test followed by interview. Relaxation for SC/ST candidates will be as per the University Grants Commission guidelines.

Important points for M.Tech and Ph. D candidates:

Last date of submission of online application is 10th July 2019 (online).

Date of Written Test/ Interview: 23rd July 2019

Session Starts: 1st August 2019

For detail syllabus for the written test see ANNEX-I and ANNEX-II

ANNEX-I

Syllabus for written test for M. Tech. in ECE:

Signals and Systems

Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications; Discrete-time signals: discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals; LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay, digital filter design techniques.

Electronic Devices

Energy bands in intrinsic and extrinsic silicon; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations; P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell; Integrated circuit fabrication process: oxidation, diffusion, ion implantation, photolithography and twin-tub CMOS process.

Analog Circuits

Small signal equivalent circuits of diodes, BJTs and MOSFETs; Simple diode circuits: clipping, clamping and rectifiers; Single-stage BJT and MOSFET amplifiers: biasing, bias stability, mid-frequency small signal analysis and frequency response; BJT and MOSFET amplifiers: multi-stage, differential, feedback, power and operational; Simple op-amp circuits; Active filters; Sinusoidal oscillators: criterion for oscillation, single-transistor and op-amp configurations; Function generators, wave-shaping circuits and 555 timers; Voltage reference circuits; Power supplies: ripple removal and regulation.

Digital Circuits

Number systems; Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders and PLAs; Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines; Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM; 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.

Communications

Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems; Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications; Information theory: entropy, mutual information and channel capacity theorem; Digital communications: PCM, DPCM, digital modulation schemes, amplitude, phase and frequency shift keying (ASK, PSK, FSK), QAM, MAP and ML decoding, matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation; Fundamentals of error correction, Hamming codes; Timing and frequency synchronization, inter-symbol interference and its mitigation; Basics of TDMA, FDMA and CDMA.

Electromagnetics

Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth; Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart; Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays; Basics of radar; Light propagation in optical fibers.

ANNEX-II

Syllabus for written test for Ph.D in ECE:

Research Methodology:

Research:

Definitions, Importance of Research, Deciding what to Research, Writing Research Proposal.

Creativity, Communication and Management

Psychology of Research Student, Oral Communication, Written Communication, Writing Methodology, Time Management, Stress Management.

Report Writing

Writing a report: Introduction, Title, Abstracts, Keywords, Plan of Paper, Sections of Paper, Diagrams, Graph and Table, Instruction to Authors, Clarity, Conflict of Interest, Conclusion, References. Research Report.

Subject Specific: Electronics and Communication

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