FIRST TERM:

1. **Ordinary Differential Equations and some Special Function:** Series solutions ordinary differential equations, Legendre and Bessel function and their properties.
   - 8 Lectures

2. **Partial Differential Equations:** Second order linear and quasi-linear partial differential equations, elliptic, parabolic and hyperbolic types, boundary and initial conditions solutions of Dirichlet and Neumann problems for Laplace equation and of heat conduction problems by Fourier method, DIA lembert solution of 1-D wave equation and solution of Cauchy problem.
   - 8 Lectures

3. **Functions of a Complex Variable:** Review of complex numbers, formulae of Euler and Demoivre, analytic functions, Cauchy Riemann conductions elementary complex functions and analytic function in term of a power series, Laur series, residue theorem, contour integration.
   - 8 Lectures

SECOND TERM:

**Probability and Statistics:** Axiomatic definition of probability, laws of probabilities classical occupancy problem with illustrations, conditional, probability

- multiplication law, independence of events, Bayes rule, discrete and continuous random variables-cumulative distribution functions, probability mass function, probability density function, mathematical expectation, mean, variance, moment generating function and characteristic function, standard probability models-binomial, Poisson, exponential, Weibull, normal and long normal, sampling and sampling distribution –z, t, Chi-square and F, estimation of parameters, use of t, Chi-square and F in test significance.
  - 24 Lectures

BOOKS RECOMMENDED:

**TEXT BOOKS:**

1. Advance Engineering Mathematics by E. Kreyszig, Wiley eastern Pvt. Ltd. (India)

**REFERENCE BOOKS:**

1. Advance Engineering Mathematics by C.R. Wysle
2. Mathematics of Physics and Modern Engineering by Sckolonikoff & Redhelfer
3. Advance Mathematics for Engineers and Physicists by L.A. Pipes
202 COMPUTATIONAL TECHNIQUES

FIRST TERM:

1. **Types of Computer:** Digital, analog and hybrid, organization of a digital computer system-CPU memory, I/O devices, representation of numbers-integer and floating point arithmetic, round off errors and their propagation.

2. **Introduction to computer languages:** Assembly language, higher languages compilers, problem solving using computers algorithm, flow chart, examples, FORTRAN programming, constant and variables, arithmetic expression I/O statements, specification statement, control statements, subscribed variables, logical expression, function and subroutines, examples of programming should include numerical as well as non-numeric matrix operations, searching, sorting etc.

3. **Iterative Techniques for solution of equation:** Simple iteration scheme, Newton-Raphson method, secant method, their rates of convergence, order of errors, etc. roots of polynomial equation, Gaussian elimination, Gauss-Siedel iteration, matrix inversion by Gaussian method, computation of determinant, polynomial approximation.

SECOND TERM:

Lagrangian interpolation of polynomial, Aitkin’s methods, method, Newton’s forward difference formula, curve fitting (least square), Trapezoidal method,

Simpson’s Rule, order of errors in integrations, solutions of initial value problems, Euler’s methods, and 4th order Runge Kutta (algorithm only).

COMPUTATIONAL LABORATORY

FIRST TERM:
Familiarization with PC and DOS, preparing ASC II files using editors/word processors, system utilities, compiling and running, programme development in FORTRAN, number theoretic problems, series summation, matrix and vector operation, non-numeric data processing, searching and sorting.

SECOND TERM:
Numerical techniques finding roots of a function, quadrature, integration and solution of differential equations, interpolation and curve fitting solution of linear simultaneous equations and matrix inversions

TEXT BOOKS:
2. Computer Oriented Numerical Methods by V. Rajaram, Prentice Hall of India

REFERENCE BOOKS:
1. Elementary Numerical Analysis by S.D. Conte
2. Introductory Methods of Numerical Analysis by S.S. Shastri
3. Numerical Methods in Engineering by M.G. Salve
4. Computing for Engineering by R. T. Fennes

203 BASIC ELECTRONICS

FIRST TERM:
P-n junction, Depletion layer, Barrier potential, forward and reverse bias, breakdown voltage, piv Characteristics of p-n junction diode knee voltage, load line and opt ideal p-n junction diode, junction capacitance, zener diode

Rectifiers and filters-half wave, centre tap full wave and bridge rectifier, percentage of regulation, piv, ripple factor, C, RC, LC and PI filter, voltage double, clipping and clamping ckt voltage regulation

BJT- Introduction, basic theory of operation of PNP and NPN transistor, V-I characteristics, CB, CE and CC configuration, junction FET-introduction, theory of operation, JFET parameters JFET-amplifiers

MOSFET- Introduction, theory of operation MOSFET parameters application. Graphical analysis of BJT and FET circuits, linear models of BJT and PET Pulse and large signal models of BJT and FET

SECOND TERM:

Basic BJT and FET Amplifiers

Introductory idea of multistage and feedback amplifiers

Biasing, base bias, emitter feedback bias, collector feedback bias, voltage divider bias, load line and operating point

Integrated ckt-ideal op-amp, analysis of principle of integration simple op-amp, ckt-intro to digital integrated circuits light source –LED.

Photo detectors- Photo diode and photo transistors, thyristors-introduction to thyristors family, SCR characteristics and ratings

TRIAC- Theory of operation, characteristics and rating voltage control By SCR and TRIAC

UJT- Introduction, basic theory of operation, characteristics and structure, complementary and programmable UJT relaxation oscillator.

204 NETWORK THEORY

FIRST TERM:
1. Linear time invariant first order circuits
2. Linear time invariant second order circuits
3. Response to an arbitrary input
4. Coupling elements and coupled circuits
5. Network graphs, Tellegen’s theorem, loop and cutest analysis

SECOND TERM:
1. State equations
2. Natural frequencies
3. Network functions
4. Two-port networks
5. Definition of positive real function, testing of driving point function
6. Synthesis of one port L-C, R-C and R-L network
7. Two port synthesis and filter design

TEXT BOOKS:
1. Basic circuit theory by Douser and Kuh, Mc Graw Hill
2. Network theory and filter design by Aatre, Wiley Eastern
3. Network Analysis by Van Valkenburg

REFERENCE BOOKS:
1. Electrical Network Theory by Balbanian and Bickert, John Wiley and Sons
3. Circuit Theory by TSKV Iyer, Tata Mc Graw

IT- 205 DISCRETE MATHEMATICS AND MATHEMATICAL LOGIC

First Term:
1. Analysis of linear time invariant. (LTI):
   Discrete time system-Introduction, Properties of discrete time sequences, linear convolution
   Discrete time system response, Introduction to Z-transform, its properties and methods to find its inverse,
   Response of LTI discrete time system using Z-transform,
2. Discrete Fourier Transform (DFT):
   Introduction, DFT properties, errors and their minimization, discrete convolution and correlation,

Second Term:
3. Fast Fourier Transform (FFT):
   Matrix formulation, Signal flow graph, dual nodes. WP determination, Unscrambling of FFT, Its computation,
   flow chart and Computer Program
4. State Equation: Discrete time system, discretization of continuous time state equations.

Text:
2. Fast Fourier Transform and Application by E. Oran Brigham, PHI Edn.
3. Signals and Systems by Allan W. Oppenheim and Allan S. Will Sky, PHI Edn

IT- 206 INTRODUCTIONS TO COMPUTER AND COMPUTER ARCHITECTURE

First Term:
1. Introduction to Computer System, Computer Interconnected structure, internal and external memory, I/O operating system, CPU, Computer Arithmetic. Instruction sets, CPU structures & function

Second Term:

1. Control Unit: Micro operation, Control of CPU, Hardware implementation

Text:

2. Digital Computer Design by V. Rajaram & T. Radha Krishnan. PHI Edn

IT- 207 (a) Operating System
(b) Java Structure & Programming

Contents to be set up by respective faculty member

IT- 208 INTRODUCTION TO INFORMATION TECHNOLOGY

First Term:

1. Organization of computers, I/O devices. CD-Rom technology, date representation, Programming languages, Operating System, Disk Operating System (DOS), Unix/ Xenix, Window 95/98 and introduction to latest version, Data base Management system.

Second Term:

1. Structural query language, data communication, Networks and Network mechanisms, Advanced networking concepts, Client' Server computing and databases, IT applications, Multimedia and virtual reading, Internet and Intranet, specialized databases.

Text:

1. Information Technology by S. Jaiswal, Galgotia Publication Pvt. Ltd., ND
2. Information Technology by D.R Curtis & others. TMH, ND
INFORMATION TECHNOLOGY

3rd Year

EE 301 Introductions to Microprocessor

First Term:
- 8085 Architecture
  * Introduction, Pin function, Internal Organization,
- 8085 Programming
  * Introduction, Programming model, Instructional timings.
- 8085 Interrupts:
- 8085 Interfacing with memory:

Second Term:
- 8085 Interfacing with 1/0
  * 1/o ports, Data transfer schemes, supporting chips.
- 8085 Application:
  * Introduction, System Design examples, Development aid
  - Introduction to 8086
  - Architecture, Introduction set

Text Books:

Introduction to Microprocessors, by A.P. Mathur

Reference Books:

Microprocessor Architecture programming and Application with the 8085/8080 A
By R.S. Gaonkar

EE 302 Instrumentation - I

First Term:
1. System of Unit: Fundamentals and derived unit, system International (S.I) units, Dimension.
2. Potentiometer: D.C Potentiometer. A.C. potentiometers, Co-ordinate and polar types and their application
3. Measuring Instruments: Operation and construction of galvanometer, (D.C. and A.C.) Ammeters and voltmeter (Moving iron, moving coil and thermal) and wattmeter (Dynamometer and induction types) Induction type energy meter, testing and compensation, Frequency-meter (Electrical resonance type), signal phase and power factor meters, mugger and multi meters
4. Instruments transformers: - current and potential transformers, Ratio and phase angle errors.
6. High voltage measurement: - Surge and impulse test and oil testing set.

Second Term:
7. Measurement of Induction and capacitance :- A.C. bridges, Maxwell wine Anderson and shearing bridges General equation and vector diagram under balanced conditions, Errors and precaution in bridge measurement, Wagner’s earth connection and shielding of bridge measurement, Wagner’s earth connection and shielding of bridge elements.
8. Magnetic measurement: - Ballistic galvanometer flux meters. Measurement of flux by Ballistic galvanometer and flux meters, Determination of B-H curve and hysteresis loop, Separation of hysteresis and current losses by Lloyd fisher square


10. Measurement of No-electrical Quantities: - Primary sending elements, classification and selection transducers. Displacement transducers, strain gauges Temperature transducers and photoelectric transducers, Measurement of strain, temperature and pressure

Text Books:-

1. Electrical Measurement and Measuring Instruments- Rajendra Prasad, Khanna Publisher, Delhi.

**EE 304 Signals and System**

First terms:-

1. SIGNALS & THEIR REPRESENTATION:-
   - Basic Continuous time Signals
   - Basic discrete time signals
   - Linear time invariant Signals
   - Random Signals

2. INTRODUCTION TO LINEAR SYSTEM:-
   - Introduction
   - Linear system from a physical view point
   - Linear system from a mathematical view point

3. FOURIER SERIES & TRANSFORMS:-
   - Fourier series expansions
   - Symmetry conditions
   - Exponential from of Fourier series
   - Fourier Integral &Fourier Transform
   - Analysis by Fourier Methods
   - Gibb’s Phenomena
   - Concept of phase & Frequency spectrum

4. LAPLACE TRANSFROM:-
   - Introduction
   - Conversion from F- transform to L transform
   - L- Transform of some important functions
   - The gate function
   - L- Transform of periodic function
   - L- Transform of operations

5. INVERSE LAPLACE TRANSFORMATION
   - Introduction
   - Heaviside’s expansion Theorem
   - Analysis of system response
   - Initial & Final value Theorem
   - The convolution integral
The superposition integral
Inverse L-transformations of some irrational functions

Second Term:

6. SAMPLED-DATA SYSTEM & THE Z-TRANSFORMATIONS:
   - Introduction
   - The Z-transformations
   - Z-transformations of some important functions
   - The shifting Theorem
   - The initial & final value Theorem
   - Introductions to difference equations
   - Pulse transfer functions

7. MATHEMATICAL MODELLING OF PHYSICAL SYSTEM:
   - System response & transfer function
   - Block diagram representations
   - Rule for block diagram transformations
   - Signal flow graph
   - Mason’s gain formula & its applications

8. STATE VARIABLE REPRESENTATION:
   - Concept of state, state variable & sata model, Different between state variable & phase variable, state model for linear continuous time system, Transition and resolvant matrix, Solution of state equations.
   - Eigen Value & vectors

9. RANDOM SIGNALS:
   - Introduction
   - Properties
   - Correlation of signal (Auto-correlation & cross-correlation), Gaussian probability density function-
   - Gaussian noise, white noise

10. NOISE:
    - Introduction & Type of Noise
    - Noise figure, S/N ratio, Calculation of noise figure

BOOKS-TEXT/REFERENCE

2. Circuit & System Analysis- By A. Papoulis
4. Communication system – By Hawkins
5. Signals and Systems – By Oppenheim and Will Sky Prentice Hall
6. Control System Engineering – By Nagrath & Gopal

First Term:

- Review of signals and system. Fourier Transforms.
- Introduction to communication system
- Generation & Demodulation of AM signals including DSB-SC SLB-VBR
- Frequency Division Multiplexing (FDM)
- Super-heterodyne & communication receivers.
- Generation and Demodulation of FM/PM signals
- Noise in AM / FM system (briefly)
Second Term:-
- Pulse Modulation System, Sampling theory
- Generation & demodulation of PAM PWM & PPM
- Time division multiplexing (TDM)
- Antenna Transmission line & wave Propagation (an introduction)
- Application -(System description in brief)
  - AM/FM/Radio broadcasting & reception system
  - TV Broadcasting & reception system including colour TV
  - Line communication (Telegraphy)
  - Telephony system including PBX & electronic exchanges
  - Microwave communication links
  - Satellite communication system
  - Radar, Navigation & civil aviation communication systems
  - Power on line carrier communication system.

Text:-
1. Communication System by Kennedy
2. Electronics Communication by Rowdy Coleen, PHI

**IT- 301 Computer Networking**

First Term:-

Networking and its concepts, Advantage and disadvantages of networking, networking topology and mechanism, Circuit switching, data communication Interface (FDDI), Transmission media, multiplexing, error detection, Ethernet (Gigabit Ethernet), High speed networking, relay, ISDN, Type of networks- LAN, its types and protocol, physical layer, Lan Hardwares, LAN extenders, bridge routers, LAN, Software, digitization of network, Wireless Lan Technology, Virtual private network.

Second Term:-

Metropolitans Area Network (Man) and Wide Area Network (Wan), Integrated server network, ATM and Sonnet/ SDE, Networking and Internetworking devices, An overview on TCP/IP, Networking layer, Transport layer, Application layer services, upper OSI layer.

Text:
1. Data communication and Networking by S. Jaiswal, Galgotia Publication Pvt. Ltd., ND
2. ‘O’ level, elective I Module MI.1 Information Technology by V.K. Jain, BPB Publication, ND

**IT- 302 Neural Networking And Application**

First Term:-

Introduction, learning Process, Signal layer perceptions, Multi layer perceptions, Radial basis functions network, support vector machine.

Second Term:-
Committee machines, Principal component analysis, Neuro dynamics & programming, dynamically reverent networks
Text:

1. Neural Networks By Somen Hawkins, Addison Wesley Longman Pvt. Ltd., ND
2. Neural Networks and genetic algorithm By Donikar Andrej Stella Nigel, Springer Verlog Publications
3. Neural Networks modeling & control of dynamic system By M. Niggard, Spring Verlog Publication

IT- 303 Elective I

EL 1 ELECTRONIC BANKING AND COMMERCE

First Term: - Electronic Commerce and its application, Data Communication. PUS and networking, Advanced networking concept, Technologies in E- Commerce system.


Text: -
1. E Commerce- By Jaiswal Galgotia Publishing Pvt. Ltd. ND
2. Trends in E – Commerce- By Lamosdorf, Spinger- Verlog

IT- 304 Elective II

EL 2 INFORMATION THEORY

First Term: -

1. Random Process: - Description of random process, ensemble average & correlation function. Stationary and erotic processes, Gaussian Process
2. Random signals: - Signal power and time average. Power spectrum superposition & modulation, filtered random signals

Second Term:-

1. Information measure, Entropy and information rate, coding for a discrete memory loss sources with memory.
2. Information Transmission on discrete Channel: - Mutual Information, Discrete channel capacity, coding for binary symmetric channel.
3. Continuous channels & system comparison: - Continuous information Continuous channel and its capacity, Ideal communication system, Systems Comparison

INFORMATION TECHNOLOGY

4th Year

IT – 401 Satellite Communication

First Term:
Satellite Orbit, Kepler's Law, Synchronous, sub synchronous and non-synchronous type satellite, characteristic of radio system, Method of Modulation, Noise consideration, Remote Area communication through satellite, Insat system and their characteristics,

Second Term:
Attitude control, Satellite station keeping, Limits of visibility, Frequency plan and polarization, Transponders, uplink and downlink, power budget calculation, multiple access method, brief introduction of digital communication by satellite.

Text:-
1. Electronics Communication by Rowdy and Cullen, PHI, ND

IT-402 Information Protection and Security

First Term:
Introduction, Cryptography, Conventional encryption and message confident ability, Public key cryptography and authentication

Second Term:

Text:
2. Internet Security Protocols By Vyless Black, Addition Wesley Longman, ND
3. Information Security
   By Dawda, Springer - Verlog (1998 Edn)

IT-403 DIGITAL SIGNAL PROCESSING

FIRST TERM:
Discus time signals and system, Stability and consality of linear ship invariant system, Z-transform, Flow graph and representation of digital filters, Effect of quantization of parameters, Digital filter design.

SECOND TERM:
FIR filter: - Design based on analog filters, input invariance and bilinear transformation approach, Computer aided design.
FIR filters: - Design windows, Computer aided design; Computation of DRT and FFT algorithm, Effect of finite register length in digital signal processing
TEXT BOOK:
Digital Signal Processing By Alan V. Oppenheim and Ronald W. Schafer, Prentice Hall of India

**IT - 404 MULTIMEDIA SYSTEMS**

**FIRST TERM:**
Introduction, Production and evaluation, Hardware involved operating system and software text. Graphics, Digital Audio, Digital Video and animation product designer

**SECOND TERM:**
Multimedia and the Internet, The multimedia development team, the multimedia development process
Internet :- Internet organization and its versions, Internet Application, Getting information on internet, Internet service providers, its types & protocol, Network and network interface concepts, Addressing in Internet, Management of Internet, Brief Introduction to service providers.

**TEXT:**
1. Multimedia Technology & Application by David Hillman, Galgotia Publishing Pvt. Ltd

**REF.:** 'O' level, Elective I - Module M 1.1 by V. K. Jain, BPB Publication

**IT- 405 BROADBAND SYSTEM - TO BE FRAMED BY TEACHER CONCERNED.**

**REF.:**
1. Satellite system for personal and broadband communication By Lutz, E. Werner, M. Springer Verlog Publication. (Zero Edn.)

**ELECTIVES III, IV AND V**

**EL-7 MANAGEMENT INFORMATION SYSTEM (MIS)**

**FIRST TERM:**
Evolution by management information system (MIS), Concept of information system, structure of MIS, Data processing, Flow charting

**SECOND TERM:**
Foundation of MIS, Information Technology, A managerial overview, Business application of Information Technology, Managing information Technology
TEXT:
1. Management Information system and Computer application by P. Mohan, Himalaya Publishing House, ND

EL-8  ADVANCE MICROPROCESSOR

FIRST TERM:
8086 Architecture, 8086 programming, 8086 interfacing with memory and peripherals, Introduction to 186/286/386/486 (with emphases on fechin)

SECOND TERM:
Bit inter processor, Rise processor, Troubleshooting and development aids. Application of inter processor

TEXT:

REFERENCE:
2. Introduction to Microprocessors by A.R Mathur
3. Introduction to Microprocessor by B. Ram.

EL-9  COMPUTER HARDWARE (I/O DEVICES AND MACHINE HARDWARE)

FIRST TERM:
External devices, I/O requirements, Modes of control, Modes of transfer, Direct memory access (DMA), Brief description of I/O devices.
Interfacing I/O devices :- Peripheral I/O instructions, input interfacing, I/O interfacing using decoders, interfacing output delays, Hardware aspect of input device interface, memory mapped I/O safety control using memory mapped I/O, Testing and troubleshooting I/O interface circuits.

SECOND TERM:
Computer system; Organisation, Bus organisation, instruction Control Logic Design :- Control organisation, Hard wired control with examples (Two examples), Micro programme control, processor unit control, PLA control, Micro programme Sequencer, Micro program med CPU organisation.
Computer Design: - System configuration, Computer instruction, Timing and control, Execution of instructions, design of computer registers, design of computer control.

TEXT:
2. Digital logic and Computer design By M. Morris Mano, PHI

**EL-10 WIRELESS MOBILE COMMUNICATION:**

**FIRST TERM:**
Introduction to wireless Cellular digital PCS- Mobile radio, Speech coding for wireless system, application, Radio propagation and cellular Engineering concept, digital modulation-demodulation (Modem) technique.

**SECOND TERM:**
Coding, Error correction and detection, spread spectrum system, Diversity technique for mobile / wireless radio systems, personal mobile Satellite communication, Cellular and wireless communication Engineering.

**TEXT:**
1. Wireless Mobile Communication by K. Feher, PHI, ND

**EL-11 VIDEO CONFERENCING TECHNOLOGY**
To be framed by teacher concerned.

**EL-12 FINANCIAL INFORMATION SYSTEM**
To be framed by teacher concerned.

**EL-13 PARALLEL COMPUTING**

**FIRST TERM:**
Introduction, Fundamental decomposition, System Composition, Operating Principles

**SECOND TERM:**
Transient objects, class ensembles, system abstractions, discussion

**TEXT:**
1. The Logic design of Parallel operating System by Wolfgang Schroder - Preikschot, Prentice Hall Publication
2. Parallel and Real Time System by Sharda, Springer Verlog Publication

**EL-14 DATA ACQUISITION SYSTEM**

**FIRST TERM:**
Introduction, Resolution and accuracy, number of channels and sampling rate, Radio metric conversion, logarithmic compression, Signal channel data acquisition system, Preamplifiers and filtering, multi-
channel data acquisition system, multiplexing of outputs of sample and hold, multiplexing after A/D conversion, multiplexing low level data, Present trend in data acquisition system.

SECOND TERM:
Signal Conditioning: -Excitation system, amplifiers, Sample and hold circuits, multiplexers-TDM and FDM, MSI, ICS as multiplexer, Design of high order multiplexer using low order multiplexer ICS, AND conversion, address decoders, Example of such ICS. Telemetry: -AC telemetry, modulation in telemetry, pulse and radio telemetry, signal recovery, signal averaging, signal correlation, Signal coding, Data Processing, Display and recording technique in biomedical systems. Role of telemetry in Biomedical System

TEXT:
1. Instrumentation, Devices and Systems by C.S. Ranjan, G.R. Saran and V.S. Mani, TMH
2. Electronic Measurement and Instrumentation by Rajendra Prasad, Khanna Publishers
3. Biomedical Electronics and Instrumentation by Venkata Ram, Galgotia publication Pvt. Ltd

EL-15 DIGITAL COMMUNICATION

FIRST TERM:
Introduction to Telecommunication, Power Spectral density of digital modulation, scalar and vector communication over discrete memory less channel, Coherent communication with wave forms, Non-coherent communication with waveform, partially coherent communication with waveform.

SECOND TERM:
Differentially coherent communication with waveform, Double differentially coherent communication with waveform, communication over band limited channel Demodulation and detection of other digital modulation, coded digital communication, black-coded digital communication, convolution – coded digital communication.

TEXT:

EL-16 ARTIFICIAL INTELLIGENCE

FIRST TERM:
(i) Overview of Artificial Intelligence (AI):- What is AI? Its Importance, Early work and related fields.

(ii) Knowledge: General Concepts, Definition and importance of knowledge, Knowledge based systems, representation of knowledge, knowledge organization and manipulation, its acquisition.

(iii) Lisp and other Programming Languages: Introduction to Lisp, Syntax and numeric function, basic list manipulation functions in LISR Functions, predicates and conditionals, I/O and local variables, Interaction and recursion properly List and arrays, Prolog and other Programming Language.


Second Term:-

(vi) Structural Knowledge: Graph, Frames and related structure: Introduction, Associative networks, Frame Structures, Conceptual dependences and scripts.

(vii) Objected oriented representations: Introduction, overview of oriented systems, objects, class, Messages and methods, Simulation examples using DOS program, object oriented language and systems.

(viii) Search and control strategies: Introduction, Preliminary concepts, Examples of search problems, Uniformed or blind search, Informed search, searching AND-OR graphs.


(x) Natural Language processing: Introduction, Overview of linguistics, Grammars and language, Basic passing techniques, Semitic analysis and representation structures, Natural Language generation and systems.

(xi) Pattern Recognition: Introduction, the recognition and classified process, learning classified pattern, recognition and understanding speech.

Reference:
Introduction to Artificial Intelligence and system by Dan W. Patterson, PHI Publication

EL-17 Data Structure in C++

First term
Arrays: Abstract data types and C++ class. The array as abstract data type, The Polynomial abstract
data type, Sparse Matrices; representation of arrays, the string abstract data type

Stacks & queues: - Templates in C++, the stack abstract data type, the queue abstract data type, multiples stacks and queues.

Second Term

Trees: - Binary trees, binary tree traversed as tree iterates, additional binary tree operations, threaded binary trees, binary search trees, selection trees.

Graph: - The graph abstract data type, elementary graph operations, minimum cost spanning trees, shortest path and transitive closures.

Text:-