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(55025) PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT I
Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, functional Programming, Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming environments.

UNIT II
Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT III
Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT IV
Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT-V
Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

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UNIT VI

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95

Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

UNIT VII

Exception handling : Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.

Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT VIII

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

Scripting Language: Pragmatics, Key Concepts, Case Study : Python – Values and Types, Variables , Storage and Control, Bindings and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

TEXT BOOKS:

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1. Concepts of Programming Languages Robert .W. Sebesta 8/e, Pearson Education,2008.
2. Programming Language Design Concepts, D. A. Watt, Wiley dreamtech,rp-2007.

REFERENCE BOOKS:

1. Programming Languages, 2nd Edition, A.B. Tucker, R.E. Noonan, TMH.
2. Programming Languages, K. C.Louden, 2nd Edition, Thomson,2003.
3. LISP, Patric Henry Winston and Paul Horn, Pearson Education.
4. Programming in Prolog, W.F. Clocksin,& C.S.Mellish, 5th Edition, Springer.
5. Programming Python, M.Lutz, 3rd Edition, O'reilly,SPD, rp-2007.
6. Core Python Programming, Chun, II Edition, Pearson Education, 2007.
7. Guide to Programming with Python, Michael Dawson, Thomson, 2008.

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(55026) OPERATIONS RESEARCH
(OPEN ELECTIVE)

UNIT I

Introduction to Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations Research. Linear Programming Problem – Formulation of LPP, Graphical solution of LPP. Simplex Method, Artificial variables, big-M method, two-phase method, degeneracy and unbound solutions.

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UNIT II

Transportation Problem. Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions – Northwest corner rule, least cost method and Vogel's approximation method. Optimality test: the stepping stone method and MODI method.

UNIT III

Assignment model. Formulation. Hungarian method for optimal solution. Solving unbalanced problem. Traveling salesman problem and assignment problem.

UNIT IV

Sequencing models. Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines – Processing n Jobs through m Machines.

UNIT V

Dynamic programming. Characteristics of dynamic programming. Dynamic programming approach for Priority Management employment smoothening, capital budgeting, Stage Coach/Shortest Path, cargo loading and Reliability problems.

UNIT VI

Games Theory. Competitive games, rectangular game, saddle point, minimax (maximin) method of optimal strategies, value of the game. Solution of games with saddle points, dominance principle. Rectangular games without saddle point – mixed strategy for 2 X 2 games.

UNIT VII

Replacement Models. Replacement of Items that Deteriorate whose maintenance costs increase with time without change in the money value. Replacement of items that fail suddenly: individual replacement policy, group replacement policy.

UNIT VIII

Inventory models. Inventory costs. Models with deterministic demand – model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

TEXT BOOKS:

1. P. Sankara Iyer, "Operations Research", Tata McGraw-Hill, 2008.
2. A.M. Natarajan, P. Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education, 2005.

REFERENCE BOOKS:

1. J K Sharma., "Operations Research Theory & Applications , 3e". Macmillan India Ltd, 2007.
2. P. K. Gupta and D. S. Hira, "Operations Research", S. Chand & co.. 2007.
3. J K Sharma., "Operations Research, Problems and Solutions, 3e". Macmillan India Ltd.
4. N.V.S. Raju, "Operations Research", HI-TECH, 2002.
5. Panneerselvam, "Operations Research", PHI-2e, 2006, rp2008.
6. Operations Research,Ravindran,Phillips,Solberg,2nd edition,Wiley India.
7. Operations Research,W.L.Winston,4th edition,Cengage Learning.
8. Col. D. S. Cheema, "Operations Research", Laxmi Publications Ltd.. 2005.
9. F.S. Hillier, G.J. Lieberman, "Introduction to Operations Research – 8ed", Tata McGraw-Hill, 2005, rp2007.
10. H.S. Kasana & K.D. Kumar, "Introductory Operations Research – Theory and applications", Springer, 2003, rp2005.
11. Billy E. Gillett, "Introduction to Operations Research – A Computer-Oriented Algorithmic Approach", Tata McGraw-Hill, 1979, rp2004.

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(55027) INTELLECTUAL PROPERTY RIGHTS AND CYBER LAW (OPEN ELECTIVE)

UNIT-I:

Introduction to Intellectual Property, Law of Trademarks, Trademark Selection & Searching

IP Law – Types of IP - Agencies for IP Registration – International Treaties. Purpose and Function of Trademarks – Types of marks – Acquisition of Trademark Rights – Categories of marks – Trade names and Business names – protectable matter. Selection and Evaluation of a mark - Trademark search.

UNIT-II:

Trademark Registration Process, Post-registration Procedures, Trademark Maintenance, Transfer of Rights to Marks

Preparing and Filing the Application - Docketing Critical Dates - Examination Process - Post-examination Procedure –Registration. Affidavit of Continued Use – Affidavit of Incontestability – Renewal of Registrations – Docketing Requirements – Loss of Trademark Rights – Trademark Use and Compliance Policies – Trademark Policing and Maintenance - Use of Marks Owned by Third Parties – Transfer of Ownership or Rights in Trademarks.

UNIT-III:

Inter Partes Proceedings, Infringement, Dilution, New Developments in Trademark Law

Inter Partes Proceedings – Infringement of Trademarks – Dilution of Trademarks – Related Trademark Claims. Protecting a Domain Name – Other Cyberspace Trademark issues.

UNIT-IV:

Law of Copyright, Subject Matter Of Copyright, Rights Afforded by

Copyright Law

Foundations of Copyright Law – Originality of Material – Fixation of Material – Exclusions from Copyright Protection – Compilations, Collections, and Derivative Works. Rights of Reproduction – Rights to Prepare Derivative works – Rights of Distribution – Rights to Perform the Work Publicly – Rights to Display the Work Publicly – Limitations on Exclusive Rights.

UNIT-V:

Copyright Ownership, Transfers, Duration, Registration, and Searching

Copyright Ownership Issues – Joint works – Ownership in Derivative works – Works Made for hire – Transfers of Copyright – Termination of Transfers of Copyright – Duration of Copyright. Copyright Registartion Application – Deposit Materials – Application Process and Registration of Copyright – Searching Copyright Office Records – Obtaining Copyright Office Records and Deposit Materials – Copyright Notice.

UNIT-VI:

Copyright Infringement, New Developments in Copyright Law, Semiconductor Chip Protection Act

Elements of Infringement – Contributory Infringement and Vicarious Infringement – Defenses to Infringement – Infringement Actions – Remedies for Infringement. Copyright Protection for Computer Programs – Copyright Protection for Automated Databases – Copyright in the Electronic Age – The Digital Millenium Copyright Act – Recent Developments in Copyright Law – Terms of the Trade – Vessel Hull Protection – Semiconductor Chip Protection.

UNIT-VII:

Law of Patents, Patent Searches, Ownership, Transfer

Patentability – Design Patents – Double Patenting – Patent Searching – Patent Application Process – Prosecuting the Application, Post-issuance Actions, Term and Maintenance of Patents. Ownership Rights – Sole and Joint Inventors – Disputes over Inventorship – Inventions Made by Employees and Independent Contractors – Assignment of Patent Rights –

Licensing of Patent Rights – Invention Developers and Promoters.

UNIT-VIII:

Patent Infringement, New Developments and International Patent Law

Direct Infringement – Inducement to Infringe – Contributory Infringement – First Sale Doctrine – Claims Interpretation – Defenses to Infringement – Remedies for Infringement – Resolving an Infringement Dispute – Patent Infringement Litigation. New Developments in Patent Law – International Patent Protection – Paris Convention – Patent Cooperation Treaty – Agreement on Trade Related Aspects of Intellectual Property Rights – Patent Law Treaty.

TEXT BOOK:

1. Intellectual Property Rights by Deborah E. Bouchoux, Cengage Learning.

REFERENCES:

1. Managing Intellectual Property – The Strategic Imperative, Second Edition by Vinod V. Sople, PHI Learning Private Limited.
2. Intellectual Property – Copyrights, Trademarks, and Patents by Richard Stim, Cengage Learning

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(55028) COMPUTER FORENSICS
(OPEN ELECTIVE)

UNIT – I

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Computer Forensics Fundamentals: What is Computer Forensics?, Use of Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology, Steps taken by Computer Forensics Specialists

Types of Computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement – Computer Forensic Technology – Types of Business Computer Forensic Technology

UNIT – II

Computer Forensics Evidence and Capture: Data Recovery Defined – Data Back-up and Recovery – The Role of Back-up in Data Recovery – The Data-Recovery Solution

Evidence Collection and Data Seizure: Why Collect Evidence? Collection Options – Obstacles – Types of Evidence – The Rules of Evidence – Volatile Evidence – General Procedure – Collection and Archiving – Methods of Collection – Artifacts – Collection Steps – Controlling Contamination: The Chain of Custody

UNIT – III

Duplication and Preservation of Digital Evidence: Preserving the Digital Crime Scene – Computer Evidence Processing Steps – Legal Aspects of Collecting and Preserving Computer Forensic Evidence

Computer Image Verification and Authentication: Special Needs of Evidential Authentication – Practical Consideration – Practical Implementation

UNIT – IV

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Computer Forensics analysis and validation: Determining what data to collect and analyze, validating forensic data, addressing data-hiding techniques, performing remote acquisitions

Network Forensics: Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, unsing network tools, examining the honeynet project.

UNIT – V

Processing Crime and Incident Scenes: Identifying digital evidence, collecting evidence in private-sector incident scens, processing law enforcement crime scenes, preparing for a search, securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case

UNIT – VI

Current Computer Forensic tools: evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensics software

UNIT – VII

E-Mail Investigations: Exploring the role of e-mail in investigation, exploring the roles of the client and server in e-mail, investigating e-mail crimes and violations, understanding e-mail servers, using specialized e-mail forensic tools

Cell phone and mobile device forensics: Understanding mobile device forensics, understanding acquisition procedures for cell phones and mobile devices.

UNIT – VIII

Working with Windows and DOS Systems: understanding file systems, exploring Microsoft File Structures, Examinig NTFS disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks, MS-DOS startup tasks, virtual machines.

TEXT BOOK:

1. Computer Forensics, Computer Crime Investigation by John R. Vacca, Firewall Media, New Delhi.

2. Computer Forensics and Investigations by Nelson, Phillips Enfinger, Steuart, CENGAGE Learning

REFERENCE BOOKS:

1. Real Digital Forensics by Keith J. Jones, Richard Bejtlich, Curtis W. Rose, Addison- Wesley Pearson Education

2. Forensic Compiling, A Tractitioneris Guide by Tony Sammes and Brian Jenkinson, Springer International edition.

3. Computer Evidence Collection & Presentation by Christopher L.T. Brown, Firewall Media.

4. Homeland Security, Techniques & Technologies by Jesus Mena, Firewall Media.

5. Software Forensics Collecting Evidence from the Scene of a Digital Crime by Robert M.Slade, TMH 2005

6. Windows Forensics by Chad Steel, Wiley India Edition.

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(55029) SOFTWARE ENGINEERING

UNIT I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT II

Process models: The waterfall model, Incremental process models, Evolutionary process models, Specialized process models, The Unified process.

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

UNIT III

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT IV

Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design.

Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into a software architecture.

UNIT V

Modeling component-level design : Designing class-based components, conducting component-level design,

Object constraint language, designing conventional components.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT VI

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT VII

Metrics for Process and Products: Software Measurement, Metrics for software quality.

Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT VIII

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering :A practitioner's Approach, Roger S Pressman, sixth edition.

   McGrawHill International Edition, 2005

2. Software Engineering, Ian Sommerville, seventh edition, Pearson education,2004.

REFERENCE BOOKS:

1. Software Engineering,A Precise Approach,Pankaj Jalote,Wiley India,2010.

2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008

3. Fundamentals of Software Engineering,Rajib Mall,PHI, 2005

4. Software Engineering, Principles and Practices,Deepak Jain,Oxford University Press.

5. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.

6. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition , 2006.

7. Software Engineering Foundations,Yingxu Wang,Auerbach Publications,2008.

8. Software Engineering Principles and Practice,Hans Van Vliet,3rd edition,John Wiley &Sons Ltd.

9. Software Engineering 3:Domains,Requirements,and Software Design, D. Bjorner, Springer International Edition.

10. Introduction to Software Engineering,R.J.Leach,CRC Press.

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(55030) MICROPROCESSORS AND INTERFACING

UNIT-I:
8 bit/ 16 bit Microprocessors:

An over view of 8085, Architecture of 8086 Microprocessor, Special functions of General purpose registers. 8086 flag register and function of 8086 Flags. Addressing modes of 8086, Instruction set of 8086. Assembler directives, simple programs, procedures, and macros

UNIT-II:
Assembly level programming:

Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation

UNIT-III:
Modes of operation in 8086:

Pin diagram of 8086-Minimum mode and maximum mode of operation, Timing diagram. Memory interfacing to 8086 (Static RAM & EPROM), Need for DMA, DMA data transfer Method, Interfacing with 8237/8257.

UNIT-IV:
I/O Interface:

8255 PPI – various modes of operation and interfacing to 8086, Interfacing Keyboard, Displays, Stepper Motor and actuators, D/A and A/D converter interfacing.

UNIT-V:
Interrupt Control:

Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

UNIT-VI:
Serial Communication control:

Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes. 8251 USART architecture and interfacing, TTL to RS 232C and RS232C to TTL conversion, Sample program of serial data transfer, IEEE 488 GPIB

UNIT-VII:
Introduction to Microcontrollers:

Overview of 8051 microcontroller, Architecture, I/O Ports, Memory organization, addressing modes and instruction set of 8051, simple programs

UNIT-VIII:
Real time control:

Timer/Counter operation in 8051, Serial Communication control in 8051, Interrupt structure of 8051, Memory and I/O interfacing of 8051

TEXT BOOKS:
1. Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2. Micro Controllers – Ajay V. Deshmukh, Tata McGraw Hill, 2005..

REFERENCES:
1. Micro Processors & Interfacing – Douglas V. Hall, 2007.
2. The 8088 and 8086 Micro Processors: Programming, Interfacing, Software, Hardware and Applications --Walter. A. Triebel, Avatar Singh, N.K.Srinath, 2007, Pearson.
3. Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.

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(55031) OPERATING SYSTEMS

UNIT - I

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Operating Systems Overview- Operating systems functions, Overview of computer operating systems, protection and security, distributed systems, special purpose systems, operating systems structures-operating system services and systems calls, system programs, operating system structure,operating systems generation

UNIT - II

Process Management – Process concepts, threads, scheduling-criteria, algorithms, their evaluation,
Thread scheduling, case studies UNIX, Linux, Windows

UNIT - III

Concurrency - Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies UNIX, Linux, Windows

UNIT - IV

Memory Management - Swapping, contiguous memory allocation, paging, structure of the page table , segmentation, virtual memory, demand paging,page-replacement,algorithms,Allocation of frames,Thrashing case studies UNIX, Linux, Windows

UNIT - V

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

UNIT - VI

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.
File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management,

efficiency and performance, case studies. UNIX, Linux, Windows

UNIT - VII

Mass-storage structure- overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.
I/O systems- Hardware, application I/o interface, kernel I/O subsystem, Transforming I/O requests to Hardware operations, STREAMS, performance.

UNIT - VIII

Protection - Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection,
Security- The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows

TEXT BOOKS :

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne,8th edition, John Wiley.
2. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, TMH

REFERENCES :

1. Operating Systems – Internals and Design Principles, Stallings, sixth Edition–2009, Pearson education.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition PHI.
3. Principles of Operating Systems , B.L.Stuart, Cengage learning, India Edition.
4. Operating Systems, A.S.Godbole,2nd Edition, TMH
5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
6. Operating Systems,G.Nutt,N.Chaki and S.Neogy,3rd Edition,Pearson Education.
7. Operating Systems, R.Elmasri,A,G.Carrick and D.Levine,Mc Graw Hill.
8. Operating Systems,S.Haldar,A.A.Aravind,Pearson education.

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(55032) DATA COMMUNICATION AND COMPUTER NETWORKS

UNIT – I

Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, Layers in the OSI Model, TCP/IP Protocol Suite, Addressing, Physical Layer and Media, Data and Signals, Analog and Digital, Periodic Analog Signals, Digital Signals, Transmission impairment, Data Rate Limits, Performance, Digital Transmission, Digital-to-Digital Conversion, Analog-to-Digital Conversion, Analog Transmission, Digital-to-analog Conversion, Analog-to-analog Conversion

UNIT – II

Bandwidth utilization: Multiplexing and Spreading, Multiplexing, Spread Spectrum, Transmission Media, Guided Media, Unguided Media: Wireless, Switching, Circuit-Switched Networks, Datagram Networks, Virtual-Circuit Networks, Structure of a Switch, Using Telephone and Cable Networks for Data Transmission, Telephone Networks, Dial-up Modems, Digital Subscriber Line, Cable TV Networks, Cable TV for Data Transfer

UNIT – III

Error Detection and Correction, Introduction, Block Coding, Liner Block Codes, Cyclic Codes, Checksum, Data Link Control, Framing, Flow and Error Control, Protocols, Noiseless Channels, HDLC, Point-to-Point Protocol, Multiple Access, Random Access, Aloha, Controlled Access, Channelization, IEEE Standards, Standard Ethernet, Changes in the Standard, Fast Ethernet, Gigabit Ethernet, IEEE 802.11, Bluetooth

UNIT – IV

Connecting LANs, Backbone Networks, and Virtual LANs, Connecting

Devices, Backbone Networks, Virtual LANs, Cellular Telephony, Satellite Networks, Sonet/SDH, Architecture, Sonet Layers, Sonet Frames, STS Multiplexing, Sonet Networks, Virtual Tributaries, Virtual-Circuit Networks: Frame Relay and ATM, Frame Relay, ATM, ATM LANs

UNIT – V

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Network Layer: Internet Protocol, Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6, Network Layer: Adress Mapping, Error Reporting and Multicasting, Address Mapping, ICMP, IGMP, ICMPv6, Network Layer: Delivery, Forwarding and Routing, Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing Protocols

UNIT – VI

Transport Layer: Process-Process Delivery: UDP, TCP and SCTP, Process-to-Process Delivery, User Datagram Protocol (UDP), TCP, SCTP, Congestion Control and Quality of Service, Data Traffic, Congestion, Congestion Control, Two Examples, Quality Service, Techniques to improve QoS, Integrated Services, Differentiated Services, QoS in Switched Networks

UNIT – VII

Application Layer: Domain Name System, Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS Messages, Types of Records, Registrars, Dynamic Domain Name System (DDNS), Encapsulation, Rmote Logging, Electronic Mail and File Transfer, Remote Logging, Telnet, Electronic Mail, File Transfer

UNIT – VIII

WWW and HTTP: Architecture, Web Documents, HTTP, Network Management: SNMP, Network Management System, Simple Network Management Protocol (SNMP), Multimedia, Digitizing Audio and Video, Audio and Video Compression, Streaming Stored Audio/Video, Streaming Live Audio/Video, Real-Time Interactive Audio/Video, RTP, RTCP, Voice over IP.

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TEXT BOOKS:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan, TMH.
2. Computer Networks, A.S.Tanenbaum, 4th edition, Pearson education.

REFERENCE BOOKS:

1. Introduction to Data communications and Networking, W.Tomasi, Pearson education.
2. Data and Computer Communications, G.S.Hura and M.Singhal, CRC Press, Taylor and Francis Group.
3. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
4. Understanding communications and Networks, 3rd Edition, W.A.Shay, Cengage Learning.
5. Computer Networks, L.L.Peterson and B.S.Davie, 4th edition, ELSEVIER.
6. Computer Networking: A Top-Down Approach Featuring the Internet, James F.Kurose, K.W.Ross, 3rd Edition, Pearson Education.
7. Data communications and computer Networks, P.C.Gupta, PHI.
8. Fundamentals of Business Data Communications, 10th edition, J.Fitzgerald and A.Dennis, Wiley India.

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(55608) MICROPROCESSORS AND INTERFACING LAB

Minimum of 12 experiments are to be conducted.

1. Write and execute an Assembly language Program (ALP) to 8086 processor to add, subtract and multiply two 16 bit unsigned numbers. Store the result in extra segment.

2. Write and execute an Assembly language Program (ALP) to 8086 processor to divide a 32 bit unsigned number by a 16 bit unsigned number. Store the result in stack segment.

3. Write and execute an Assembly language Program (ALP) to 8086 processor to sort the given array of 32 bit numbers in ascending and descending order.

4. Write and execute an Assembly language Program (ALP) to 8086 processor to pick the median from the given array of numbers.

5. Write and execute an Assembly language Program (ALP) to 8086 processor to find the length of a given string which terminates with a special character.

6. Write and execute an Assembly language Program (ALP) to 8086 processor to reverse the given string and verify whether it is a palindrome.

7. Write and execute an Assembly language Program (ALP) to 8086 processor to verify the password.

8. Write and execute an Assembly language Program (ALP) to 8086 processor to insert or delete a character/ number from the given string.

9. Write and execute an Assembly language Program (ALP) to 8086 processor to call a delay subroutine and display the character on the LED display.

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10. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7- segment display which is also interfaced to 8086.

11. Write an interrupt service routine to 8086 when ever there is an interrupt request on interrupt pin, which displays "hello" on a LCD.

12. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS 232.

13. Interface DMA controller to 8086 and transfer bulk data from memory to I/O device.

14. Interface a stepper motor to 8086 and operate it in clockwise and anti-clock wise by choosing variable step-size.

15. Interface an 8 bit ADC to 8086 and generate digital output and store it in memory for the given square/ ramp/ triangle wave form inputs.

16. Interface an ADC to 8086 and generate step, ramp, triangle and square waveforms with different periods.

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(55609) COMPUTER NETWORKS AND OPERATING SYSTEMS LAB

Objective:

- To Understand the functionalities of various layers of OSI model
- To understand the operating System functionalities

System/ Software Requirement

- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

Part - A

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.

2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP .

3. Implement Dijkstra 's algorithm to compute the Shortest path thru a graph.

4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm

5. Take an example subnet of hosts . Obtain broadcast tree for it.

6. Take a 64 bit playing text and encrypt the same using DES algorithm.

7. Write a program to break the above DES coding

8. Using RSA algorithm Encrypt a text data and Decrypt the same .

Part -B

1. Simulate the following CPU scheduling algorithms

   a) Round Robin b) SJF c) FCFS d) Priority

2. Simulate all file allocation strategies

   a) Sequentialb) Indexed c) Linked

3. Simulate MVT and MFT

4. Simulate all File Organization Techniques

   a) Single level directory b) Two level c) Hierarchical d) DAG

5. Simulate Bankers Algorithm for Dead Lock Avoidance

6. Simulate Bankers Algorithm for Dead Lock Prevention

7. Simulate all page replacement algorithms

   a) FIFO b) LRU c) LFU Etc. ....

8. Simulate Paging Technique of memory management.