3. ADMISSION TO M.E./M.Tech. PROGRAMME

Mode of Program: Regular

3.1 ELIGIBILITY FOR ADMISSION

Admission to all the M.E./M.Tech. programmes shall be made on the basis of valid GATE Score in respective discipline. First preference will be given to GATE qualified candidates and who have obtained at least 60% (55% for SC/ST) marks in the aggregate in the qualifying examination from a recognised University.

After offering seats to the GATE qualified candidates, for seats remaining vacant (if any), the admission will be made on the basis of following method:

(1) In M.E./M.Tech. programs offered by CSED, MED, CED and ECED. The seats remaining vacant, after offering to the GATE qualified candidates, shall be filled by conducting offline entrance test. Admission to M.E./M.Tech. programme shall be open to candidates who obtain at least 60% (55% for SC/ST/Industry sponsored) marks in the aggregate in the qualifying examination from a recognised University.

(2) In other departments/schools, remaining vacant seats shall be filled on the basis of merit prepared by giving 30% weightage to 12th marks and 70% weightage to B.E./B.Tech. marks (upto end of pre-final year). Overall minimum 60% (55% for SC/ST/Industry sponsored) in B.E./B.Tech. shall be required to be eligible for admission.

                Or

In case M.Sc. is qualifying exam, the seats remaining vacant shall be filled on the basis of merit prepared by giving 50% weightage to B.Sc. marks and 50% weightage to M.Sc. marks (upto end of pre-final year). Overall minimum 60% (55% for SC/ST/Industry sponsored) in M.Sc. shall be required to be eligible for admission.

Qualifying examination for M.E./M.Tech. programme in various disciplines is as under:

M.E. – CAD/CAM Engineering/ Production Engineering/ Thermal Engineering
B.E./B.Tech. degree in Mechanical/Production/Industrial/Mechatronics/ Automobile/ Marine/ Petroleum/Chemical/Metallurgy/Heat power/Aeronautical Engineering and Equivalent.

M.E. – Infrastructure Engineering
B.E./B.Tech. in Civil Engineering, B.E./B.Tech. in Infrastructure Engineering

M.E. – Structural Engineering
B.E./B.Tech. degree in Civil Engineering.

M.E. – Computer Science & Engineering*
B.E./B.Tech. degree in any discipline of Engineering OR M.Sc. in Mathematics/ Statistics/ Computer Science/ Electronics/ Physics/ Operations Research/ Information Science/ Information Technology OR MCA OR Equivalent

M.E. – Information Security*
B.E./B.Tech. degree in any discipline of Engineering OR M.Sc. in Mathematics/ Statistics/ Computer Science/ Electronics/ Physics/ Operations Research/ Information Science/ Information technology OR MCA OR Equivalent.

M.E. – Software Engineering*
B.E./B.Tech. degree in any discipline of Engineering OR M.Sc. in Mathematics/ Statistics/ Computer Science/ Electronics/ Physics/ Operations Research/ Information Science/ Information Technology OR MCA OR Equivalent

M.Tech. – Computer Applications*

B.E./B.Tech. degree in any discipline of Engineering OR M.Sc. in Mathematics /Statistics /Operation Research/Computer Science/Electronics/Information Technology/ Information Science/Physics OR MCA OR equivalent.

* Gate qualified candidates with valid gate score in "Computer Science/ Information Technology" shall only be considered for admission on the basis of GATE score.

M.E. – Electronics & Communications Engineering#

B.E./B.Tech. degree in Electronics & Communication

M.Tech. – VLSI Design

B.E./B.Tech. degree in Electronics / Computer Science/ Electronics & Communication / Electronics (Instrumentation & Control) / Electrical Engineering OR M.Sc. in Computer Science/ Electronics / Physics with Electronics / Instrumentation with Mathematics as one of the subjects in B.Sc.

M.E. – Wireless Communications#

B.E. / B.Tech. or equivalent, Applied Electronics & Telecommunication / Electronics Telecommunication / Telecommunication Engineering / Electronics & Telematics / Electronics and Communication Engineering / Electrical and Electronics.

Gate Qualified candidates with B.E./B.Tech. in Electronics and Communication shall only be considered for admission on the basis of GATE score.

M.E. – Electronic Instrumentation & Control Engineering

B.E./B.Tech. degree in Instrumentation & Control/ Electronics/ Electrical/ Electronics & Computer/ Computer/ Information Technology/ Mechatronics Engineering OR
M.Sc. in Instrumentation/Electronics/ Computer/Information Technology or equivalent

M.E. – Power Systems

B.E./B.Tech. degree in Electrical/ Electrical & Electronics/ Electrical & Computer Engineering or equivalent

M.E. – Power Electronics and Drives

B.E./B.Tech. degree in Electrical /Electrical & Electronics /Instrumentation & Control/Electronics/Electrical & Computer/Mechatronics Engineering or equivalent

M.Tech. – Biotechnology

B.E./B.Tech. degree in Biotechnology/ Chemical / Industrial Biotechnology / Biochemical Engineering /Bio-Medical Engineering / Bio-Informatics or a Bachelor's Degree in Pharmacy or M.Sc. Degree in Biochemistry / Biotechnology / Microbiology / Bio-Physics / Biology / Botany / Zoology/ Genetics / MBBS / M.Sc.(Ag) & M.V.Sc.

M.Tech. – Chemical Engineering

B.E./B.Tech. (Chemical Engineering/Technology, Environmental, Biotechnology, Pulp and Paper Technology/Polymer Technology/Metallurgy/Materials/ Mechanical/ Ceramics Engineering or allied discipline) or M.Sc. (Applied /Industrial Chemistry) with Mathematics upto B.Sc. level.

M.Tech. – Energy Technology and Management

B.E./B.Tech. in any branch of Engineering / Technology OR M.Sc. in Physics or Chemistry with Mathematics at graduation level.

M.Tech. – Environmental Science & Technology
B.E./B.Tech. degree in any branch of Engineering or Technology, OR M.Sc. in Chemistry/ Biochemistry/ Biotechnology/ Life Sciences (including Botany and Zoology) / Atmospheric Sciences.

M.Tech. – Metallurgical & Materials Engineering
B.E./B.Tech. degree in any branch of Engineering OR M.Sc. in Materials Science/ Physics/ Chemistry (with Physics and Mathematics at B.Sc. Level)

Note: Candidate who has passed Section B of the Institution of Engineers (India) or Grade IETE and has three years of professional experience in reputed organization are also eligible for admission to M.E./M.Tech. programme in respective disciplines.

Sponsored Candidates with 55% marks in the qualifying examination are eligible for admission. Such candidates must have a minimum of two years of full time work experience in a registered firm/ company/ industry/ educational and research institutions/any Government Department of Government Organization in the relevant field in which admission is being sought. The employer in the sponsorship certificate must indicate that the fee will be borne by the sponsoring organization and the candidate will not be withdrawn before the completion of the programme. **The fee of the sponsored candidates shall be paid by the sponsoring agency from the company's bank account.**

Candidates who are appearing in the final exam of the qualifying degree are eligible to apply. Such candidates have to furnish following undertaking at the time of document checking/'In-Person' counselling.

"I am applying on my own risk and responsibility as my final result of the qualifying exam has not been declared by the University.

I do hereby declare that I do not have any backlog paper in any of the previous semesters (Years) of study of the qualifying exam and also, I do not expect any backlog in my final exam.

*I assure you that I will produce the proof of passing of my qualifying examination with the minimum percentage of marks required on or before **December 31, 2017**, failing which my admission shall stand cancelled and I shall not claim any right on any count whatsoever."*

3.2 NUMBER OF SEATS
The University offers PG programme of four semesters (regular) leading to M.E./M.Tech. degree. The distribution of seats discipline-wise is as under:

Regular Programs:

Programme	Name of the Deptt/School	Number of Seats		
		Open	Sponsored	SC/ST
M.E. – CAD/CAM Engineering	MED	19	5	6
M.E. – Production Engineering		19	5	6
M.E. – Thermal Engineering		19	5	6
M.E. – Infrastructure Engineering	CED	19	5	6
M.E. – Structural Engineering		19	5	6
M.E. – Computer Science & Engineering	CSED	42	5	13
M.E. – Information Security		19	5	6
M.E. – Software Engineering		19	5	6
M.Tech. – Computer Applications		19	5	6

M.E. – Electronic Instrumentation & Control Engineering	EIED	19	5	6
M.E. – Power Systems		19	5	6
M.E. – Power Electronics and Drives		19	5	6
M.E. – Electronics & Communication Engineering	ECED	19	5	6
M.E. – Wireless Communications		19	5	6
M.Tech. – VLSI Design		19	5	6
M.Tech. – Biotechnology	BTD	19	5	6
M.Tech. – Chemical Engineering	CHED	19	5	6
M.Tech. – Energy Technology and Management	SEE	11	5	4
M.Tech. – Environmental Science & Technology		19	5	6
M.Tech. – Metallurgical & Materials Engineering	SPMS	19	5	6
Total		**395**	**100**	**125**

In addition to above seats, 1% over and above seats are reserved for children of employees of Thapar University. The candidates seeking admission under this category are required to satisfy the eligibility as mentioned above at 3.1.

5 seats in each regular discipline of M.E./M.Tech. programme are available for FN/NRI candidates. Refer section 10 for eligibility and other conditions.

Seats, if any in the sponsored category remained unfilled; such vacant seat(s) shall be filled by General category candidates.

The program will run only if minimum 10 students are admitted in it.

3.3 LEAVE RULES

M.E./M.Tech. regular students getting scholarship shall be entitled for leave for a maximum period of thirty days per year in addition to general holidays but not entitled to vacation, e.g., summer, winter, etc. The students must apply for leave in advance and obtain the sanction from the concerned Head of the Department/School. The student shall be required to give an undertaking to the effect that he/she would not leave the course midway or appear in any competitive examinations, etc., not related to Engineering & Technology, in order to be eligible to receive this scholarship.

3.4 DURATION OF PROGRAMME

The normal duration of programme leading to the M.E./M.Tech. degree shall be four semesters for regular students, which includes course work of twelve subjects, seminar, minor project and Dissertation. The maximum duration for regular programmes is six semesters.

3.5 SCHOLARSHIPS/ASSISTANTSHIP

The candidates admitted in M.E./M.Tech. with valid GATE score, will be considered to receive scholarships only if approved and amount released by AICTE or any other funding agency (applicable only for intake approved by AICTE). It will be obligatory for every post-graduate student to undertake 8-10 hours per week of work related to teaching and research activities as assigned to him/her by the University. This could include conduct of tutorial classes/laboratory classes/development and maintenance of laboratories/assistance in research and development activities undertaken by faculty members/maintenance and operation of computers/other central facilities/assistance in library etc.

GATE qualified candidates who are not getting scholarship from AICTE or from any other funding agency shall be offered a scholarship of Rs. 8,000/- per month for 10 months in an academic year. It will be obligatory for post-graduate students who are availing this scholarship to undertake teaching load of 8-10 hours per week.

3.6 M.E./M.Tech. Admission Schedule:

There will be Offline Entrance Test for admission to vacant seats left in various disciplines of M.E./M.Tech. offered by CSE, ME, CE and ECE departments after offering these seats to GATE qualified candidates and counselling shall be as per given schedule.

Note:

i.   No TA/DA will be paid for appearing in the Entrance Test/Interview etc.
ii.   For all the M.E./M.Tech. programs offered by a particular department/school single application form is required to be filled. However, if candidate want to apply for M.E./M.Tech. program of other department/school also, he/she is required to fill separate application form alongwith requisite application fee.
iii. Candidates are advised to browse www.thapar.edu

M.E./M.Tech. Admission Schedule:

Counselling Schedule including deposit of fee for GATE Qualified Candidates:

Programme	Name of the Deptt/School	Date of counselling including deposit of fee	Time of interview
M.E. – Computer Science & Engineering	CSED	July 6, 2017	09:00 AM
M.E. – Software Engineering			
M.E. – Information Security			
M.Tech. – Computer Applications			
M.Tech. – VLSI Design	ECED	July 6, 2017	02:00 PM
M.E. – Electronics & Communication Engineering			
M.E. – Wireless Communications			
M.E. – Electronic Instrumentation & Control Engineering	EIED	July 7, 2017	09:00 AM
M.E. – Power Systems			
M.E. - Power Electronics and Drives			
M.E. – CAD/CAM Engineering	MED	July 7, 2017	11:00 AM
M.E. – Production Engineering			
M.E. – Thermal Engineering			
M.E. – Structural Engineering	CED	July 7, 2017	02:00 PM
M.E. – Infrastructure Engineering			
M.Tech. – Biotechnology	BTD	July 7, 2017	02:30 PM
M.Tech. – Environmental Science & Technology	SEE	July 7, 2017	03:00 PM
M.Tech. – Energy Technology & Management			

M.Tech. – Chemical Engineering	CHED	July 7, 2017	04:00 PM
M.Tech. – Metallurgical & Materials Engineering	SPMS	July 7, 2017	04:30 PM

Display of number of vacant seats in various disciplines of M.E./M.Tech. after offering seats to GATE qualified in above mentioned schedule : July 11, 2017

The following is the schedule of Offline Entrance Test for admission to vacant seats left in various disciplines of M.E./M.Tech. offered by CSE, ME, CE and ECE departments after offering these seats first to GATE qualified candidates:

Programme	Name of the Deptt/School	Date & Time of Offline Entrance Test
M.E. – Computer Science & Engineering	CSED	July 13, 2017 03:00 – 05:00 PM
M.E. – Software Engineering		
M.E. – Information Security		
M.Tech. – Computer Applications		
M.E. – Electronics & Communication Engineering	ECED	July 13, 2017 12:00 NOON – 02:00 PM
M.E. – Wireless Communications		
M.Tech. – VLSI Design		
M.E. – CAD/CAM Engineering	MED	
M.E. – Production Engineering		
M.E. – Thermal Engineering		
M.E. – Structural Engineering	CED	
M.E. – Infrastructure Engineering		

Counselling Schedule including deposit of fee for the vacant seats:

Programme	Name of the Deptt/School	Date of counselling/Interview & deposit of fee	Time of interview
M.E. – Computer Science & Engineering	CSED	July19, 2017	09:00 AM
M.E. – Software Engineering			
M.E. – Information Security			
M.Tech. – Computer Applications			
M.Tech. – VLSI Design	ECED	July19, 2017	02:00 PM
M.E. – Electronics & Communication Engineering			
M.E. – Wireless Communications			
M.E. – Electronic Instrumentation & Control Engineering	EIED	July 20, 2017	09:00 AM
M.E. – Power Systems			
M.E. - Power Electronics and Drives			

M.E. – CAD/CAM Engineering	MED	July 20, 2017	11:00 AM
M.E. – Production Engineering			
M.E. – Thermal Engineering			
M.E. – Structural Engineering	CED	July 20, 2017	02:00 PM
M.E. – Infrastructure Engineering			
M.Tech. – Biotechnology	BTD	July 20, 2017	02:30 PM
M.Tech. – Environmental Science & Technology	SEE	July 20, 2017	03:00 PM
M.Tech. – Energy Technology & Management			
M.Tech. – Chemical Engineering	CHED	July 20, 2017	04:00 PM
M.Tech. – Metallurgical & Materials Engineering	SPMS	July 20, 2017	04:30 PM

Last Round of counselling for vacant seats, if any   : July 28, 2017

Note: In all the rounds of counselling, the GATE qualified candidates shall get first preference based on merit. Those who missed the earlier round can attend any counselling held later but their admission will be on merit & subject to availability of seat.

GENERAL INFORMATION REGARDING M.E./M.TECH. ENTRANCE TEST INCLUDING ENTRANCE TEST SYLLABUS

Duration of Test:120 minutes (90 Questions)
Maximum Marks: 90

Minimum of 30% (25% for SC/ST) marks are required to qualify the test. There will be no negative marking in the test.

Components of Test
1. Engineering Mathematics   (Common for all)   15 Questions
2. General Aptitude (GA)   (Common for all)   15 Questions   **90 Questions**
3. Subject Knowledge   60 Questions

SYLLABUS FOR ENGINEERING MATHEMATICS (Common for all)

Linear algebra: Algebra of matrices; rank of matrix; System of linear equations; Eigen values and Eigen vectors.

Calculus: Functions of single variable; Limit, continuity and differentiability; Mean value theorems; Local maxima and minima; Evaluation of definite and indefinite integrals, application of definite integral to area; Partial derivatives; Total derivative; double and triple integrals; Gradient, Divergence and Curl, Vector identities, Directional derivatives; Line, surface and volume integrals; Gauss, Stoke's and Green 's theorem.

Ordinary Differential Equations (ODE): First order (linear and nonlinear) equations; higher order of linear Differential equations with constant coefficients; Euler – Cauchy equations.

Probability and statistics: mean, median, mode and standard deviation Definitions of probability, conditional probability, Bayes theorem; random variables, Binomial, Poisson and Normal distributions; Correlation and regression analysis.

Numerical Methods: Numerical solutions of linear and nonlinear algebraic equations; Integration by trapezoidal and Simpson's rule; numerical solution of first order differential equation by using Euler's method and fourth order Runge – Kutta method.

SYLLABUS FOR GENERAL APTITUDE (GA) (Common for all)

Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.

Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.

SYLLABUS FOR SUBJECT KNOWLEDGE

ME – CAD/CAM ENGINEERING/THERMAL ENGINEERING/PRODUCTION ENGINEERING

Design: Mechanics, Solid Mechanics, Machine Design, Theory of Machines, Mechanical vibrations, Machine Drawing, Computer Aided Design, Computer Aided Manufacturing Robotics, Industrial Automation

Thermal Engineering: Thermodynamics, Thermodynamics Cycles (Carnot, Otto, Diesel, Rankine, Braytan) IC Engines and Gas Turbines, Turbo Machines, Fluid Mechanics and Machinery, Refrigeration and Air Conditioning, Heat and Mass Transfer, Power Plant Engineering, Non-conventional Sources of Energy, Combustion Stoichiometry

Production and Industrial Engineering: Manufacturing Processes/Technologies, Machining Science, Industrial Engineering, Production Management, Inspection and Quality Control, Measurement Techniques, Material Science and Metallurgy.

Subject Knowledge component of Entrance Test for admission to ME – CAD/CAM Engineering/Thermal Engineering/Production Engineering shall consist of 60 question. Questions will be equally divided (20 each) from the three paragraphs on Design, Thermal and Production Engineering.

M.E. – STRUCTURAL ENGINEERING/INFRASTRUCTURE ENGINEERING

Structural Engineering: Bending moment and shear force diagrams. Analysis of pin jointed and rigid plane frames. Influence lines. Concrete Technology: Concept of quality control. Concrete making materials. Properties of fresh and hardened concrete. Methods of concrete mix design. Reinforced Concrete Design: Limit state design methods for flexure, shear, bond and torsion. Design of basic elements using IS: 456-2000. Design of Steel Structures: Design of tension and compression members. Design of beams and columns (including bases and foundations as per IS: 800-2007). Welded and riveted joints. Earthquake resistant design of structures

Geotechnical Engineering: Soil classification, engineering properties of soil, permeability and seepage, effective stress principle: consolidation, compaction, shear strength. Sub-surface investigation, earth pressure theories, foundation design requirements, bearing capacity, shallow and deep foundations, load capacity of piles in sands and clays.

Highway & Transportation Engineering: Highway planning, Geometric design of Highways, Testing and specifications of paving materials, Design of flexible and rigid road pavements as per IRC guidelines, Geometric design of runway & taxiways, Pavement markings & lighting, FAA method of runway & taxiway pavement design, Marshall method of mix designing, Geometric & structural design of Permanent way as per Indian Railways guidelines.

Water Resources and Hydraulics: Hydrostatics, applications of Bernoulli equation, laminar and turbulent flow in pipes, critical flow and gradually varied flow in channels, hydraulic jump, dimensional analysis and hydraulic modelling. Hydrologic cycle, rainfall, evaporation infiltration, unit hydrographs, flood estimation, Irrigation methods, Duty, delta, estimation of evapo-transpiration, crop water requirements, design of lined and unlined canals.

Environmental Engineering: Quality standards, basic unit processes and operations for water treatment. Drinking water standards, water requirements, basic unit operations and unit processes for surface water treatment, distribution of water. Sewage and sewerage treatment, quantity and characteristics of wastewater. Primary, secondary and tertiary treatment of wastewater, effluent discharge standards.

Surveying & Construction Management: Principles of surveying; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing and triangulation survey. Types of construction projects, Tendering and construction contracts, Rate analysis and standard specifications, Cost estimation of building & road projects, Project planning and network analysis - PERT and CPM.

Subject Knowledge component of Entrance Test for admission to M.E. (Structural Engineering & Infrastructure Engineering) shall consist of 60 question. There will be 24 questions from Structural Engineering, 8 questions from Geotechnical Engineering, 8 questions from Highway

& Transportation Engineering, 8 questions from Water resource & Hydraulic Engineering and 12 questions from Environmental Engineering, Surveying & Construction Management.

M.E. – ELECTRONICS & COMMUNICATION ENGINEERING/WIRELESS COMMUNICATIONS and M.Tech. – VLSI DESIGN

Communication Systems: Fourier analysis of signals amplitude, phase and power spectrum, Autocorrelation and cross-correlation and their Fourier transforms. Signal transmission through linear time-invariant (LTI) system, impulse response and frequency response, group delay and phase delay. Analog modulation systems-amplitude and angle modulation and demodulation systems, spectral, analysis of operations, super heterodyne receivers, elements of hardware realizations of analog communication systems. Basic sampling theorem. Pulse code modulation (PCM), differential pulse code modulation (DPCM), delta modulation (DM), amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK). Multiplexing time-division and frequency division, Additive Gaussian noise characterization using correlation. Probability density function (PDF), power spectral density (PSD). Signal to noise ratio (SNR) calculation for amplitude modulation (AM) and frequency (FM)for low noise conditions.

Electromagnetism Antennas: Elements of vector calculus: gradient, divergence and curl; Gauss' and Strokes' theorems, Maxwell's equations: differential and integral forms. Wave equation. Pointing vector Plane waves: propagation through various media; reflection; phase and group velocity; Skin depth Transmission lines: Characteristics impedance; impedance transformation, Smith Chart, Impedance matching pulse excitation. Modes in rectangular waveguides; Boundary conditions; Cut-off frequencies; Dispersion relations. Dipole antennas; antenna arrays; radiation pattern; reciprocity theorem; antenna gain.

Analog and Digital Circuits: Characteristics and equivalent circuits (large and small signal) of diodes, BJTs, JFETs and MOSFETs Simple diode circuits: clipping, clamping, rectifier Biasing and bias stability of transistor and FET amplifiers. Amplifiers: single and multi-stage, differential, operational; feedback and power. Amplifiers; frequency response of amplifiers. Simple op-amp circuits. Filters, Sinusoidal oscillators: criterion for oscillation; single-transistor and op-amp configurations. Function generators & wave-shaping circuits Power supplies, Boolean algebra; minimization of Boolean functions; logic gates, Digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinational circuits; arithmetic circuits, code converters, multiplexers and decoders. Sequential circuits; latches and flip-flops, counters and shift registers. Comparators, timer, multi-vibrators. Sample and hold circuits, ADCs and DACs. Semiconductor memories.

Networks: Network graphs; matrices associated with graphs, incidence, fundamental cut set and fundamental circuit matrices. Solution methods: nodal and mesh analysis. Network theorems: superposition, Thevenin and Norton's Maximum Power Transfer, WyeDelta Transformation Steady statesinusoidal analysis using phasors. Fourier series. Linear constant coefficient differential and difference equations; time domain analysis of simple RLC circuits. Laplace and Z transforms; frequency domain analysis of RLC circuits. Convolution 2 port network parameters driving point and transfer functions. State equations for networks.

Fundamentals of Computer Programming and Data Structures: Basics of Computers; Operators, Datatypes, Expression, Control Flow statement, Functions, Arrays, Strings, pointers, structures, and unions. Data types, structures, stacks, queues, and linked lists. Sorting and Searching, B-trees, B+ trees and hashing.

Microprocessors and Computer Architecture: Evolution, microcomputer architecture; Intel 8085: architecture, addressing mode, Instruction set, programming technique, Interrupt Structure; Intel 8086: architecture, concept of segmented memory, addressing modes, Instruction set, programming techniques, Interrupt Structure; Interfacing devices i.e. 8255, 8279, 8257, 8253, 8259 etc. memory and I/O interfacing, read/write timing diagrams. Basic computer

organization and Design, memory organization, I/O organization, I/O Devices, Data transfer techniques, Register transfer Language Microprogrammed control, CPU, Concept and CISC and RISC architecture.

Subject Knowledge component of Entrance Test for admission to M.E. – Electronics & Communication Engineering/Wireless Communications and M.Tech. – VLSI Design shall consist of 60 question. There will be 16 questions from Communication Systems, 8 questions from Electromagnetism Antennas, 16 questions from Analog and Digital Circuits, 12 questions from Networks, 4 questions from Fundamentals of Computer Programming and Data Structures, and 4 questions from Microprocessors and Computer Architecture.

M.E. – COMPUTER SCIENCE & ENGINEERING/SOFTWARE ENGINEERING/INFORMATION SECURITY and M.Tech. – COMPUTER APPLICATIONS

Digital Logic: Logic functions, minimization, design and synthesis of combinational and sequential circuits; Number Representation and Computer Arithmetic;

Computer Organization: Machine instructions and addressing modes, ALU and data-paths, hardwired and micro-programmed control, memory interface, I/O interfaces, serial communication interface, instruction pipelining, cache, main and secondary storage.

Programming Methodology: C programming, program control, functions, recursion, scope, binding, parameter passing, pointers, array handling, structures and unions, file handling, elementary concepts of Object Oriented, Functional and Logic Programming;

Data Structures: Notion of abstract datatypes, stacks, queues, linked lists, trees, heap, graphs;

Algorithms for Problem Solving: Tree and graph traversals, connected components spanning trees, shortest paths, hashing, sorting, searching; design techniques;

Complier Design: Lexical analysis, parsing, syntax directed translation, runtime environment, code generation, linking;

Operating Systems: Classical concepts (concurrency, synchronization, deadlock), processes, threads and inter-process communication, CPU scheduling, memory management, file systems, I/O systems, protection and security;

Database Systems: Relational model, ER diagram, relational algebra, database design, normalization, SQL, file structures, transactions management and concurrency control;

Computer Networks: ISO/OSI stack, sliding window protocol, LAN technologies (Ethernet, Token ring), TCP/UDP, IP, Basic concepts of switches, gateways and routers.

Theory of Computation: Regular languages and finite automata, context free languages and pushdown automata, Turing machines.

Subject Knowledge component of Entrance Test for admission to M.E. – Computer Science & Engineering/Software Engineering/Information Security and M.Tech. – Computer Applications shall consist of 60 question. These 60 questions will be evenly distributed among the complete syllabus of subject knowledge.