

Department of Electronics & Communication Engineering
School of Engineering and Technology

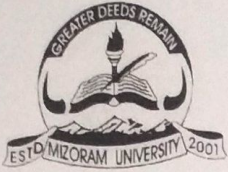
Mizoram University

(A Central University, Govt of India)

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Dr. Achinta Baidya
Assistant Professor & Head (in-charge)

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No. MZU/ECE/A-0/08/2022/02

Dated the 18th August, 2023

Notification

It is to notify that the Ph.D. Entrance Test for Ph.D. Admission in Academic session 2023-24 in the Department of Electronics and Communication Engineering is scheduled on 30th August, 2023 (offline mode).

Date & Time:	Syllabus
Written Test: 30/08/2023, 11am onwards	1. Research Methodology 2. Electronics and Communication Engineering (Enclosed as Annexure-II)
Personal Interview and Presentation : 30/08/2023	10 mins power point presentation on research proposal

All candidates are requested to bring all their original mark sheets, degree certificates and other relevant documents. List of shortlisted candidates for Ph.D. Entrance Test is given in Annexure-I.

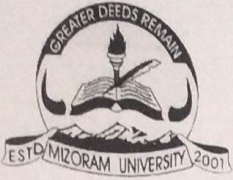
Any other information will be intimated as and when necessary.

— sd —
(Dr. Achinta Baidya)

Copy to :

1. Admission Director
2. Dean (SET), for kind information
3. System Administrator, ICT for display in MZU website
4. Office file.

Baidya
18/08/2023
(Dr. Achinta Baidya)
Head (i/c)
Dept. of Electronics & Communication Engg.
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Tanhril, Aizawl-796004, Mizoram, India.



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(Annexure-I)

List of Short-Listed Applicants for PhD (ECE) Entrance Test

Sr. No.	Application Id.	Name	Eligibility
1.	MZU230000517	BIJIT KUMAR NATH	Provisionally Eligible
2.	MZU230003528	C HMINGTHANSANGA	Provisionally Eligible
3.	MZU230003659	PRITHWISH BHATTACHARYA	Provisionally Eligible
	MZU230006120	KOTA NAGESWARA RAO	Provisionally Eligible
5.	MZU230006165	KISHORE REDDY ADURI	Provisionally Eligible
6.	MZU230006393	GOLLAMANDALA RAVI RAJU	Provisionally Eligible
7.	MZU230006539	NARAYANAM SRI PRAKASH	Provisionally Eligible
8.	MZU230006550	PRAGYANI PATRA	Provisionally Eligible
9.	MZU230006738	SAIRAM VALLABHUNI	Provisionally Eligible
10.	MZU230006789	VANLALREMRUATA	Provisionally Eligible
11.	MZU230007501	SOURAV KUMAR NAWANI	Provisionally Eligible
12.	MZU230008529	F LALMALSAWMZUALI	Provisionally Eligible
13.	MZU230008796	JAMES K LALTHLAMUANA	Provisionally Eligible

List of Non-Eligible Applicants for PhD (ECE) Entrance Test

Sr. No.	Application Id.	Name	Eligibility	Remarks
1.	MZU230006740	SANDEEP V	Not Eligible	Due to no qualifying relevant degree

Baidya
18/08/2023
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Tanzhal, Aizawl-796004, Mizoram, India.

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

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.