

Code No.: ETIT 401

L T C

Paper: Advanced Computer Networks

3 1 4

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions.

However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

Review of Physical & Data link layer, ISDN, Frame Relay, ATM

[No. of Hrs.: 11]

UNIT – II

Network Layer: ARP and RARP, Routing algorithms and protocols, Congestion control algorithm, Router Operation, Router configuration, Internetworking, IP Protocol, IPv6 (an overview).

[No. of Hrs.: 11]

UNIT – III

Transport Layer: UDP, TCP (Flow Control, Error Control, Connection Establishment)

[No. of Hrs.: 11]

UNIT – IV

Application layer: DNS, SNMP, RMON, Electronic Mail, WWW.

Network Security: Firewalls (Application and packet filtering), Cryptography, Virtual Print,

[No. of Hrs.: 11]

TEXT BOOKS:

1. B. A. Forouzan, "TCP/IP Protocol Suite", TMH, 2nd Ed., 2004.

REFERENCE BOOKS:

1. U. Black, "Computer Networks-Protocols, Standards and Interfaces", PHI, 1996.
2. W. Stallings, "Computer Communication Networks", PHI, 1999.
3. W. Stallings, "SNMP, SNMPv2, SNMPv3, RMON 1&2", 3rd Ed., Addison Wesley, 1999.
4. Michael A. Miller, "Data & Network Communications", Vikas Publication, 1996.
5. William A. Shay, "Understanding Data Communications & Networks", Vikas Publication, 1999.
6. A. S. Tananbaum, "Computer Networks", 3rd Ed, PHI, 1999.
7. Laura Chappell (ed), "Introduction to Cisco Router Configuration", Techmedia, 1999.

Code No.: ETCS 403
Paper: Advanced Computer Architecture

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INSTRUCTIONS TO PAPER SETTERS:

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UNIT – I

Parallel computer models: The state of computing , Multiprocessors and multicomputers, Multivector and SIMD computers, Architectural development tracks
Program and network properties :Conditions of parallelism, Data and resource dependences,Hardware and software parallelism,Program partitioning and scheduling, Grain size and latency, Program flow mechanisms,Control flow versus data flow,Data flow architecture,Demand driven mechanisms,Comparisons of flow mechanisms[**No. of Hrs.: 11**]

UNIT - II

System Interconnect Architectures : Network properties and routing, Static interconnection networks, Dynamic interconnection Networks, Multiprocessor system interconnects, Hierarchical bus systems, Crossbar switch and multiport memory,Multistage and combining network.

Processors and Memory Hierarchy : Advanced processor technology, Instruction-set Architectures,CISC Scalar Processors, RISC Scalar Processors, Superscalar Processors,VLIW Architectures, Vector and Symbolic processors

Memory Technology :Hierarchical memory technology, Inclusion, Coherence and Locality, Memory capacity planning, Virtual Memory Technology [**No. of Hrs.: 11**]

UNIT - III

Backplane Bus System: Backplane bus specification, Addressing and timing protocols, Arbitration transaction and interrupt, Cache addressing models, Direct mapping and associative caches.

Pipelining :Linear pipeline processor, Nonlinear pipeline processor, Instruction pipeline design, Mechanisms for instruction pipelining, Dynamic instruction scheduling, Branch handling techniques, Arithmetic Pipeline Design, Computer arithmetic principles, Static arithmetic pipeline, Multifunctional arithmetic pipelines [**No. of Hrs. 11**]

UNIT - IV

Vector Processing Principles : Vector instruction types, Vector-access memory schemes.

Synchronous Parallel Processing : SIMD Architecture and Programming Principles, SIMD Parallel Algorithms, SIMD Computers and Performance Enhancement [**No. of Hrs.: 11**]

TEXT BOOKS:

1. Kai Hwang, “Advanced computer architecture”; TMH, 2000.

REFERENCES BOOKS:

1. J.P.Hayes, “computer Architecture and organization”, MGH, 1998.
2. M.J Flynn, “Computer Architecture, Pipelined and Parallel Processor Design”, Narosa Publishing, 1998.

3. D.A.Patterson, J.L.Hennessy, "Computer Architecture :A quantitative approach", Morgan Kauffmann, 2002.
4. Hwang and Briggs, " Computer Architecture and Parallel Processing"; MGH, 2000.

Code No.: ETCS 405
Paper: Compiler Construction

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INSTRUCTIONS TO PAPER SETTERS:

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UNIT - I

Classification of grammars, Context free grammars, Deterministic finite state automata (DFA) Non-DFA. **[No. of Hrs.: 10]**

UNIT - II

Scanners, Top down parsing, LL grammars, Bottom up parsing, Polish expression Operator Precedence grammar, LR grammars, Comparison of parsing methods, Error handling. Symbol table handling techniques, Organization for non-block and block structured languages. **[No. of Hrs.: 12]**

UNIT - III

Run time storage administration, Static and dynamic allocation, Intermediate forms of source program, Polish N-tuple and syntax trees, Semantic analysis and code generation. **[No. of Hrs.: 12]**

UNIT - IV

Code optimization, Folding, redundant sub-expression evaluation, Optimization within iterative loops. **[No. of Hrs.: 10]**

TEXT BOOKS:

1. Tremblay, et. al., "The Theory and Practice of Compiler Writing", McGraw Hill, New York, 1985.
2. A. Holub, "Compiler Design in C", PHI, 2004
3. Aho, Ullman & Ravi Sethi, "Principles of Compiler Design", Pearson Education, 2002

REFERENCES BOOKS:

1. Andrew L. Appel, "Modern Compiler Implementation in C", Delhi, Foundation Books, 2000.
2. Dick Grune et. Al., "Modern Compiler Design", Wiley Dreamtech, 2000.

Code No.: ETEC 407
Paper: Mobile Computing

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INSTRUCTIONS TO PAPER SETTERS:

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However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

Introduction to Personal Communications Services (PCS): PCS Architecture, Mobility management, Networks signalling.

Global System for Mobile Communication (GSM) system overview: GSM Architecture, Mobility management, Network signalling.

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

[No. of Hrs.: 11]

UNIT – II

Mobile Data Communication: WLANs (Wireless LANs) IEEE 802.11 standard, Mobile IP.

Wireless Application Protocol (WAP): The Mobile Internet standard, WAP Gateway and Protocols, wireless mark up Languages (WML).

[No. of Hrs.: 11]

UNIT – III

Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G.

Wireless Local Loop(WLL): Introduction to WLL Architecture, wireless Local Loop Technologies.

[No. of Hrs.: 11]

UNIT – IV

Global Mobile Satellite Systems; case studies of the IRIDIUM and GLOBALSTAR systems.

Wireless Enterprise Networks: Introduction to Virtual Networks, Blue tooth technology, Blue tooth Protocols.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Yi-Bing Lin & Imrich Chlamtac, “Wireless and Mobile Networks Architectures”, John Wiley & Sons, 2001.
2. Raj Pandya, “Mobile and Personal Communication systems and services”, Prentice Hall of India, 2001.
3. Hansmann, “Principles of Mobile Computing”, Wiley Dreamtech, 2004.

REFERENCE BOOKS:

1. Mark Ciampa, “Guide to Designing and Implementing wireless LANs”, Thomson learning, Vikas Publishing House, 2001.
2. Ray Rischpater, “Wireless Web Development”, Springer Publishing, 2000.
3. Sandeep Singhal, “The Wireless Application Protocol”, Pearson Education Asia, 2000.
4. P.Stavronlakis, “Third Generation Mobile Telecommunication systems”, Springer Publishers, 2001.

Code No.: ETIT 409
Paper: VLSI Design

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3 1 4

INSTRUCTIONS TO PAPER SETTERS:

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However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

MOS Transistor Theory: nMOS Enhancement Transistor, pMOS Enhancement transistor, Threshold voltage, Fabrication of MOSFET: Silicon Semiconductor technology, Wafer processing, Oxidation, Epitaxy, Deposition, Ion-implanation and diffusion, The silicon gate Process, CMOS Technology, basic n-well cmos process, p-well process, twin tub process CMOS process enhancement: metal interconnect, Polysilicon / Refractory metal interconnect, Circuit element: Resistor, Capacitor. **[No. of Hrs.: 11]**

UNIT – II

Operation of MOS transistor as a switch, Design and analysis of nMOS, pMOS and CMOS circuits, CMOS Logic, The Inverter, NAND gate, NOR Gate, Compound Gate.

[No. of Hrs.: 11]

UNIT – III

Modeling of MOS transistors using SPICE, MOS Inverters: Static Characteristics, MOS Inverters: Switching Characteristics and Interconnect Effects, Combinational MOS Logic Circuits: MUX, DMUX, Transmission gate, Differential Inverter, Tristate Inverter.

[No. of Hrs.: 11]

UNIT – IV

Sequential MOS Logic Circuits, Dynamic Logic Circuits, Semiconductor Memories.

[No. of Hrs.: 11]

TEXT BOOK:

1. Sung-Mo Kang and Yusuf Leblebici, “CMOS – Digital Integrated Circuits Analysis and Design”, TMH, 2004.

REFERENCE BOOKS:

1. Douglas A. Pucknell, “Basic VLSI Design, 3rd Edition, 2004.
2. Neil H. E. Weste & K. Eshraghian, “Principles of CMOS VLSI design”, 2nd Edition, Addison Wesley, 2003.
3. S. M. Sze, “VLSI Technology, Wiley, 2000.
4. Demassa & Ciccone, “Digital Integrated Circuits”, Wiley Publications, 2003.
5. Jacob Millman and Arvin Grabel, “Microelectronics”, TMH, 2004.

Code No.: ETEC 411

L T C

Paper: Digital Image Processing

3 1 4

INSTRUCTIONS TO PAPER SETTERS:

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UNIT - I

Introduction And Digital Image Fundamentals: The origins of Digital Image Processing, Examples of Fields that Use Digital Image Processing, Fundamentals Steps in Image Processing, Elements of Digital Image Processing Systems, Image Sampling and Quantization, Some basic relationships like Neighbours, Connectivity, Distance Measures between pixels, Linear and Non Linear Operations.

Image Enhancement in the Spatial Domain: Some basic Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic and Logic operations, Basics of Spatial Filters, Smoothing and Sharpening Spatial Filters, Combining Spatial Enhancement Methods.

[No. of Hrs.: 10]

UNIT - II

Image Enhancement in the Frequency Domain: Introduction to Fourier Transform and the frequency Domain, Smoothing and Sharpening Frequency Domain Filters, Homomorphic Filtering.

Image Restoration: A model of The Image Degradation / Restoration Process, Noise Models, Restoration in the presence of Noise Only Spatial Filtering, Periodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invariant Degrations, Estimation of Degradation Function, Inverse filtering, Wiener filtering, Constrained Least Square Filtering, Geometric Mean Filter, Geometric Transformations.

[No. of Hrs.: 12]

UNIT - III

Image Compression: Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Elements of Information Theory, Error free comparison, Lossy compression, Image compression standards.

Image Segmentation: Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region Oriented Segmentation, Motion based segmentation.**[No. of Hrs.: 12]**

UNIT - IV

Representation and Description: Representation, Boundary Descriptors, Regional Descriptors, Use of Principal Components for Description, Introduction to Morphology, Some basic Morphological Algorithms.

Object Recognition: Patterns and Pattern Classes, Decision-Theoretic Methods, Structural Methods.**[No. of Hrs.: 10]**

TEXT BOOKS:

1. Rafael C. Gonzales & Richard E. Woods, "Digital Image Processing", 2nd edition, Pearson Education, 2002.
2. A.K. Jain, "Fundamental of Digital Image Processing", PHI, 1989.

REFERENCES:

1. Bernd Jahne, "Digital Image Processing", 5th Ed., Springer, 2002.
2. William K Pratt, "Digital Image Processing: Pks Inside", John Wiley & Sons, 2001.

Code No.: ETCS 413
Paper: Requirements & Estimation Techniques

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UNIT – I

Requirements engineering: Requirements Elicitation, Requirement Elicitation techniques, Requirement Analysis, Requirement Analysis Models, Requirement Documentation, Requirement Management, IEEE Std. For SRS **[No. of Hrs.: 10]**

UNIT - II

Size Estimation: Function Point Analysis, Mask II FPA, LOC estimation, Conversion between size measures **[No. of Hrs.: 12]**

UNIT - III

Effort, schedule & cost estimation: Estimation factors, COCOMO-II, Putnam Estimation Model, Estimation by Analogy, Validating Software Estimates **[No. of Hrs.: 12]**

UNIT - IV

Introduction to software life cycle, management activities in software project

Tools: Software Estimation Tools

Industry Resources; IFPUG, UQAM-SEMRL, COSMIC, IEEE, COCOMO **[No. of Hrs.: 10]**

TEXT BOOKS:

1. Swapna Kishore, Rajesh Naik, “Software Requirements and Estimation”, TMH, 1992.

REFERENCE BOOKS:

1. K.K. Aggarwal & Yogesh Singh, "Software Engineering", 2nd Ed., New Age International Publishers, New Delhi, 2005.
2. Roger Pressman, “Software Engineering: A Practitioner’s Approach”, 3rd Edition, McGraw Hill, 1992.

Code No.: ETCS 415
Paper: Project

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| L | P | C |
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Students may select a project related to any of the subjects of the current semester.

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| Code No. : ETIT 451 | L | P | C |
| Paper: Advanced Computer Network Lab. | 0 | 2 | 1 |

Practical will be based on Advanced Computer Network.

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| Code No. : ETCS 453 | L | P | C |
| Paper: Practical Lab. | 0 | 2 | 1 |

Practical will be based on Electives

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|----------------------------|----------|----------|----------|
| Code No. : ETCS 455 | L | P | C |
| Paper: *Seminar | 0 | 2 | 1 |

*NUES

A college committee will evaluate the performance of the students & marks will be awarded accordingly.

Code No. : ETCS 457

L P C

Paper: Minor Project

0 8 5

Students may choose a project based on any subject of Computer Science. The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format. The student will have to present the progress of the work through seminars and progress reports.

Code No. : ETCS 459

L P C

Paper: *Practical Training

0 0 1

*NUES

Practical training conducted after sixth semester will be evaluated in the Seventh Semester based on Viva-Voce.

Code No.: ETCS 402

L T C

Paper: Artificial Intelligence

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INSTRUCTIONS TO PAPER SETTERS:

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UNIT – I

Scope of AI: Games, theorem proving, natural language processing, vision and speech processing, robotics, expert systems, AI techniques-search knowledge, abstraction.

Problem Solving (Blind): State space search; production systems, search space control; depth-first, breadth-first search.

Heuristic Based Search: Heuristic search, Hill climbing, best-first search, branch and bound, Problem Reduction, Constraint Satisfaction End, Means-End Analysis. **[No. of Hrs.: 12]**

UNIT – II

Game Playing: Game Tree, Minimax Algorithm, Alpha Beta Cutoff, Modified Minimax Algorithm, Horizon Effect, Futility Cut-off.

Knowledge Representation: Predicate Logic: Unification, Modus Ponens, Modus Tolens, Resolution in Predicate Logic, Conflict Resolution Forward Chaining, Backward Chaining, Declarative and Procedural Representation, Rule based Systems.

Structured Knowledge Representation: Semantic Nets: Slots, exceptions and default frames, conceptual dependency, scripts. **[No. of Hrs.: 12]**

UNIT – III

Handling Uncertainty: Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic.

Natural Language Processing: Introduction, Syntactic Processing, Semantic Processing, Pragmatic Processing. **[No. of Hrs.: 10]**

UNIT – IV

Learning: Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets.

Expert Systems: Need and justification for expert systems, knowledge acquisition, Case Studies: MYCIN, RI. **[No. of Hrs.: 10]**

TEXT BOOKS:

1. E. Rich and K. Knight, "Artificial Intelligence", TMH, 2nd Ed., 1992.
2. N. J. Nilsson, "Principles of AI", Narosa Publ. House, 1990.
3. M. N. Hoda, "Foundation Course in Artificial Intelligence", Vikas Pub., 2004.

REFERENCES BOOKS:

1. P. H. Winston, "Artificial Intelligence", Pearson Education, 3rd Edition, 2002.
2. D. W. Patterson, "Introduction to AI and Expert Systems", PHI, 1992.

3. R. J. Schalkoff, "Artificial Intelligence – An Engineering Approach", McGraw Hill Int. Ed. Singapore, 1992.
4. M. Sasikumar, S. Ramani, "Rule Based Expert Systems", Narosa Publishing House, 1994.
5. Tim Johns, "Artificial Intelligence, Application Programming", Wiley Dreamtech, 2005.

Code No.: ETCS 404
Paper: Software Testing

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UNIT – I

Introduction: What is software testing and why it is so hard?, Error, Fault, Failure, Incident, Test Cases, Testing Process, Limitations of Testing, No absolute proof of correctness, Overview of Graph Theory.
[No. of Hrs.: 11]

UNIT - II

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.

Structural Testing: Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing.
[No. of Hrs.: 11]

UNIT - III

Reducing the number of test cases:

Prioritization guidelines, Priority category, Scheme, Risk Analysis, Regression Testing, Slice based testing

Testing Activities: Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging, Domain Testing.
[No. of Hrs.: 11]

UNIT - IV

Object Oriented Testing: Issues in Object Oriented Testing, Class Testing, GUI Testing, Object Oriented Integration and System Testing.

Testing Tools: Static Testing Tools, Dynamic Testing Tools, Characteristics of Modern Tools.
[No. of Hrs.: 11]

TEXT BOOKS:

1. William Perry, “Effective Methods for Software Testing”, John Wiley & Sons, New York, 1995.
2. Louise Tamres, “Software Testing”, Pearson Education Asia, 2002
3. Robert V. Binder, “Testing Object-Oriented Systems-Models, Patterns and Tools”, Addison Wesley, 1999.

REFERENCE BOOKS:

1. Cem Kaner, Jack Falk, Nguyen Quoc, “Testing Computer Software”, Second Edition, Van Nostrand Reinhold, New York, 1993.
2. K.K. Aggarwal & Yogesh Singh, “Software Engineering”, 2nd Ed., New Age International Publishers, New Delhi, 2005

3. Boris Beizer, "Software Testing Techniques", Second Volume, Second Edition, Van Nostrand Reinhold, New York, 1990.
4. Boris Beizer, "Black-Box Testing – Techniques for Functional Testing of Software and Systems", John Wiley & Sons Inc., New York, 1995.

Code No.: ETCS 406
Paper: Soft Computing

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3 1 4

INSTRUCTIONS TO PAPER SETTERS:

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UNIT – I

Neural Networks: History, overview of biological Neuro-system, Mathematical Models of Neurons, ANN architecture, Learning rules, Learning Paradigms-Supervised, Unsupervised and reinforcement Learning, ANN training Algorithms-perceptions, Training rules, Delta, Back Propagation Algorithm, Multilayer Perceptron Model, Hopfield Networks, Associative Memories, Applications of Artificial Neural Networks. **[No. of Hrs.: 11]**

UNIT – II

Fuzzy Logic: Introduction to Fuzzy Logic, Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, Fuzzy rule generation.

Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations. **[No. of Hrs.: 11]**

Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.

UNIT – III

Fuzzy Logic: Classical Logic, Multivalued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges. **[No. of Hrs.: 11]**

Uncertainty based Information: Information & Uncertainty, Nonspecificity of Fuzzy & Crisp Sets, Fuzziness of Fuzzy Sets.

UNIT – IV

Introduction of Neuro-Fuzzy Systems, Architecture of Neuro Fuzzy Networks.

Application of Fuzzy Logic: Medicine, Economics etc.

Genetic Algorithm: An Overview, GA in problem solving, Implementation of GA

[No. of Hrs.: 11]

TEXT BOOKS:

1. J. A. Anderson, “An Introduction to Neural Networks”, PHI, 1999.
2. Hertz J. Krogh, R.G. Palmer, “Introduction to the Theory of Neural Computation”, Addison-Wesley, California, 1991.
3. G.J. Klir & B. Yuan, “Fuzzy Sets & Fuzzy Logic”, PHI, 1995.

REFERENCE BOOKS:

1. “Neural Networks-A Comprehensive Foundations”, Prentice-Hall International, New Jersey, 1999.
2. J. A. Freeman, D.M. Skapura, “Neural Networks: Algorithms, Applications and Programming Techniques”, Addison Wesley, Reading, Mass, (1992).
3. Melanie Mitchell, “An Introduction to Genetic Algorithm”, PHI, 1998.

Code No.: ETIT 408
Paper: Embedded System

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UNIT – I

Introduction to an embedded systems design & RTOS: Introduction to Embedded system, Processor in the System, Microcontroller, Memory Devices, Embedded System Project Management, ESD and Co-design issues in System development Process, Design cycle in the development phase for an embedded system, Use of target system or its emulator and In-circuit emulator, Use of software tools for development of an ES.

Inter-process Communication and Synchronization of Processes, Tasks and Threads, Problem of Sharing Data by Multiple Tasks, Real Time Operating Systems: OS Services, I/O Subsystems, Interrupt Routines in RTOS Environment, RTOS Task Scheduling model, Interrupt Latency and Response times of the tasks.

[No. of Hrs.: 11]

UNIT – II

Overview of Microcontroller: Microcontroller and Embedded Processors, Overview of 8051 Microcontroller family: Architecture, basic assembly language programming concepts, The program Counter and ROM Spaces in the 8051, Data types, 8051 Flag Bits and PSW Register, 8051 Register Banks and Stack Instruction set, Loop and Jump Instructions, Call Instructions, Time delay generations and calculations, I/O port programming Addressing Modes, accessing memory using various addressing modes, Arithmetic instructions and programs, Logical instructions, BCD and ASCII application programs, Single-bit instruction programming, Reading input pins vs. port Latch, Programming of 8051 Timers, Counter Programming

[No. of Hrs.: 11]

UNIT – III

Communication with 8051: Basics of Communication, Overview of RS-232, I²C Bus, UART, USB, 8051 connections to RS-232, 8051 serial communication programming, 8051 interrupts, Programming of timer interrupts, Programming of External hardware interrupts, Programming of the serial communication interrupts, Interrupt priority in the 8051

[No. of Hrs.: 11]

UNIT - IV

Interfacing with 8051: Interfacing an LCD to the 8051, 8051 interfacing to ADC, Sensors, Interfacing a Stepper Motor, 8051 interfacing to the keyboard, Interfacing a DAC to the 8051, 8255 Interfacing with 8031/51, 8051/31 interfacing to external memory

[No. of Hrs.: 11]

TEXT BOOKS:

1. Raj Kamal, “Embedded Systems”, TMH, 2004.

2. M.A. Mazidi and J. G. Mazidi, "The 8051 Microcontroller and Embedded Systems", PHI, 2004.

REFERENCES BOOKS:

1. David E. Simon, "An Embedded Software Primer", Pearson Education, 1999.
2. K.J. Ayala, "The 8051 Microcontroller", Penram International, 1991.
3. Dr. Rajiv Kapadia, "8051 Microcontroller & Embedded Systems", Jaico Press
4. Dr. Prasad, "Embedded Real Time System", Wiley Dreamtech, 2004.

Code No.: ETIT 410

L T C

Paper: E-Commerce & ERP

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INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

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UNIT – I

Introduction and Concepts: Networks and commercial transactions – Internet and other novelties; networks and electronic transactions today, Model for commercial transactions; Internet environment – internet advantage, worlds wide web and other internet sales venues; Online commerce solutions.

Security Technologies: Insecurity Internet; A brief introduction to Cryptography; Public key solution; Key distribution and certification; prominent cryptographic applications.

Electronic Payment Methods: Updating traditional transactions; secure online transaction models; Online commercial environments; digital currencies and payment systems; Offline secure processing; private data networks.

[No. of Hrs.: 11]

UNIT – II

Protocols for Public Transport of Private Information: Security protocols; secure protocols; Secure hypertext transfer protocols; Secure sockets layers; Integrating security protocols into the web; Non technical provide.

Electronic Commerce Providers: On-line Commerce options: Company profiles.

Electronic Payment Systems: Digital payment systems; First virtual internet payment system; cyber cash model.

On-line Commerce Environments: Servers and commercial environments; Netscape product line; Netscape commerce server; Microsoft internet explorer and servers; open market.

Digital Currencies: Optional process of Digicash, Ecash Trail; Using Ecash; Smart cards, Electronic Data Interchange; Its basics; EDI versus Internet and EDI over Internet.

Strategies, Techniques and Tools: Internet Strategies: Internet Techniques, Shopping techniques and online selling techniques; Internet tools.

Electronic Commerce Online Resources and Guide to the CD-ROM

[No. of Hrs.: 11]

UNIT – III

ERP – An Enterprise Perspective; Production Finance, Personnel disciplines and their relationship, Transiting environment, MIS Integration for disciplines, Case Study, Information / Workflow, Network Structure, Client Server Integrator System, Virtual Enterprise.

ERP – Resource Management Perspective; Functional and Process of Resource. Management, Basic Modules of ERP System-HRD, Personnel Management, Training and Development, Skill Inventory, Material Planning and Control, Inventory, Forecasting, Manufacturing, Production Planning, Production Scheduling, Production Control, Sales and Distribution, Finance, Resource

Management in global scenario, dynamic data management in complex global scenario.

[No. of Hrs.: 11]

UNIT – IV

ERP – Information System Perspective: Evolution of Application Software Technology Management, EDP, MIS, DBMS, DSS OLAP (Online Analysis and Processing), TP, OAS, KBS, MRP, BPR, SCM, REP, CRM, Information Communication Technology, E-Business, E-Commerce, EDI

ERP-Key Managerial Issues: Concept Selling, IT Infrastructure, Implication, of ERP Systems on Business Organization, Critical success factors in ERP System, ERP Culture Implementation Issues, Resistance to change, Public Service and Organizations (PSO) Project, ERP Selection issues, Return on Investment, Pre and Post Implementation Issues.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Pete Loshin and P.A.Murphy, “ Electronic Commerce ” Jaico Publishing House, 1999.
2. Gary Schneider and James T. Perry, “Electronic Commerce” by Thomson learning, 2001.
3. S. Sadagopan, “Enterprise Resource Planning”, Tata McGraw Hill, 1999.
4. Alexis Leon, “Enterprise Resource Planning”, Tata McGraw Hill, 2000.

REFERENCE BOOKS:

1. Kalakota, “Frontiers of E-Commerce ” Addition Wesley long man Publishers, 1999.
2. Kamlesh Bajaj & Debjani Nag, “E-Commerce: The cutting edge of Business” Tata Mcgraw Hill, 2000.
3. Trepper, “E-Commerce strategies”, Prentice Hall of India, 2001.

Code No.: ETIT 412
Paper: Network Security

L T C
3 1 4

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

Introduction: Codes and Ciphers – Some Classifical systems – Statistical theory of cipher systems – Complexity theory of Crypto systems – Stream ciphers, Block ciphers.

Stream Ciphers: Rotor based system – shift register based systems – Design considerations for stream ciphers – Cryptanalysis of stream ciphers – Combined eneryption and encoding.

Block Ciphers – DES and variant, modes of use of DES.

[No. of Hrs.: 11]

UNIT – II

Public Key systems – Knacksack systems – RSK – Diffe Hellman Exchange 0 Authentication and Digital signatures, Elliptic curve based systems.

System Identification and clustering

Cryptology of speech signals – narrow band and wide band systems – analogue & digital systems of speech encryption.

[No. of Hrs.: 11]

UNIT – III

Network Security: Hash function – Authentication:

Protocols – Digital Signature standards.

Electronics Mail Security – PGP (Pretty Good Privacy) MIME, Data Compression technique.

IP Security: Architecture, Authentication Leader, Encapsulating security Payload – Key management.

Web Security: Secure Socket Layer & Transport Layer security, Secure electronic transactions.

Firewalls Design principle, established systems.

[No. of Hrs.: 12]

UNIT – IV

Telecommunication Network architecture, TMN management layers, Management information Model, Management servicing and functions, Structure of management information and TMN information model.

[No. of Hrs.: 10]

TEXT BOOKS:

1. William Stallings, “Network Security Essentials, 2nd Edition, 2002.
2. William Stallings, “Cryptography & Network Security”, 3rd Edition, 1999.

Code No.: ETEC 414
Paper: Mobile Communication

L T C
3 1 4

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

Introduction to Cellular Mobile Systems: A basic cellular system, performance criteria, uniqueness of mobile radio environment, operation of cellular systems, planning a cellular system, overview of generations of cellular systems.

Elements of Cellular Radio Systems Design and Interference: General description of the problem, concept of frequency reuse channels, co-channel interference reduction factor, desired C/I from a normal case in an omni directional antenna system, cell splitting, consideration of the components of cellular systems, Introduction to co-channel interference, co-channel measurement design of antenna system, antenna parameter and their effects.

[No. of Hrs.: 11]

UNIT – II

Cell Coverage for Signal & Antenna Structures: General introduction, obtaining the mobile point to point mode, propagation over water or flat open area, foliage loss, propagation near in distance, long distance propagation, point to point prediction model – characteristics, cell site, antenna heights and signal coverage cells, mobile to mobile propagation, Characteristics of basic antenna structures, antenna at cell site, mobile antennas.

Frequency Management & Channel Assignment, Hand Off & Dropped Calls: Frequency Management, fixed channel assignment, non-fixed channel assignment, traffic & channel assignment, Why hand off, types of handoff and their characteristics, dropped call rates & their evaluation.

[No. of Hrs.: 11]

UNIT – III

Modulation methods and coding for error detection and correction: Introduction to Digital modulation techniques, modulation methods in cellular wireless systems, OFDM, Block Coding, convolution coding and Turbo coding.

Multiple access techniques: FDMA, TDMA, CDMA: Time-division multiple access (TDMA), code division multiple access (CDMA), CDMA capacity, probability of bit error considerations, CDMA compared with TDMA.

[No. of Hrs.: 11]

UNIT – IV

Second generation, digital, wireless systems: GSM, IS_136 (D-AMPS), IS-95, mobile management, voice signal processing and coding.

[No. of Hrs.: 11]

TEXT BOOKS:

1. William, C. Y. Lee, “Mobile Cellular Telecommunications”, 2nd Edition, McGraw Hill, 1990.
2. Mischa Schwartz, “Mobile Wireless Communications”, Cambridge University Press, UK, 2005.

REFERENCE BOOKS:

1. "Mobile Communication Hand Books", 2nd Edition, IEEE Press.
2. Theodore S Rappaport, "Wireless Communication Principles and Practice", 2nd Edition, Pearson Education, 2002.
3. Lawrence Harte, "3G Wireless Demystified", McGraw Hill Publications, 2001.
4. Kaveh Pahlavan and Prashant Krishnamurthy", Principles of Wireless Networks", PHI, 2001.

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|--|----------|----------|----------|
| Code No. : ETCS 452 | L | P | C |
| Paper: Artificial Intelligence Lab. | 0 | 2 | 1 |

Practical will be based on Artificial Intelligence.

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|-------------------------------------|----------|----------|----------|
| Code No. : ETCS 454 | L | P | C |
| Paper: Software Testing Lab. | 0 | 2 | 1 |

Practical will be based on Software Testing.

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|----------------------------|----------|----------|----------|
| Code No. : ETCS 456 | L | P | C |
| Paper: Electives | 0 | 2 | 1 |

Practical will be based on ELECTIVES :

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|-----------------------------|----------|-----------|----------|
| Code No. : ETCS 458 | L | P | C |
| Paper: Major Project | 0 | 12 | 6 |

The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format. The student will have to present the progress of the work through seminars and progress reports.

The i-unit is an ultra-compact single seater four wheeled Toyota concept car. It debuted at the World Expo 2005, held in Aichi Prefecture, Japan. The vehicle is a cross between a microcar, a motorcycle, and a vehicular exoskeleton. The goal of Toyota is to provide a personal mobility, which can be used on roads but also does not hinder interaction with pedestrians. For this the i-unit has two possible setups. First, there is an upright low speed setup, where the rider has a higher position and can