Area of Research: Microelectronics and VLSI Design

List of Regular PhD candidates: for area of research Microelectronics and VLSI Design

Serial	SID	Full name
1	21291	Deepak Mittal
2	21325	Abhishekha Chandra Dubey
3	21381	Syed Misbah Shafi
4	21391	jyoti khichar
5	21401	SHALU RANI
6	21437	RAVINDER KUMAR
7	21464	SHELJA
8	21507	RITESH KUMAR PANDEY
9	21569	Chetali Yadav
10	21585	Abhishek Kumar Chaudhary
11	21597	MUSKAN AGARWAL
12	21651	MANDEEP SINGH
13	21661	Sunil Kumar
14	21665	Pratistha Pal
15	21678	INDERJIT SINGH
16	21683	Sanjay Kumar
17	21712	imtiyaz
18	21715	T ASWINI
19	21729	SWAGATA PANCHANAN
20	21732	SURABHI GAUTAM
21	21751	HIMANSHU DIWAKAR
22	21853	sumit kumar
23	21885	RADHIKA MALHOTRA
24	21903	MANDA NARESH
25	21904	PERUMALLA SUBRAHMANYAM
26	21908	ashraf maniyar
27	21975	SUNIL KUMAR MEENA
28	22019	Vishal Narula
29	22070	GEETANJALI
30	22073	DIWAKAR PRASAD TIWARI
31	22097	JAYSHREE
32	22150	ANSHOO SARSWAT
33	22167	Oindrila Chakraborty
34	22239	DALCHAND AHIRWAR
35	22258	BHARTI KUMARI
36	22288	KUNDAN KUMAR
37	22315	DARA SUNIL KUMAR
38	22325	JYOTI YADAV
39	22352	AMIT KUMAR
40	22375	PRIYA KAUSHAL
41	22399	PRASHANT KUMAR
42	22404	SAPNA YADAV
43	22406	mukesh kumar
44	22416	A K NIKETA
45	22435	Thottempudi Nagateja
46	22467	SHRADHYA SINGH
47	22475	NILESH ANAND SRIVASTAVA
48	22495	DEEPINDER KAUR
49	22504	Muhomd Tayyab
50	22505	PRACHI GUPTA
51	22564	ANUP KUMAR
52	22566	THOTA PAVAN KUMAR

List of Part-time PhD candidate: for area of research Microelectronics and VLSI Design

Serial	SID	Full name
1	21361	AMIT SINGH
2	21433	KISHORE AJAY KUMAR AYYALA
3	22454	Abdul Manan

List of Direct PhD candidate: for area of research Microelectronics and VLSI Design

Serial	SID	Full Name
1	10189	MEGHNA

Note:

Any applicant who satisfies the above mentioned criteria, but his/her name is not in the list can also appear for written and/or personal interview on mentioned dates. Provided he/she has already applied with in due date.

Syllabus of PhD written examination: for area of research Microelectronics and VLSI Design

Section 1: Networks, Signals and Systems

Network solution methods: nodal and mesh analysis; Network theorems: superposition, Thevenin and Norton's, maximum power transfer; Wye-Delta transformation; Steady state sinusoidal analysis using phasors; Time domain analysis of simple linear circuits; Solution of network equations using Laplace transform; Frequency domain analysis of RLC circuits; Linear 2-port network parameters: driving point and transfer functions; State equations for networks.

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.

Section 2: 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.

Section 3: 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.

Section 4: 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.

Section 5: Control Systems

Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.

Section 6: Electromagnetics

Elements of vector calculus: divergence and curl; Gauss' and Stokes' theorems, Maxwell's equations: differential and integral forms. Wave equation, Poynting vector. Plane waves: propagation through various media; reflection and refraction; phase and group velocity; skin depth. Transmission lines: characteristic impedance; impedance transformation; Smith chart; impedance matching; S parameters, pulse excitation. Waveguides: modes in rectangular waveguides; boundary conditions; cut-off frequencies; dispersion relations. Basics of propagation in dielectric waveguide and optical fibers. Basics of Antennas: Dipole antennas; radiation pattern; antenna gain.