

COURSE CURRICULUM

M.Sc.ETC (Electronics & Telecommunication)

SEMESTER-I					
PAPER		MARKS		TOTAL MARKS	CREDIT
PAPER CODE	TITLE OF THE PAPER	MID TERMS	END TERMS		
MSCETC-101	Electronics Devices & Circuits	20	80	100	4
MSCETC-102	Analog & Digital Communication	20	80	100	4
MSCETC-103	Digital Electronics	20	80	100	4
MSCETC-104	C Programming with numerical Methods	20	80	100	4
MSCETC-105	Analog-Digital Lab AND C Programming Lab		100	100	4
TOTAL MARKS		80	340	500	20
SEMESTER-II					
PAPER		MARKS		TOTAL MARKS	CREDIT
PAPER CODE	TITLE OF THE PAPER	MID TERMS	END TERMS		
MSCETC-201	Electronics Communication Systems	20	80	100	4
MSCETC-202	Microprocessor & Microcontrollers	20	80	100	4
MSCETC-203	Microwave Electronics & Antenna Theory	20	80	100	4
MSCETC-204	OOPS with JAVA Programming	20	80	100	4
MSCETC-205	MPMC Lab AND JAVA Lab		100	100	4
DSE PAPERS					
MSCETC-206 E1	Communication networks	20	80	100	4
MSCETC-206 E2	Control Systems Engineering	20	80	100	4
MSCETC-206 E3	Power Electronics	20	80	100	4
TOTAL MARKS		120	480	600	28
SEMESTER-III					
PAPER		MARKS		TOTAL MARKS	CREDIT
PAPER CODE	TITLE OF THE PAPER	MID TERMS	END TERMS		
MSCETC-301	Digital Signal Processing	20	80	100	4
MSCETC-302	Optical Fiber & Satellite Communication	20	80	100	4
MSCETC-303	VLSI Design	20	80	100	4
MSCETC-304	Data Communication & Switching	20	80	100	4
MSCETC-305	DSP Lab AND Communication Lab		100	100	4
DSE PAPERS					
MSCETC-306E4	Database Management Systems	20	80	100	4
MSCETC-306E5	E-COMMERCE	20	80	100	4
MSCETC-306E6	Operating System & Android	20	80	100	4
TOTAL MARKS		120	480	600	28
Semester-IV					
PAPER		MARKS		TOTAL MARKS	CREDIT
PAPER CODE	TITLE OF THE PAPER	MID TERMS	END TERMS		
MSCETC-401	Wireless Communication	20	80	100	4
MSCETC-402	Embedded Systems Design	20	80	100	4
MSCETC-403	Soft Computing	20	80	100	4
MSCETC-404	Management For Telecommunication Professionals			100	4
MSCETC-405	Project / Dissertation & Comprehensive Viva Voce			100	4
		80	240	500	20
				2200	88

SEMESTER-I

Paper- MSCETC-101

ELECTRONIC DEVICES & CIRCUITS

UNIT-I

Semiconductor Diode:- Introduction, V-I characteristics of P-N junction Diode, Forward and Reverse characteristic, Diode current equation, effect of temperature, The ideal Diode, static & Dynamic resistance of a diode.

Diode Applications:- Introduction, clipping circuits, positive, negative, biased clampers, Practical Clamper circuit & Applications.

Bipolar junction transistor: The junction Transistor, Transistor Amplifier, Configuration of Transistor: CB, CE & CC, Static characteristics of Transistor. Transistor Biasing, Cascade and Darlington connections.

Hybrid Parameters: - h-parameters of a linear circuit, h-parameters of a transistor, hybrid equivalent circuits for CE, CB and CC configurations, The r_e transistor model, hybrid model, graphical determination of h-parameters.

UNIT-II

Field Effect Transistors:- Introduction, Types of FET, Junction FET, Formation of depletion region, operation & characteristics of IFET, Drain characteristics, Effect of Gate-to-Source voltage, Transfer char, FET parameters, comparison between FET & BJT, MOSFET, Types of MOSFET, Depletion Type, working Principle, Drain characteristics & Transfer characteristics of depletion – type MOSFET, circuit symbol, enhancement type **MOSFET:-** Working Principal, Drain characteristics & Transfer characteristics of Enhance – type MOSFET, Circuit Symbol, Advantages of N-channel MOSFETs over P-Channel, complementary MOSFETS(CMOS).

UNIT-III

Power Amplifiers :-Introduction, Difference between voltage amplifier and power amplifier, performance parameters, classification of power amplifiers, class-A amplifier, characteristics, power relationship of class-A amplifier, Transformer coupled class-A Amplifier, class-B amplifier, characteristics, power relationship of class-B amplifier, class-B push-pull amplifier, advantages and efficiency of class-B push- pull amplifier, class-C amplifier, characteristics of class-C amplifier.

UNIT-IV

Operational Amplifier :-Introduction, operational overview, op-amp supply Voltage, IC identification, Op-amp parameters, op-amp as a voltage amplifier, inverting amplifier, Non-Inverting amplifier, the voltage follower, summing amplifier, differential amplifier op-amp frequency response, frequency vs. gain characteristics of an op-amp. Op-amp applications: comparators, the integrator. The differentiator, audio amplifier, op-amp based oscillator circuits.

Integrated devices and circuits:- Introduction, Advantage & limitation of ICs, Scale of integration, Classification of ICs by structure, Comparison between different ICs, Classification of ICs by function, Linear IC, Digital ICs, IC terminology.

TEXT BOOKS:-

1. Electronic circuits by R.S. Sedha (S. Chand)
2. Electronic Devices & Circuits by M.L. Anand

REFERENCE BOOKS:

1. Electronic Devices Boyelstad.
2. Electronics Devices & Circuits by B.L. Thareja (S.Chand)

Paper- MSCETC-102 ANALOG & DIGITAL COMMUNICATION

UNIT-I

Signal analysis: Introduction, Signal classification, Singularity function, Representation of signal, Trigonometry Fourier series, Properties of continuous- time Fourier series, Properties of Fourier transform, Fourier transform of periodic function, Convolution, Parseval's theorem , Correlation between wave forms, Auto correlation, cross correlation.

UNIT-II

Amplitude Modulation System: Introduction, Spectrum of AM wave, Modulation Index, Power contain in AM wave, Generation of AM signal(Square Law Diode Modulation), Detection of AM wave(Linear Diode Detector), Concept of DSB-SC signal, Generation(Balanced modulator using diode),concept of SSB-SC signal, Generation(Frequency discrimination method),Concept of VSB-SC signal. Block diagram of AM Transmitter and Receiver.

UNIT-III

Frequency Modulation: Concept of Angle modulation, Phase modulation, Frequency modulation, Frequency deviation, Spectrum of FM signal, Bandwidth of FM, Narrow band and Wide band FM, FM generations(Direct & Indirect method), FM detection(PLL Detector).Pre-emphasis & De-emphasis. Comparison between AM, FM and PM.

UNIT-IV

Sampling Theory & Pulse Modulation: Introduction, Sampling Theorem, Nyquist rate & Interval, Signal reconstruction, Aliasing, Sampling technique (Instantaneous & Natural sampling), Pulse amplitude modulation (PAM), Pulse width modulation(PWM), Pulse position modulation(PPM), Generation, Detection, Advantage & Disadvantage. Multiplexing, TDM & FDM, Concept of Quantization, Pulse code modulation(PCM), Block diagram of PCM transmitter &Receiver, bandwidth of PCM system,
Digital Modulation Technique: Introduction, Digital Modulation Format, Generation & Detection of ASK BPSK, BFSK, FSK, PSK, QPSK.

TEXT BOOKS:-

1. Communication System(Analog & Digital) by: Sanjay Sharma.
2. Principles of communication By: Taub Schilling
3. Analog & Digital Communication by: B.P. Lathi.

REFERENCE BOOKS:-

1. Communication System by: Singh & Sapre.(TMH)
2. Electronics Communication System by: Kenady & Davis(TMh)
3. Principle Of electronics devices and circuits, by:Schand.

UNIT-I

Analog and digital signals, Logic gates, Boolean algebra, DeMorgan's Law, Standard and K-map representation of logic functions, Simplification of Logical functions Using K-map, minimization of logical function specified in Minterms/Max terms, Don't care condition, NAND & NOR DTL Gates, Modified DTL Gates, TTL.

UNIT-II

Combinational circuits: Binary adder, Binary subtractor, Digital comparator, Parity checker/generator, Encoder/Multiplexer, Decoder/Demultiplexer, Code Converters, BCD-to-7-segment Decoder/Driver.

Flip Flops: Clocked S-R Flip Flop, J-K Flip flop, Master slave Flip Flop, T and D Type Flip Flop, excitation table of Flip Flop.

UNIT-III

Analog to Digital and Digital to Analog converters, **Sequential circuits:** Ripple counter, Synchronous counter, applications of counters, Shift register, state table, state diagram, state assignments & reduction.

UNIT-IV

TTL & CMOS logic families, **Semiconductors memories:** 1 bit-memory cell, memory organization and operation, classifications and characteristics of memories, ROM, 2-dimensional addressing of a ROM and their applications, elementary idea of RAM, EPROM and EEPROM, Introduction to FPGA.

TEXT BOOKS:-

1. Modern Digital Electronics, 3rd edition by R.P.Jain, (TMH)
2. Digital Design by M.Mano (PHI)

Reference Books:

1. A TextBook Of Digital Electronics By: SChand
2. Computer organization and architecture designing for performance By w.stallings.

Paper- MSCETC-104 'C' PROGRAMMING WITH NUMERICAL METHODS

UNIT-I

Program structure, Key words, Variable, Constant, Identifier, I/O statements, Escape Sequence, Preprocessor, Macro, Storage Class of Variables.

Operators, Conditional statements(If, If-Else, Nested If Else, Else If Ladder, Switch) & Looping(While, Do-While, For).

Array(One & Two Dimensional) , Pointer, Pointer to Array, Function(Structure, Call By value, Call By Reference, Recursion), Pointer to Function, String(Introduction, Storing Process, Various Operation in String), Structure, Pointer to structure, Union.

Unit-II

High Speed Computations and Errors: Introduction, Mathematical Preliminaries, Accuracy of Numbers, Chopping and Rounding Off, Errors, Types of Errors, General Error Formula, Error Numerical Computations, Error in series Approximation, Floating Point Representations, Floating Point Arithmetic, Error Propagation.

Solution Of Algebraic and Transcendental Equations: Bisection Method, Iteration Method, Regula-False Method, The Secant Method, Newton-Raphson Method.

System Of Linear Algebraic Equations: Matrix Inversion Method, Gauss Elimination Method, Gauss Elimination method with pivoting, Ill-Conditioned Equations, Iterative Refinement of the Solution Obtained by Gauss-Elimination Method, LU Decomposition Method, Gauss-Jordan Elimination method, Iterative Methods, Jacobi Iteration Method, Gauss-Seidel Iteration Method.

Unit-III

Interpolation With Equal Intervals: Introduction, Newton Gregory Forward Interpolation Formula, Newton-Gregory Backward Difference Interpolation Formula, Error in the Interpolation Formula.

Interpolation with Unequal Intervals: Divide Differences, Properties of Divided Difference, Newton's General Divided Difference Formula, Error in Newton's Divided Difference Formula, Lagrange's Formula for Unequal Intervals, Different Forms of Lagrange's Interpolation Formula. **Numerical**

Differentiation: Introduction, Derivative Using Newton's Forward Interpolation Formula, Derivatives Using Newton's Backward Interpolation Formula.

Unit-IV

Numerical Integration: A General Quadrature Formula for Equidistant Ordinates, Trapezoidal Rule, Simpson's One-third Rule, Simpson's Three-eighths Rule, Boole's Rule, Weddle's Rule, Romberg Integration, Euler-Maclaurian Formula, Gaussian Quadrature Formula.

Numerical Solution Of Ordinary Differential Equations: Taylor's Series Method, Picard's Method of Successive Approximations, Euler's Method, Euler's Improved Method, Modified Euler's Method, Runge-Kutta Method, Predictor-Corrector Methods.

Text Books:

1. Programming in ANSI C by Balaguruswamy (Unit-I & II)
2. Computer Based Numerical & Statistical Techniques by Dr. Santosh Kumar. (Unit-III, IV & V)

Reference Books:

1. Working with C By Y. Kanetkar
2. Computer oriented numerical methods by V Rajaraman

Paper- MSCETC-105 ANALOG- DIGITAL LAB AND ‘C’ PROGRAMMING LAB

(Any 10 Lab Assignments To Be Done As Decided By The Department)

ANALOG & DIGITAL LAB

1. Study of different logic gates.
2. Study of different Flip flops.
3. Study the characteristics of diodes.
4. Study the characteristics of BJT amplifiers.
5. Study the Characteristics of MOSFET.
6. Study the Characteristics of Power Amplifiers.
7. Study the characteristics of OP-Amps.
8. Study of Amplitude Modulation and Demodulation
9. Study of AM & calculation of modulation index
10. Study of Frequency Modulation and Demodulation
11. Study of Pulse Amplitude Modulation
12. Study of Pulse Width Modulation
13. Study of Pulse Position Modulation
14. Study of TDM, FDM
15. Study of Pulse Code Modulation
16. Study of generation & Detection of DSB-SC signal.
17. Study of generation & Detection of SSB signal.
18. Generation of narrow FM using balance modulator.
19. Direct method of generating wide band FM signal.
20. Study of generation & detection of ASK,FSK,PSK & BPSK signals
21. Study of generation & detection of DPSK,QPSK & MSK signals.

‘C’ PROGRAMMING LAB

1. Programs using console I/O and standard I/O routines
2. Programs illustrating Operators
3. Programs illustrating escape sequences
4. Programs illustrating storage class.3
5. Programs for conditional statement “if”, “if-else” and “nested if-else”
6. Programs for control loop “while”
7. Programs for control loop “do-while”
8. Programs for control loop “for”
9. Programs for switch-case concept
10. Programs for goto and continue and break concepts
11. Programs using one dimensional array
12. Programs using two dimensional array
13. Programs using array of characters
14. Programs using pointer
15. Programs using pointer string
16. Programs using pointer to array
17. Programs using function concepts
18. Programs using pointer to function
19. Programs using union
20. Programs using structure

SEMESTER-II

Paper- MSCETC-201

ELECTRONICS COMMUNICATION SYSTEMS

UNIT – I

Radio Transmission system -Introduction, AM Transmitter, Broadcast transmitter(Block Diagram & Function of each block i.e Master Oscillator, Buffer amplifier, Harmonic Generators), Block diagram and function of Single sideband Transmitter, Block diagram of Frequency modulated Transmitter and function of each blocks, FM Stereo Transmitter, Pre-emphasis circuits.

UNIT – II

Radio Reception System:- AM Broadcast receivers: RF amplifier, Image signal frequency, IF amplifier, Detector, Automatic volume control, SSB receivers, Frequency modulated receivers, Stereo FM Receiver, measurement of receivers performance: Selectivity, Sensitivity, Fidelity.

UNIT – III

Digital TV System- Merit of digital System, Fully digital television system, digital television signals, digitized video parameters, digital video hardware, transmission of digital TV signals, bit rate reduction, digital TV receiver, video processor unit, audio processor unit.
Closed circuit television system (CCTV), high definition television system (HDTV).

UNIT-IV

Radar system- Introduction to Radar, Basic concepts, Advantages, limitations, applications, Block diagram of a simple radar, classification (continuous wave and pulsed radar). Simple form of radar equation, radar frequencies, Prediction of range performance, minimum detectable signal, receiver noise, pulse reception, frequency and range ambiguities, antenna parameter ,Doppler effect, system losses and propagation effects.

TEXT BOOKS:-

1. Principles of communication Engg. By Singh and Chhabra, SChand.
2. Advanced Communication System, by Wayen Tomasi
3. Michael Robin& Michael Poulin, Digital Television Fundamentals, Mc Graw Hill
4. Television Engineering and video systems, by R.G.Gupta, TMH, NewDelhi
5. Introduction to Radar Systems,Mc Graw Hill,Kogakusha Ltd.

REFERENCE BOOKS:-

1. Electronic Communication systems by Kennedy & Davis.
2. Monochrome & color TV. By R. R. Gulati
3. Microwave & Radar Systems – by A.K. Maini.
4. Television and video engineering ,By- M.Dhake. TMH, NewDelhi
5. Microwave & Radar Engineering – by M. Kulkarni

UNIT-I

Eight-bit Microprocessor (Intel 8085): Introduction, Applications, Basic block diagram, Speed, Word size, Memory capacity, Classification of microprocessors, Features, Architecture -block diagram, pin description of microprocessor 8085, General purpose registers, flags, stack pointer, program counter, types of buses. Multiplexed address and data bus, generation of control signals, Basic interfacing concepts, Memory mapped I/O and I/O mapped I/O. Interrupts in 8085.

UNIT-II

Instruction set: Addressing modes. Data movement instructions, Arithmetic, increment & decrement instructions, logic instructions, branch instruction, Stack operations, Subroutine ,call and Return, Program control instructions, Assembly language programming. Instruction cycle, machine cycle, T- states, time delay. Delay loops, use of counters, timing diagrams.

Sixteen bit Microprocessor (Intel 8086): Internal organization of 8086, Signal descriptions, Physical memory organization, Bus Interface Unit (BIU), Execution Unit (EU), **Instruction sets:** Data movement instructions, Arithmetic and logic instructions, Program control instructions . Assembly language programming.

UNIT-III

Microcontrollers(Intel 8051): Basic block diagram, comparison of microcontroller with microprocessors, comparison of 8 bit, 16 bit and 32 bit microcontrollers. Microcontrollers, Intel 8051 microcontroller architecture. , key features of 8051, pin diagram, memory organization, Internal RAM memory, Internal ROM, Special purpose/function registers.

Interrupts – IE, IP, time flag interrupts, serial port interrupt, external interrupts, software generated interrupts.

UNIT-IV

8051 Addressing modes and Instruction set: Addressing modes, Data transfer instructions, internal data move, external data move, code memory read-only data move, Push and Pop and data exchange instructions. Logical Instructions, byte level logical operations, bit level logical operations, rotate and swap operations. Arithmetic Instructions, flags, incrementing and decrementing, addition, subtraction, multiplication and division, decimal arithmetic, simple programs in assembly language.

TEXT BOOKS:-

1. Microprocessor by M.Rafiqzaman
2. Microprocessor architecture and system design by R.S Gaonkar
3. Microcontroller 8051 by Mazidi

REFERENCE BOOKS:-

1. Advanced Microprocessor & Peripherals by Ray & Bhurchandi
2. Fundamentals of Microprocessor and its application By-A K Chhabra
3. A Key to Program microcontroller System By- S Chand

Paper- MSCETC-203 MICROWAVE ELECTRONICS & ANTENNA THEORY

UNIT-I

Introduction to Microwave, Features, Advantages & Applications of Microwaves, Maxwell's Equations from Ampere's and Gauss's Laws. Maxwell's Equations in Differential and Integral forms; Transmission Line Theory.: Introduction , Characteristic Impedance, Propagation Constant, Reflection Constant, Standing Wave Ratio, VSWR, Impedance Matching, Stub Matching

UNIT-II

Semiconductor Microwave Tubes:- Klystrons : (Two cavity, reflex), magnetrons

Semiconductor Microwave Devices:- Introduction, varactor diodes : construction, equivalent ckt & applications, parametric amplifier, PIN diode : operation & applications, schottky barrier diode, tunnel diode, Gunn diode..

UNIT-III

Radio wave Propagation : Introduction, Radio Links, EM wave Propagation , Mechanism of Propagation, vertical & Oblique incidence- Critical Frequency & Critical Angle, Skip distance, skip zone, & multiple Hop Transmission, Fading.

Waveguides (single line): types of wave guides , propagation of waves in rectangular wave guide , propagation of TEM waves, TE and TM modes, propagation of TM waves in rectangular wave guide , Boundary conditions , Guide wavelength , Group velocity and phase velocity, expression for phase velocity and group velocity, propagation of TE waves in a rectangular wave guide.

UNIT- IV

Antennas : Physical Concept of radiation from an antenna. Wave equations in terms of Potential Functions. The Concept of retarded Vector Potential . Hertzian Dipole: Near Zone Fields, Radiation Fields, Radiation resistance, Directive gain and Directivity. A Magnetic Dipole. A Short dipole Antenna. The Half wave Dipole Antenna. Monopole Antenna. Antenna types(Horn, Helical, Yagi, disc).

TEXT BOOKS:-

1. Electromagnetic Field Theory, Fundamental by B. S. Guru & Huseyn
2. Principles of Electromagnetics ,By-Matthew N.O.Sadiku, Oxford

REFERENCE BOOKS:

- 1 Fields & Antenna Theory by J.D.Krauss
2. Electromagnetic waves and Radiating Systems By- E. C. Jordan & K. G. Balmin,
3. Fundamentals of microwave and Radar engineering By-K.K Sharma S.Chand.

Unit-I

Introduction to Java: Basics of Java programming, Data types, Variables, Operators, Commandline argument, Control structures including selection, Looping, Math class, Arrays in java.

Unit-II

Objects and Classes : Basics of objects and classes in java, Java methods, Methods and objects Constructors, Overloading, Finalizer, Visibility modifiers, , Inbuilt classes like String, Character, StringBuffer, Scanner class.

Unit-III

Inheritance and Polymorphism : Inheritance in java, Super and sub class, Overriding, this reference, Object class, Polymorphism, Dynamic binding, Abstract class, Interface in java, Package in java.

Multithreading in java : Multithreading concept, Thread life cycle and methods, Runnable interface, Thread synchronization,

Exception handling: Exception handling with try-catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.

Unit-IV

Event and GUI programming and Applet: Event handling in java, Event types, Mouse and key events, GUI Basics, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing.

TEXT BOOKS:

1. Java Programming :A Primer By E.Balagurusamy(4th/5th edition) TMH
2. Complete Reference Java By Schildet TMH
3. Core Java By C.Xavier Scitech Publication

REFERENCE BOOKS:

1. Programming in Java By- S Chand
2. Learn Object Oriented Programming using JAVA. BY. S.Chand
3. An UML Based core java for beginners . By S Chand.

Paper- MSCETC- 205 MPMC LAB & JAVA LAB

(Any 10 Lab Assignments To Be Done As Decided By The Department)

MPMC LAB

1. Assembly language programming with 8085 microprocessor
 - a) Program to transfer a block of data
 - b) Program for multibyte addition,
 - c) Program for multibyte subtraction
 - d) Program to multiply two 8-bit numbers
 - e) Program to divide a 16-bit number by 8-bit number
 - f) Program to search a given number in a given list
 - g) Program to generate terms of Fibonacci series
 - h) Program to find minimum and maximum among N numbers
 - i) Program to find the square root of an integer
 - j) Program to sort numbers in ascending /descending order
 - k) Program to verify the truth table of logic gates
2. Assembly language programming with 8086 microprocessor
 - a) Program for addition
 - b) Program for subtraction
 - c) Program for multiplication
 - d) Program for division
3. Assembly language programming with 8051 microcontroller
 - a) Program to find the sum of N 8-bit numbers
 - b) Program to find the subtraction of 8-bit numbers
 - c) Program to find largest of N numbers
 - d) Program to find smallest of N numbers

JAVA LAB

1. Programs to define a structure of a basic JAVA program, data types, variable, operators, commandline, array
2. Programs to define control structure and looping.
3. Programs to define class, methods and objects, string buffer, scanner class
4. Programs to define constructors and method overloading.
5. Programs to define inheritance, to show the use of method overriding and this.
6. Programs to demonstrate Interface and Packages.
7. Programs to demonstrate Multithreading and Exception Handling.
8. Programs to demonstrate Event handling
9. Programs to demonstrate GUI Basic components like Buttons,
 - a. Check Boxes, Radio Buttons etc.
10. Programs to demonstrate Applet and Swing

Paper- MSCETC-206E1 COMMUNICATION NETWORKS

UNIT-I

Fundamentals concepts:-Components & Network architecture of Broadband communication system. Cable broadband data network architecture, Importance & Future of broadband telecommunication.

internet based network:- Internet protocol suite, IPv6, applications & services, voice over IP, Internet security.

intranet & extranet:- Overview, Intranet Technology, Extranet Technology,. Topology model, Intranet & Extranet applications.

UNIT-II

Networking technologies:- X.25 Technology, Frame relay, Frame relay vs.x.25, Frame relay applications, Fiber channel Technology & topologies, classes of services, Benefits and applications.

SONET- Signal frame components, topologies advantages applications, and disadvantages, Introduction to SDH.

UNIT-III

Virtual Private Network:-Introduction, types, general architecture, advantages & disadvantages of VPN, VPN security issues.

ISDN & BISDN- ISDN:- ISDN Devices & Interfaces, services, Architecture, applications.

BISDN- Interfaces & Terminals, protocol architecture applications of BISON.

UNIT-IV

ATM technology: - Introduction, Network, Service classes, applications, advantages & disadvantages.

Digital Subscriber line :- DSL system technology Future of DSL systems & Broadband systems, XDSL standards (ASDL, HDSL, VDSL, SDSL)

Cable Modem systems :- Cable modem technology, External & Internal modem, comparison between Broadband DSL and Cable modem Technology.

LAN: Physical layer & Topology, Technologies, Applications.

ATM :- Overview & Architecture of ATM. Wireless PAN, Wimax

Network Management & Security: - Network management architecture, protocol, simple Network Management protocol (SNMP)

Network Security:- Requirement, Network Threats cryptography, Firewalls, Access control Methods.

TEXT BOOKS:

1. Broadband Communication System by AKUJUOBI & SADIKU (PHI)

REFERENCE BOOKS:

2. Broadband Communication by Balaji Kumar.

Paper- MSCETC-206E2 CONTROL SYSTEM ENGINEERING

UNIT-I

Basic concepts of control system, open loop and closed loop systems, difference between open loop and closed loop systems, classifications, Mathematical model of physical systems, transfer function, block diagram algebra, single flow graph (SFG), Mason's gain formula, application of SFG to control systems. **Feed back theory::**Types of feedbacks, effects of degenerative feedback on control system, regenerative feedback.

UNIT-II

Time domain analysis: standard test signals: step ramp, parabolic and impulse signals. Time response of 1 & 1 order systems to unit step and unit ramp inputs. Time response of second order systems to unit step input. Time response specifications steady state errors and error constants of different types of control systems generalized error series method.

Concepts of stability: Necessary conditions of stability, Hurwitz stability criterion, routh stability criterion, application of routh stability criterion to linear feedback systems, relative stability.

UNIT-III

Root locus techniques: Root locus concepts, rules for construction of root loci, determination of roots from root locus, root contours, systems with transportation lag

Frequency domain analysis: Introduction ,Bode plots, Determination of stability from Bode plots, Polar plots, Nyquist Stability criterion, application of Nyquist stability criterion to linear feedback systems. Closed loop frequency response: Constant M circles, Constant N Circles constant m circles , use of Nicolas chart

UNIT-IV

State variable analysis: introduction, concept of state variables, state vector, input and output vector, general state model representation of linear time invariant, SISO and MIMO systems and their block diagram representations, state model representations of physical systems

Components: A.C Servo motor, DC servo motor, AC techo meter, synchros, stepper motor

Digital control system: introduction to digital control system, shanon's sampling theorem, signal reconstruction, transfer function of ZOH, the z-transforms of various functions, inverse z transform, properties of z-transform, solution(n) of difference equations, the pulse-transfer function of linear feedback systems.

Text Books:

1. Control Systems Engineering by L.J. Nagrath, M. Gopal, Third Edition, New Age International Publishers.
2. Modern Control Engineering by K. Ogata, PHI
3. Modern Control Engineering by D. Roy Choudhury, PHI

REFERENCE BOOKS:

1. System Dynamics and Control: Eroni Umez Erani, PWS Publishing, International Thompson Publishing Company
2. Control System, Theory & Applications by Sama_it Ghosh, Pearson Education

UNIT-1

Switch Realization: Survey of power semiconductor devices, Power diode, SCR, GTO, LASCR, RCT, SITH, BJT, MOSFET, IGBT etc., Switching losses, driver circuits, protection, cooling, application .

Controlled Rectifiers (Converters): Single Phase /Three Phase, Halfwave / full wave, half controlled /fully controlled converters with R, RL and RLE loads, Continuous and discontinuous current operations- Evaluation of performance parameters. Effects of source inductance- Power factor improvement techniques - twelve pulse converters – Dual converters.

UNIT-2

DC- DC Converters: principle of operation of buck, boost, buck-boost, Cuk, fly back, forward, push-pull, half bridge, full bridge Converters with continuous and discontinuous operation, Input & output filter design, multi-output boost converters, diode rectifier based boost converters. State space analysis of regulators.

UNIT-3

Design: Design considerations: snubber circuit, driver circuit, temperature control and heatsink, materials, windings. Design of converter and chopper circuits. Triggering circuits for converter and choppers. MMF equations, magnetic. Design of transformers and inductors.

UNIT-4

Converter Dynamics / simulations: Feedback control for converters: regulation and control problem, control principles, model for feedback, P and PI control. Non linear dynamic modeling , Control and analysis of choppers, voltage mode and current mode control. Simulation: process, mechanics, techniques, PSPICE simulator. EMI and Power Quality Problems. Power conditioning. PLL / Micro computer based converters and choppers

Texts Books:

1. M. H. Rashid, "Power Electronics - Circuits, Devices and Applications", P.H.I Private Ltd. New Delhi, Second Edition, 1994
2. N. Mohan et.al. "Power Electronics- Converters, Applications and Design", John Wiley & Sons (Asia) Private Ltd., Singapore, 1996.
3. Bimal K Bose, "Modern Power Electronics and AC Drives" PHI
4. R W Erickson and D Makgimovic, "Fundamental of Power Electronics" Springer, 2nd Edition.
5. P. T. Krein, "Elements of Power Electronics", OUP

SEMESTER-III

Paper- MSCETC-301

DIGITAL SIGNAL PROCESSING

UNIT – I

Discrete Time Signals and System : Discrete Time Signals (Elementary examples , classification : periodic and a periodic Signals energy and Power signals , Even and Odd Signals) .

Discrete Time System : Block diagram representation of discrete time systems, classification of discrete time systems time variant and time – invariant, linear and non-linear, casual and anti-casual, stable and unstable.

UNIT-II

Analysis and response (convolution sum) of discrete - time linear LTI system, Recursive and Non-recursive discrete time system. Constant coefficient differences equations and their solutions, impulse response of LTI system .

The Z transform : The Z-transform and one-sided Z-transform, properties of Z-transform , inverse of the Z-transform , Solution of difference equations.

UNIT-III

The Discrete Fourier Transform : The DFT and IDFT, relationship , Matrix relations, transformation Relationship of DFT with Z-transform , properties of DFT: periodicity, linearity, summery and time reversal of a sequence. Circular convolution, and correlation by DFT method.

Fast Fourier Transform : FFT Algorithms and processing gain, Radix – 2 FFT algorithm-Decimation –in-time (DIT) and Decimation – in frequency (DIF) algorithm, Efficient computation DFT of Two real sequences .

UNIT – IV

Design and Digital Filters:

Casually and its implication, Design of linear phase FIR filters using different windows. Design of IIR filters – Impulse Invariance Method and Bilinear transformation method.

Text Books:

1. Digital Signal Processing – Principles, Algorithms and Applications by J. G. Proakis and D. G. Manolakis, 3rd Edition, Pearson.
2. Digital Signal Processing by S. Salivahanan, TMH

REFERENCE BOOKS:

1. Digital Signal Processing – schaums Outlines series
2. DSP by Ramesh babu
3. DSP by Oppen Ham & Shaffer

Paper- MSCETC-302 OPTICAL FIBER & SATELLITE COMMUNICATION

UNIT-I

Int. to optical communication, Types and classification of optical fibers with regards to number of modes and refractive index profiles. Block diagram of optical fiber communication system. Attractive features of optical fibers. Importance & applications of optical fibers, basic laws in geometrical optics (Brewster angle, total internal reflection, concept of coherence, two beam interference), One dimensional ray equation, ray paths in homogeneous medium, Numerical aperture of optical fiber.

UNIT-II.

Optical sources: LASER Diodes, Principles of LASERS, Einstein's A, B coefficients, elementary idea about different lasers, properties and application of lasers. LED sources, principles of LEDs, characteristics, types and applications of LEDs. Optical detectors: photo detector, PIN.

Propagation characteristics in step-index optical fibers, modal analysis, Attenuation losses, dispersion in optical fibers, Bandwidth and transmission characteristics, Advance fiber design: Dispersion compensating fiber, Design optimization of single mode fibres. Coherent optical fiber communication, Modulation Techniques, Optical Amplifier EDFA.

UNIT-III:

Evolution of Satellite Technology, Communication Satellites, Satellite frequency Bands. Orbit of communication satellite -Satellite Constellation - Orbital parameters, Advantage and disadvantage of Geo stationary satellites, block diagram of satellite sub system, up link, down link, cross-links, Carrier to Noise ratios, Frequency reuse with spot beams. Path loss, ground station, simplified block diagram of earth station. Satellite multiple access methods. FDMA, TDMA, CDMA Systems,.

UNIT-IV

Antennas :Antenna patterns. Gain. Half power beamwidth. Efficiency. Sidelobe suppression CDMA, Satellite jamming, Code acquisition and tracking Rain Loss. Rain attenuation. Crane rain model. Effect on G/T. Frequency dependence Satellite applications, Mobile satellite services (GEO and NONGEO).

TEXT BOOKS:

1. G. Keiser, "Optical Fiber Communication (3rd Edition)", Mc Graw Hill International,
2. A. Ghatak and K. Thyagarajan, "Int. to fiber optics" Cambridge University press, 1998.
3. "Satellite Communication", Dennis Roddy PHI
4. Richharia, M. Satellite communication

REFERENCE BOOKS:

1. Satellite communication by Timotty Pratt.
2. Optical Fibre Communication by Senior. (PHI)
3. Satellite Communication by D.C. Agarwal.
4. Advanced Communication by W. Thomasi

UNIT-I

Introduction, Historical perspective, VLSI Design methodologies, VLSI Design Flow, Design Hierachy, Design Styles, CAD Technology. Fabrication of MOSFETS, Fabrication processes, NMOS Fabrications, CMOS n-well process, Layout Design rules, Stick Diagrams, Full Custom Mark Layout Design.

UNIT-II

MOS Transistor, Review of structure and operations of MOSFET(n-MOS enhancement type), CMOS, MOSFET v-I Characteristics, MOSFET scaling and small geometry effects, MOSFET capacitance, Modeling of MOS Transistor- Basic concept the SPICE level-1 models, the level-2 and level-3 model equations.

MOS Inverters: Basic NMOS inverters, Characteristic, Inverters with resistive load and with n-type MOSFET load. CMOS inverter and characteristics.

UNIT-III

MOS inverts: Switching characteristic and interconnect effects; Delay time definitions and calculations Inverter design with delay constraints, estimations of parasitic switching power dissipations of CMOS inverters.

Combinational MOS logic circuits, CMOS logic circuits, State Style, Complex logic circuits, Pass transistor Logic.

UNIT-IV

Sequential Logic Circuit-Introduction, SR latch, Clocked latch & Flip Flop Circuits , CMOS D latch and edge triggered flip flop.

Dynamic logic circuits: Dynamic logic, Basic principles, High performance dynamic CMOS circuits, Dynamic RAM, SRAM, Flash Memory.

System Design method, Design strategies, Concept of FPGA, Standard cell based design, design capture tools, hardware definition languages such as VHDL and packages. Xilinx (Introduction),.

TEXT BOOK:

1. VLSI – Puckneln & Eshagraine (PHI)
2. Digital Integrated Circuits- Analysis & Design – Sung Mo-Kang & Yussuf Leblebici, TMH.

REFERENCE BOOKS:

- 1 Digital Integrated Circuits: A Design Perspective- Rabey et.ai.Pearson Education.
2. VLSI design Techniques for analog and digital circuits- Geiger et.ALMcGraw Hill.
3. VHDL Language by Pery

UNIT-I

Introduction to data communication: components, data flow

Introduction to Networking: Network criteria, Physical Structure, Types of connection, physical Topology, categories of network, Internetworks and internet, Protocols and Standard, Layers in OSI Model

Analog and Digital Signals: Analog and Digital , Periodic Analog Signals, Digital Signals-bit rate, bit length , concept of baseband transmission, Analog versus Digital, Transmission Impairment

UNIT-II

Digital Transmission : Line coding, Block coding, Sampling, Transmission mode.

Analog Transmission: Modulation of Digital Data; Telephone modems, modulation of Analog signals

Multiplexing : FDM, WDM , TDM

Transmission Media : Guided Media, Unguided media (wireless)

UNIT-III

Switching: Circuit switched network, Datagram networks, Virtual circuit networks, Structure of a switch

Data Link Layer:

Error Detection and correction: Type of Errors, Detection, Error Correction, block coding, linear block codes, cyclic codes,

UNIT-IV

Data Link Control and Protocols:Framing, Flow and error Control, protocols, Stop-and-wait ARQ. Go- Back. N ARQ, Selective Repeat ARQ, HDLC,Point –to- Point Protocol

Multiple Access :Random Access, Controlled Access, Channelization.

Ethernet:IEEE Standards,Standard Ethernet,Fast Ethernet, Gigabit Ethernet

Wireless LAN: IEEE 802.11-Architecture,MAC sub layer, Bluetooth-Architecture

TEXT BOOKS :

1. Data Communications and Networking : Third Edition. Behrouz A. Forouzan Tata Mc Graw-Hill Publishing company Limited.

Reference Books:

1. Computer networks by William Stallings .
2. Computer Network by A.S. Tannenbum
3. Data Communication and Networking by DP Nagpal(S. Chand)
4. Data Communication and Computer Networks By Rajesh Agarwal (Vikash)

(Any 10 Lab Assignments To Be Done As Decided By The Department)

DSP LAB

1. Different types of Signal generation using Matlab/Labview. (both continuous and discrete.)
(Unit sample sequence, Unit step, Ramp function)
2. Linear & Circular Convolution of two sequences.
3. Finding Auto correlation of a sequence.
Finding cross correlation of 2 sequences
Finding power spectral density of a sequence .
4. Given $x[n]$, Write program to find $X[z]$.
5. Given $X[z]$, Write a program to find $x[n]$.
6. Finding the convolution of periodic sequence using DFT and IDFT.
7. Implementation of FFT (Fast Fourier Transform) algorithm
 - a. Decimation in Time (DIT)
 - b. Decimation in Frequency (DIF)
8. Design of FIR filter (lowpass, highpass,bandpass). Using windowing technique (hanning window, hamming, window rectangular window, Kaiser window.
9. Design of Half-Adder.
10. Implementation of NAND & NOR Gates.
11. Characteristic of C-MOS & N-MOS.

LAB. REFERENCE:

Digital Signal Processing a hands –on approach by Schucer C, Mohesh Chgave. (TMH)
DSP – using MATLAB by Sanjit Mitra

COMMUNICATION LAB

1. Measurement of Refractive Index profile, Numerical Aperture attenuation and dispersion in a multimode optical fiber.
2. Establishing and Testing an optical Fiber Communication Link.
3. Studt of different types of Losses in FOC.
- 4 Study of Pulse Code Modulation
- 5 Study of Time Division Multiplexing
6. Study of Frequency Division Multiplexing
7. Study of Wave Division Multiplexing
8. Study of Local Area Network (LAN)

Paper- MSCETC-306E4 DATABASE MANAGEMENT SYSTEMS

UNIT-I

Introduction:

Characteristics of Database approach, Actors on the Scene, Workers behind the scene, Advantages of using DBMS approach, Data models, schemas and instances, Three –schema architecture and data independence, Database languages and interfaces, the database system environment, Centralized and client -server architectures, Classification of Database Management systems.

Entity-Relationship Model: Conceptual Database using high level conceptual data models for Database Design, A Sample Database Application, Entity types, Entity sets, Attributes and Keys Relationship types, Relationship Sets, Roles and Structural Constraints Weak Entity Types.

UNIT-II

Relational Model

Relational Model Concepts and Constraints, Relational Database Schema ,Update Operations, Transactions and Dealing with Constraint violations, Unary Relational operations, Relational Algebra Operations from Set Theory, Binary Relational Operations, JOIN and DIVISION, Additional Relational Operations, Examples of Queries in Relational Algebra Relational Database Design Using ER-to-Relational Mapping.

UNIT-III

Introduction to SQL:

Overview of the SQL Query Language, SQL Data Definition, Basic structure of SQL Queries, Additional Basic Operations, Null values, Aggregate Functions, nested Sub queries, Modification of the Database, Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization. Database programming issues and techniques, Embedded SQL

UNIT-IV

Database Design:

Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms based on Primary Keys, General Definitions of 2nd and 3rd Normal Forms, Boyce Codd Normal Forms, Multi-valued Dependencies and IV- Normal Forms, Join Dependencies and V- Normal Forms, Inference Rules, Equivalence and Minimal Cover.

Text Books:

1. Fundamental of Database Systems By R. Elmasri , S .B. Navathe, Person Education Asia (LPE)

Reference:

1. An Introduction to Database Systems by C.J DatePearson
2. Database Management Systems by Korth
3. Database Management Systems by Majumdar & Bhattacharya(TMh)
4. Database Management Systems by Ramkrishna Geherke(MCh)
5. Database Management Systems by V.K.Jain(DreamTech)
6. Database Management Systems Leon & Leon (Vikash)
7. Database Management System: A Practical Approach By R.Chopra (S.Chand)

UNIT-I

Introduction to e-Commerce :Definition, Activities, Objectives, Components, Functions, Advantages and disadvantages, Scope, Forces driving E-Commerce, Traditional commerce Vs. E-Commerce, E-Commerce opportunities for industries, Growth of E-Commerce, e-Commerce Applications.

UNIT-II

E-Commerce Models: Business to consumer, Business to Business, Consumer to Consumer, Government to Citizen, Features and Benefits, Portal Vs. Website.

Other Models: Brokerage Model, Aggregator Model, Info-Mediary Model, Community Model and value chain Model.

UNIT-III

Electronic Payment Systems :Introductions, Special features, Types of E-Payment Systems (EFT, E-Cash, E-Cheque, Credit/Debit Card, Smart Card, Digital Tokens and Electronic Purses/ Wallets), Traditional Payments Vs E-Payment Systems, The SET protocol, SET vs. SSL, Payment Gateway, Certificate Issuance, Certificate Trust Chain.

Security Issues in E-Commerce: Security risk of E-Commerce, Types of threats, Security Tools, Cyber Laws, Business Ethics, EDI Architecture, EDI Standards, and EDI Application in business.

UNIT-IV

Applications of E-Commerce :E-Marketing, E-Customer Relationship Management, E-Supply Chain Management, EGovernance, E-Buying, E-Selling, e-Banking, E-Retailing Creation of An E-Commerce Application and Project Report based on any of the above models/modules

Text Books:

1. Ravi Kalakota, "Electronic Commerce: A Manager's Guide", Addison-Wesley Professional, Edition 2012. 2. Ian Daniel, "E-Commerce get it Right", Neuro Digital Publication, 2011.

References:

1. Dr. K. Abirami Devi & Dr. M Alagammai, "E-Commerce Essentials", Margham Publication, 2012. 2. Kenneth C. Loudon, Karol Traver, "E-Commerce 2014", Prentice Hall Publication, 2013

UNIT-I

Introduction to Operating System:

Main Functions of an OS, Measuring System performance, Process Management-Multi tasking, Multi Processing, OS as an extended machine, OS as a resource manager, Main frame OS, Server OS, Multiprocessor OS, PC OS, RT OS, Embedded OS, Smart Card OS

Computer H/W Overview: Processor, Memory, I/O Devices, Buses

UNIT-II

PROCESSES AND THREADS

Processes: Process model, Process creation, Termination, States

Threads: Thread Model, Usage, Implementing Threads in users pace and kernel, Hybrid Implementation, Pop Up Threads

IPC: Race condition, critical Region, Mutual Exclusion-Disabling Interrupts, Sleep and wake up, Semaphore, Monitor

UNIT-III

SCHEDULING: Introduction, Scheduling in batch system, batch system, Interactive system, Real time, thread schedule ,

Dead Lock: Introduction-Condition, Modelling

Memory Management: swapping and paging, Multiprogramming without swapping or paging, multi programming with partition, swapping

Virtual memory: paging, page table, inverted page table

Page replacement algorithms: optimal, not recently used, FIFO, second chance, clock, least recently, working set, Belady's algorithm

UNIT-IV

INTRODUCTION TO ANDROID: Introduction, open handset alliance, ecosystem, android version, android activity, feature, architecture, Stack Linux Kernel

ANDROID ENVIRONMENT AND CONFIGURATION: JDK, SDK, development tool, AVDs, DVM, Difference between JVM and DVM

Text Books:

1. Modern Operating System, By A.S Tanenbaum (PHI)
2. ANDROID, By Prasanna Ku Dixit(VIKASH Professional Master-Class Series)

References:

1. Operating By Silbertz & Galvin

SEMESTER-IV

Paper- MSCETC-401 WIRELESS COMMUNICATION

UNIT-I

A brief introduction to Mobile Telephony, Cellular Concept – System Design: Fundamentals: Frequency reuse, Channel Assignment, Handoff Strategies, Interferences and System Capacity, Trunking and Grade of Service; Improving coverage and capacity in Cellular Systems – Cell Splitting, Sectoring, Repeaters and Range Extension, Microcell Zone Concept.

UNIT-II

Mobile Radio Propagation: Large–Scale path loss, Ground Reflection Model, Diffraction, Scattering. Outdoor propagation Model – Okumura Model; Indoor Propagation Model: Partition losses, Log distance Path loss Model. Small Scale Fading and Multipath, factors influencing small Scale fading, Doppler Shift. Types of Small Scale Fading and their effect on received signal.

UNIT-III

Multiple Access Techniques: Introduction to Multiple Access, frequency Division Multiple Access(FDMA), time division Multiple Access(TDMA), Spread Spectrum Multiple Access(SSMA), Frequency Hopped Multiple Access(FHMA), Code Division Multiple Access (CDMA) & space Division Multiple Access(SDMA)
Various Generations of Wireless Networks.

UNIT-IV

Wireless Systems & standards: Global System for Mobile (GSM): features, architecture, channel types, Frame Structure in GSM. Signal processing in GSM, CDMA Frequency & Channel specification.

Wireless Application Protocol (WAP) : The Mobile Internet standard, WAP Gateway and Protocols, wireless mark up Languages (WML), Wireless Local Loop (WLL) : Introduction to WLL Architecture, wireless Local Loop Technologies.

Third Generation (3G) Mobile Services : Introduction to International Mobile Telecommunications

General Packet Radio Services (GPRS) : GPRS Architecture, GPRS Network Nodes.

TEXT BOOKS:

1. Wireless Communication, 2nd Edition by Theodore S. Rappaport, Pearson Publication.
2. Mobile Communication Engg., 2nd Edition by William C. Y. Lee Mc Graw Hill International Edition.
3. Mobile Cellular Communications, 2nd Edition by William C. Y. Lee Mc Graw Hill International
4. Mobile Communication, 2nd Edition by Jocken Schiller, Pearson Education.
5. Wideband Wireless Digital Communication by Andreas F. Molisch Editor Pearson Education.

UNIT-I

Introduction: Overview of embedded systems, Processor in the system, software embedded into a system, exemplary embedded system-on-chip (SOC) and VLSI circuit. Concept of Design Process in embedded systems, Challenges in embedded system design.

UNIT-II

Devices and Communication Buses: I/O devices, Advance Communication Principles, Serial protocols(I2C,CAN,FireWire,USB), wireless Protocols(IrDA,Bluetooth,IEEE 802.11), parallel Protocols(PCI Bus,ARM Bus), Multiple processes and application, Interprocess Communication.

UNIT-III

Software and Programming Concept : Processor selection for an embedded system, memory selection for an embedded system, basic architecture of a general-purpose processor, Standard software development Environment, Assembly Language Programming, High level language programming, Unified modelling language (UML) Basics.

UNIT-IV

Real Time Operating System: Operating system services, I/O subsystem, Network operating system.

Hardware and Software Co-design: Design cycle in the development phase for an embedded system, Use of software tools for development of an embedded system, Embedded system design and co-design issues in system development process.

Design Examples: Case study of an embedded system for a smart card, Case study of an embedded system for a Automatic chocolate vending machine.

TEXT BOOKS:

1. Embedded System Architecture, Programming and Design, Raj Kamal, TMH
2. Embedded System Design,By- Frank Vahid/Tony Givargis, Wiley Publication

REFERENCE BOOKS:

2. Hardware Software Codesign of Embedded System, Ralf Niemann, Kulwer Academic
3. Embedded Real time system Programming, Sriram V. Iyer and Pankaj Gupat, TMH

UNIT-I

Basic tools of soft computing-Fuzzy logic, Neural Networks and Evolutionary Computing, Approximations of Multivariate functions, Non-linear Error surface and optimization.

UNIT-II

Fuzzy Logic Systems: Basic of fuzzy logic theory, Crisp and fuzzy sets, Basic set operations. Fuzzy relations, Composition of Fuzzy relations, Fuzzy inference, Zadeh's compositional rule of inference, Defuzzification, Fuzzy logic control; Mamdani and Takagi and sugeno architectures, Applications to pattern reorganization.

UNIT-III

Neural Networks: Single layer networks, Perceptron, Activation functions, Adalinc: Its training and capabilities, Weights learning, Multilayer perceptions: Error back propagation, Generalized delta rule.

UNIT-IV

Radial basis function networks and least square training algorithm, Kohonen self-organizing map and learning vector quantization networks, Recurrent neural networks, Simulated annealing neural networks, Adaptive neuro-fuzzy information; system(ANFIS), Applications to control and pattern reorganization.

UNIT-V

Evolutionary Computing: Genetic algorithms: Basic concepts, encoding, fitness function, reproduction, Differences of GA and traditional optimizations methods. Basic genetic programming concepts Applications.

TEXT BOOKS:

1. V. Keeman, "Learning and Soft Computing", pearson Education India.
2. J.S.R. jang. C.T. SUN and E. Mizutani, "Neuro-fuzzy and soft computing".PHI Pvt. Ltd., New Delhi.
3. Fredric M.Ham and Ivica Kostanic, "Principle of Neuro Computing for Science and Engineering", Tata McGrawHill.
4. S. Haykins, "Neural networks : a comprehensive foundations". Pearson Education, India.
5. Soft computing by Mitzuani & Jang (PHI)
6. Fuzzy Logic by PAI & others (PHI)

Paper- MSCETC-404 MANAGEMENT FOR TELECOMMUNICATION PROFESSIONALS

UNIT-I :

Principles and Practices of Management: Functions of Management (planning, Organising, directing, controlling), Fayol's Principle of Management, Taylor's Scientific theory of Management.

Organizational Behaviour: Theory and concepts of Perception, Motivation, Learning, Communication, Leadership.

UNIT-II

Marketing Management: Basic Concept of Marketing, Marketing Mix (4Ps of Marketing) Sales Promotion, Product life Cycle and Marketing Strategies, Digital Marketing

Advertisement Management: Role of advertisement, Advertising Vs Consumer Behaviour, Brand Planning, Brand Promotion, Brand Positioning, Brand Equity, Brand Loyalty

UNIT-III

Managerial Economics: Principle of Demand and Supply, Elasticity of Demand, Demand forecasting, Pricing.

Financial Management: Aims and Objective of financial Management, Financial Analysis and Control, Cost-Volume -Profit Analysis, Time Value of money.

UNIT- IV

Cyber Law : Electronics (Cyber Law) Security and Privacy Issue.

Environmental Management: Fundamentals sustainable development, Implication of human Population growth.

Energy Resource Management: Fundamentals- Fossil fuels use, energy production and trade, energy balance.

TEXT BOOKS:-

1. Business Economics-By H.L Ahuja
2. Managerial Economics-By-P.L. Mehta.
3. Marketing Management- By-Philip Kotler (pearson Publication)
4. Marketing Management- S.Sherleker
5. Financial Management- I.M Pandey
6. pandey,G.N Environmental Management, Vikash Publishing House New Delhi,1997.
7. Uberoi,N.K Environmental Management,Excel Books,A-15, Naraina Phase-1,New Delhi,2000.

Paper- MSCETC-405 PROJECT/DISSERTATION & COMPREHENSIVE VIVA VOCE

A comprehensive viva voce based on Electronic and telecommunication project is to be carried out and submitted for the partial fulfilment of M.Sc. ETC.