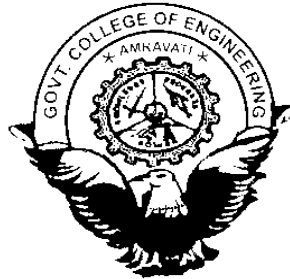


GOVT. COLLEGE OF ENGINEERING, AMRAVATI



B. TECH. (Information Technology) V and VI Semester CURRICULUM

**Department of Information Technology
2009-10**

INFORMATION TECHNOLOGY DEPARTMENT

SCHEME FOR B.Tech. Information Technology

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	Internal	External		
Semester- III													
IT301	Engineering Mathematics- III	4	1	--	5	10	15	15	60	--	--	100	5
IT302	Discrete Mathematics and Graph Theory	4	1	--	5	10	15	15	60	--	--	100	5
IT303	Programming Methodology	4	--	--	4	10	15	15	60	--	--	100	4
IT304	Electronic Devices and Circuits	4	--	--	4	10	15	15	60	--	--	100	4
IT305	Microprocessor Fundamentals	4	--	--	4	10	15	15	60	--	--	100	4
IT306	Programming Methodology Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT307	Electronic Devices and Circuits Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT308	Microprocessor Fundamentals Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT309	Computer Laboratory- I	--	--	4	4	--	--	--	--	50	50	100	2
Total		20	2	10	32	50	75	75	300	125	125	750	27
Semester- IV													
IT401	Data Structures	4	--	--	4	10	15	15	60	--	--	100	4
IT402	Communication Engineering- I	4	--	--	4	10	15	15	60	--	--	100	4
IT403	Digital Integrated Circuits	4	--	--	4	10	15	15	60	--	--	100	4
IT404	Introduction to Information Theory	4	1	--	5	10	15	15	60	--	--	100	5
IT405	Numerical and Statistical Methods	4	--	--	4	10	15	15	60	--	--	100	4
IT406	Data Structures Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT407	Communication Engineering- I Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT408	Digital Integrated Circuits Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT409	Computer Laboratory- II	--	--	2	2	--	--	--	--	25	25	50	1
IT410	General Proficiency-I	--	--	2	2	--	--	--	--	25	25	50	2
Total		20	1	10	31	50	75	75	300	125	125	750	27

Semester- V													
IT501	System Analysis and Design	4	1	--	5	10	15	15	60	--	--	100	5
IT502	Operating System and Compiler construction	4	0	--	4	10	15	15	60	--	--	100	4
IT503	Object Oriented Programming	4	--	--	4	10	15	15	60	--	--	100	4
IT504	Communication Engineering –II	4	--	--	4	10	15	15	60	--	--	100	4
IT505	Theory of Computation	4	0	--	4	10	15	15	60	--	--	100	4
IT506	System Analysis and Design laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT507	Operating System and Compiler construction laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT508	Object Oriented Programming laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT509	Communication Engineering –II Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT510	General Proficiency-II	--	--	2	2	--	--	--	--	25	25	50	2
Total		20	1	10	31	50	75	75	300	125	125	750	27
Semester- VI													
IT601	Computer Network	4	0	--	4	10	15	15	60	--	--	100	4
IT602	Microprocessor Based Design	4	--	--	4	10	15	15	60	--	--	100	4
IT603	Data Base Management System	4	1	--	5	10	15	15	60	--	--	100	5
IT604	E-Commerce	4	0	--	4	10	15	15	60	--	--	100	4
IT605	Design and Analysis of Algorithms	4	--	--	4	10	15	15	60	--	--	100	4
IT606	Computer Network laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT607	Microprocessor Based Design laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT608	Data Base Management System Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT609	Design and Analysis of Algorithms Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT610	Minor Project	--	--	2	2	--	--	--	--	25	25	50	2
Total		20	1	10	31	50	75	75	300	125	125	750	27

Semester- VII													
IT701	Wireless Technology	4	--	--	4	10	15	15	60	--	--	100	4
IT702	Web Technology	4	--	--	4	10	15	15	60	--	--	100	4
IT703	Multimedia Technology	4	--	--	4	10	15	15	60	--	--	100	4
IT704	Embedded System	4	--	--	4	10	15	15	60	--	--	100	4
IT705	Elective –I	4	--	--	4	10	15	15	60	--	--	100	4
IT706	Embedded System Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT707	Multimedia Technology Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT708	Elective –I Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT709	Project and Seminar	--	--	6	6	--	--	--	--	50	50	100	4
Total		20	--	12	32	50	75	75	300	125	125	750	27
Semester- VIII													
IT801	Data Warehousing and Data Mining	4	--	--	4	10	15	15	60	--	--	100	4
IT802	Network Administration and Security	4	--	--	4	10	15	15	60	--	--	100	4
IT803	Elective – II**	4	--	--	4	10	15	15	60	--	--	100	4
IT804	Elective – III***	4	--	--	4	10	15	15	60	--	--	100	4
IT805	Data Warehousing and Data Mining Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT806	Elective – II** Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT807	Elective – III*** Laboratory	--	--	2	2	--	--	--	--	25	25	50	1
IT808	Project and Seminar	--	--	8	8	--	--	--	--	100	100	200	8
Total		16	--	14	30	40	60	60	240	175	175	750	27

TA :Teacher Assessment

CT: Class Tests

ESE: End Semester Examination

Duration of ESE: 2hrs.30min

Elective I (IT705)

Distributed Computing
Optical and Satellite Communication
Digital Signal Processing

Elective II (IT803)

Computer Graphics
Digital Image Processing
Artificial Intelligence

Elective III(IT804)

Artificial Neural Network
Advanced Web Technology
Software Planning and Management with Object Oriented Approach

IT 501 SYSTEM ANALYSIS AND DESIGN

Teaching Scheme : 04 L + 1T Total - 05 Credits : 05
Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks :100
Duration of ESE: 2hrs.30min.

Introduction : System Analysis & Design concepts, Role of system analyst, Review of SDLC, Organization as systems, Levels of management culture, Project fundamentals, Feasibility study, Activity planning & control, Managing analysis & design activities, Sampling and investigating hard data, Interviewing, Planning & conducting interview & reporting, Joint application design, using questionnaires, Planning, designing and administering the questionnaire.

Conservation of a decision-makers behavior and office environment Prototyping: User Reactions, Approaches to prototyping & developing prototype, Data flow approach to requirements, developing DFDs, Logical & Physical DFDs, examples of DFDs, data dictionary concept, data repository, creating & using data dictionary.

Overview of process specifications: Structured English, decision tables/trees, decision support system & decision making concepts relevant to DSS, semi structured decisions, Multiple-criteria decision-making.

System Proposal: Ascertaining hardware/software needs, Identifying & forecasting cost/benefit & comparing cost/benefit, Writing and presenting the systems proposals, Principles of delivery, output design objectives, designing printed output, screen output, Input design objectives, form design, screen design for input.

Introduction to OOSAD : Object-oriented Analysis, object-oriented design.

Text-Book :

1. System Analysis and Design, Kenneth E. Kendall & Julie E.Kendal, 3rd Edition, Prentice Hall,1994.

Reference Books:

1. System Analysis & Design ,Yeates ,2nd Edition, Pearson publication, 2004
2. Fundamentals of System Analysis & Design J.Fitzgerald & A.Fitzgerald, 3rd Edition, John Wiley Publication, 1987.

IT502 OPERATING SYSTEM AND COMPILER CONSTRUCTION

Teaching Scheme : 04 L Total-04 Credits : 04
Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks :100
Duration of ESE: 2hrs.30min.

Introduction: OS definition, Operating system structures: System components, OS services, system calls, Virtual Machines, Process concepts, process state, PCB, scheduling and operations on processes, Co-operating processes. Threads, inter process communication. CPU Scheduling concepts. Scheduling criteria and algorithms and their evaluation. Deadlocks: Definition, conditions & characterization. Deadlock handling, prevention, avoidance, detection and recovery.

Process synchronization: Concept, critical section problem, Semaphores, critical regions. Memory management, swapping, single, multiple partition allocation, compaction, paging, implementation of page table, segmentation, paged segmentation, Virtual memory, demand paging, page replacement, page replacement policies, LRU algorithm, Thrashing concept.

Introduction to Compiling: The phases of a compiler, preprocessors, Introduction: Assembler, Loader, Linker. Simple one pass compiler: overview, Syntax definition, Syntax directed translation, parsing, translator for simple expression. Lexical Analysis: The role of lexical analyzer, input buffering, specific of tokens, recognition of tokens, finite automata, Design of a lexical analyzer generator.

Syntax Analysis: The role of the parser, context free grammar, ambiguity, eliminating ambiguity, elimination of left recursion, Top down parsing, recursive descent parsing, predictive parsers, Transition diagrams for predictive parsers, Nonrecursive predictive parsing, FIRST and FOLLOW, Construction of predictive parsing tables, , LR parsers: LR parsing algorithm, construction of SLR parsing table, Constructing canonical LR parsing tables, using ambiguous grammars.

Intermediate Code Generation and Code Generation: Intermediate languages, three address code, syntax directed translation into three address code, declarations, assignments statements, Boolean expressions, case statements, backpacking.

Text Books:

1. Operating System Concepts, A. Silberschatz, P. B. Galvin, 7th Edition, John Wiley & Sons Publication, 2004
2. The Design of UNIX Operating System, Maurice J Bach, 3rd Edition, PHI Publication, 2004
3. Compilers principles, technique and tools - Alfred V Aho, Ravi Sethi, Jeffrey D Ulman 1st Edition, Addison Wesley Publication, 1986

Reference Books:

1. Modern Operating Systems, A. S. Tananbum, 2nd Edition, Pearson, Education, 2001
2. Operating Systems, William Stallings, 4th Edition, Prentice Hall, 2002
3. Operating Systems, Crowley, 2nd edition, Tata McGraw Hill, 1998
4. Operating System: Concepts and Design, Milan Milenkovic, 2nd Edition, McGraw Hill, 1992.

IT 503 OBJECT ORIENTED PROGRAMMING

Teaching Scheme : 04 L

Total 04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 + 10 TA + 60 ESE

Total Marks : 100

Duration of ESE: 2hrs.30min.

Objects & Classes in C++ : Declaring & using classes, Constructors, Objects as functions arguments, Copy Constructor, Static class data, Arrays of objects, C++ String class.

Operator overloading: Overloading unary & binary operators. Data conversion. Pitfalls of operator overloading, Pointers & arrays, Pointers & functions, new & delete operators, Pointers for objects.

Inheritance in C++ : Derived class & base class, Derived class constructors, Function overloading, class hierarchies, Public and private inheritance, Multiple inheritance. Containership : classes within classes.

Virtual functions concepts: Abstracts classes & pure virtual functions, Virtual base classes, Friend functions, Static functions, Assignment and copy initialization, this pointer, Dynamic type information.

Streams & Files in C++ : Stream classes, stream errors, disk file I/O with streams, File pointers, Error handling in file I/O, File I/O with members functions, overloading the extractions & insertion operators, Memory as a stream object, command-line arguments. Multifile programs.

Function Template: Class templates, Exception syntax, Multiple exceptions, exception with arguments. Introduction to the Standard Template Library, Algorithms, Sequential Containers, Iterates, Specialized iterates, Associative containers, Function objects.

Text Book :

1. Object-Oriented Programming in C++, Robert Lafore, 5th Edition, Galgotia Publication 2002.

References Books :

1. The C++ Programming Language, Bjarne Stroustrup, 3rd Edition, Addison-Wesley, 2004

2. C++ Primer, Stanley B. Lippman, Josee Lajoie, Barbara E. Moo, 4th Edition, Addison Wesley, 2007.

3. Complete Reference C++, Herbert Schild, 3rd Edition, TMH, 1991.

IT 504 COMMUNICATION ENGINEERING – II

Teaching Scheme : 04 L

Total 04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Analysis: Classification of signals, Fourier series, Exponential Fourier series, Fourier transform, properties of Fourier transform, Delta function, Fourier transform of periodic functions, Power spectral density, energy spectral density, correlation, Auto-correlation, cross-correlation.

Probability and Random Signal Theory: Probability, Random variable, PDF random processes, stationarity, Mean, Correlation and covariance functions, Ergodicity, spectral density, Gaussian process, White Gaussian noise.

Noise in CW Modulation: Mathematical representation of Noise, AM receivers, Signal to Noise ratio, SNRs of SSB-SC, DSB-SC and DSB-FC systems, FM receivers, Noise in FM reception, FM threshold effect, comparison of AM and FM

Pulse Modulation: The sampling theorem, sampling of Band-pass signal, Quantization and types of quantization, Practical aspects of sampling, Reconstruction of message process from its samples, time division Multiplexing, pulse amplitude modulation, pulse time modulation,

Data Transmission: PCM, Differential PCM, DM, Basic principle of ASK, FSK, PSK, BPSK, DPSK, QPSK, BFSK, its generation, reception, error probability, band width requirement and comparison.

Switching Techniques: Introduction to switching system, Pulse dialing, touch-tone dial telephone, space division switching, SPC, centralized and distributed SPC, time division switching: Basic time division space switching, time division time switching, time multiplexed space switching, time multiplexed time switching.

Text Books:

- 1.Principle of Communication Systems, Taub and Schilling D.L., 2nd Edition, Tata McGraw Hill, 1986.
2. Communication System, Simon Haykin, 4th Edition, John Wiley, 2001

References Books:

- 1..Digital Communication, J.S. Chitode ,3rd Edition, Technical Publication, 2002.
2. Modern Digital and Analog Communication System, B.P. Lathi , 3rd Edition, A Prism Indian Edition, 1998.

IT505 THEORY OF COMPUTATION

Teaching Scheme : 04 L

Total-04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Finite Automata: Alphabet, Language, Operations, Finite state machine, definitions, Finite automation model, Acceptance of strings and languages, Non-deterministic finite automation, deterministic finite automation, equivalence between NFA and DFA. Conversion of NFA into DFA, minimization of FSM, equivalence between two FSM's, Moore and Mealy machines.

Regular expressions: Regular sets, regular expressions, identity rules, Manipulation of regular expressions, equivalence between RE and FA, Inter conversion, pumping lemma, Closure properties of regular sets .

Regular grammars: right linear and left linear grammars, equivalence between regular linear grammar and F A inter conversion between RE and RG Context free grammar, derivation trees, Chomsky normal form, Greibach normal form, push down automata, definition, model, acceptance of CFL, equivalence of CFL and PDA, interconversion, enumeration of properties of CFL .

Turing machine: Definition, model, design of TM, computable functions, recursive enumerable language, Church's hypothesis, counter machine, types of TM's Chomsky hierarchy of languages, linear bounded automata and context sensitive language, introduction of DCFL and DPDA, LR (O), grammar, decidability of problems.

Undecidability: properties of recursive & non-recursive enumerable languages, universal Turing machine, post-correspondence problem, introduction to recursive function theory.

Text Books :

- 1.Introduction to Automata Theory, Languages and Computation , John E.Hopcroft, Rajeev Motwani, Jeffrey D.Ullman ,3rd Edition, Addison-Wesley Longman publishing Co. 1984.
- 2.An Introduction to Formal Languages and Automata by Peter Linz,4th Edition, Jones

& Bartlett Publication, 2006

Reference Books :

- 1.Introduction to Languages and the Theory of Automata, John C.Martin,2nd Edition, McGraw- Hill Publication,2002.
- 2.Elements of Theory of Computation , Lewis H.P. and Papadimition C.H. ,2nd Edition, Prentice Hall Publication,1997.

IT506 SYSTEM ANALYSIS AND DESIGN LABORATORY

Teaching Scheme : 02 P

Total : 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

1. Write an experiment to Create Database & Connect it with Front-end.
2. Write an experiment to Create student information system. Add Following buttons on Form. 1)add 2)delete 3)edit 4)exit
3. Write an experiment to Create student-grading system using the following controls on the form
 - 1.combo box
 - 2.list box
4. Create online registration form for taking admission in different courses.
5. Write an experiment to create online examination system using check box & option box & option button.
6. Write an experiment to prepare Mark Sheet using reports.
7. Write an experiment to Create Leaving Certificate.
8. Write an experiment for Hostel Information System.

**IT 507 OPERATING SYSTEM AND COMPILER CONSTRUCTION
LABORATORY**

Teaching Scheme : 02P

Total : 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

The sample list of programs is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

- 1.To display Partition Table of Hard Disk.
2. To generate child process and print ids.
3. To show one way communication between process
4. To show one way communication between process using pipe
5. To implement file related system call read(),write(),open(),lseek()..
6. To implement shared memory
7. To implement message queue
8. To sockets for RPC

IT 508 OBJECT ORIENTED PROGRAMMING LABORATORY
Teaching Scheme : 02 P **Total: 02** **Credit :01**
Evaluation Scheme : 25 Internal + 25 External **Total Marks :50**

The sample list of program is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes. Write following programs in C++ :-

1. To implement a stack with its constructor and two member functions PUSH and POP.
2. To find product of two same numbers from 0 to 9 stored in an object array of 10 objects and then free the memory space occupied by an object array.
3. To overload minus operator as a unary and binary operator.
4. Using friend operator function to overload plus binary operator.
5. To calculate the circumference of an earth (subclass) after getting distance of it measured from sun from planet (super class).
6. For an inventory that stores the name of an item, the number on hand, and its cost. Include an inserter and an extractor for this class.
7. To create an output file, write information to it, close the file and open it again as an input file and read the information from the file.
8. To count number of words in a file.
9. To create an abstract class area having an abstract function getarea(), which will find an area of derived classes rectangle and triangle.
10. To create a generic function that swaps the values of the two variables.

IT509 COMMUNICATION ENGINEERING-II
LABORATORY

Teaching Scheme : 02 P **Total 02** **Credit : 01**
Evaluation Scheme : 25 Internal + 25 External **Total Marks : 50**

Minimum Eight practical on following topics:-

- Asynchronous protocol,
- Synchronous protocol,
- Character oriented protocol,
- Bit Oriented protocols,
- Link access procedures,
- Packet switching,
- Message switching,
- Integrated services digital networks (ISDN),
- Routing algorithms.

IT510 GENERAL PROFICIENCY-II

Teaching Scheme: 02 P

Total 02

Credits :02

Evaluation Scheme: 25 Internal + 25 External

Total Marks: 50

- Writing Letters at work
- How to write reports?
- Writing for meetings
- Writing Letters from home
- How to write Job Application?
- To learn Modes of Address
- Improving your voice and speech
- The art of conversation
- Public speaking
- Job Interviews

Textbook:

1. How to speak and write better, John Ellison Kahn ,1st Edition, The Reader Digest Association Limited, 2006 .

Reference Book:

1. Everyday Letter for Busy People, Debra Hurt May, 1st Edition, Career Press, 2004
2. Speak Easy, Sandy Linver and Loral Dean, 1st Edition, New York Summit Books, 1978.

IT601 COMPUTER NETWORK

Teaching Scheme : 04 L

Total - 04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Introduction to network: History, OSI model process, simple client server model, Unix networking, process daemon process and introduction to interprocess communication in Unix.

Communication protocols : TCP/IP, SNA, NetBIOS and protocol comparison, Berkley sockets, Elementary and Advanced socket system calls (Unix), socket implementation.

Internet time and date client, Internet ping client, XNS echo client, TFTP protocol, data formats, connections, client user interface, UDP and TCP implementation.

Remote command execution: Rmed function and rshd server, rexec function and rexecd server, remote login, rlogin overview, rlogin client and rlogin server, pseudo terminals and terminal modes.

Remote procedure calls: Common stubs, introduction, transparency issues, Sun RPC, exception handling, call semantics, data representation, performance and security.

Domain name system: Structure of computer names, DNS, client server model. DNS server hierarchy, Resolving names, Types of DNS entries, configuring the DNS

Text Books:

- 1.Unix Network Programming , W.Richard Stevens,2nd Edition, PHI Publication, 1998
- 2.Computer Network & Internet, Douglas E. Comer,2nd Edition,Addison Wesley, 2001

Reference Books:

- 1.Communication Networks ,Leon Garcia &Widjaja, 2nd Edition,TMH Publication , 2000.
- 2.Data&Computer Communication ,William Stallings,7th Edition,Pearson Education, 2003.

IT602 MICROPROCESSOR BASED DESIGN**Teaching Scheme : 04 L****Total - 04****Credits : 04****Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE****Total Marks :100****Duration of ESE: 2hrs.30min.**

8086: Pin configuration, Physical memory organization, general bus organization, I/O addressing, 8086 minimum mode system & timings, Memory interfacing, static RAM Interfacing, dynamic RAM interfacing.

I/O interfacing: methods of I/O interfacing, 8255 PPI: Pin configuration, internal organization, modes of operation, interfacing with 8086.Programmable Interrupt Controller 8259: Pin Configuration, various control & command words and internal organization, modes of operation, interfacing with 8086.

USART 8251: pin configuration, internal organization, control word formats for synchronous & Asynchronous modes of operation, 8251 interfacing with 8086.DMA controller 8237: pin Configuration, internal organization, modes of operation, 8237 interfacing with 8086.

Programmable Timer/counter 8254:pin configuration, Internal organization, all the modes of Operation, 8254 interfacing with 8086.Programmable Keyboard/display Controller 8279:pin Configuration, internal organization, modes of operation, interfacing with 8086.

ADC 0800/0809 :Its working, interfacing with 8086 and programming in polled mode, in interrupt-driven mode. DAC 0800/0808 its working, interfacing with 8086 and programming in polled mode, in interrupt-driven mode. Measurement of temperature, speed and frequency using ADCs/DACs

8086 maximum mode system & timings, bus controller 8288: Its architecture, operation and Interfacing with 8086. 8289 bus arbiter its architecture, operation and interfacing with 8086,Coprocessor configuration. ESC prefix, system bus mode, semaphores & LOCK prefix.

Text Book :

- 1.8086/8088 Families: Design, Programming& Interfacing, Uffenbeck John. P.,3rd Edition,Prentice-Hall Publication, 2001

References Books :

- 1.Intel Microprocessors, Bray B,4th Edition,PHI Publication, 1997.
- 2.Intel Processors: Programming, Interfacing & Applications, Walter A. Triebel, Avtar Singh ,3rd Edition,Prentice-Hall Publication ,2000.
- 3.Microprocessors Systems: The 8086/8088 Family, Liu & Gibson 2nd Edition,

Prentice-Hall Publication, 1986.

IT603 DATABASE MANAGEMENT SYSTEM

Teaching Scheme : 04 L+01T

Total - 05

Credits : 05

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Introduction: Database System Applications, Database Systems versus File Systems, View of Data, Data Models, Database Languages, Database Users and Administrators, Transaction Management, Database System Structure, Application architectures, History of Database Systems. Entity-Relationship Model, Basic Concepts, Constraints, Keys, Design Issues, Entity-Relationship Diagram, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

Relational Model: Structure of Relational Databases, The Relational Algebra, Extended Relational-Algebra Operations, Modification of the Database, Views, The Tuple Relational Calculus, The Domain Relational Calculus, SQL: Basic Structure, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Views.

Integrity and Security, Domain Constraints, Referential Integrity, Assertions, Triggers, Security and Authorization, Authorization in SQL, Encryption and Authentication, Relational-Database Design: First Normal Form, Pitfalls in Relational-Database, Design, Functional Dependencies, Decomposition, BCNF, Third, Fourth and more Normal Forms, Overall Database Design Process.

Query Processing: Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions, Query Optimization: Overview, Estimating Statistics of Expression Results, Transformation of Relational Expressions, Choice of Evaluation Plans, Materialized Views.

Transaction management: Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Execution, Serializability, Recoverability, Implementation of Isolation, Transaction Definition in SQL, Testing for Serializability.

Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols, Validation-Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling, Insert and Delete Operations, Weak Levels of Consistency, Concurrency in Index Structures. Recovery System, issues & solutions.

Text Book:

1. Database System Concept , Korth ,Sudarshan ,4th Edition, Mc Graw Hill Publication, 1997.

Reference Books:

1. Database system, Raghu Ramkrishnan, 3rd Edition, McGraw-Hill Publication ,2003.
2. Database System, Connolly & Begg, 3rd Edition, Low Price Ed. Addison Wesley publication, 2005.

IT604 E- COMMERCE

Teaching Scheme : 04 L

Total - 04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Basic web commerce concepts: electronic commerce modes: overview, EDI, electronic commerce with www-internet, commerce net advocacy. **Approach to safe E-commerce:** Secure transport protocol and transaction, SEPP,SET, Certificate for authentication, security on web server and enterprise network. **Electronic cash and Electronic payment scheme:** Internet monetary payment and security Requirements, Payment & purchase order process, Online Electronic cash. **Needs for computer security:** Security strategies, Encryption. MasterCard/visa secure Electronic Transaction: Introduction ,requirements and concepts, payment processing. **Secure E-mail Technologies:** Introduction, means of distribution, models for message handling, Email working, MIME, S/MIME, moss comparisons of security methods, MIME and Related facilities for EDI over the Internet. **Internet & web site Establishment:** Internet Resources for commerce: introduction, Web server Technologies, Internet tools Relevant to commerce, Internet Applications for commerce, Internet Access and Architecture, Internet searching.

Text Book :

1.Web Commerce Technology Hand Book, Daniel Minoli & Emma Minoli,1st Edition, PHI Publication, 1999.

Reference Books:

1. The E-Commerce book, Steffano Korper and Juanita Ellis,2nd Edition, Focal press, 2000.
2. The Complete E-Commerce book, Janice Reynolds, 1st Edition, Focal Press, 2004.

IT605 DESIGN AND ANALYSIS OF ALGORITHMS

Teaching Scheme : 04 L

Total - 04

Credits : 04

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE: 2hrs.30min.

Algorithms as technology: The role of algorithm in Computing, Introduction to elementary algorithmic, problem and instances, Efficiency of algorithms, Average and Worst-case analysis, Efficiency considerations, Elementary operations, Asymptotic notations, Conditional Asymptotic notations.

Analysis of algorithmic: control structure analysis, sequencing, "for" loops, recursive calls, while and repeat loops, Average case analysis, amortized analysis, Solving recurrences, Heaps, binomial heaps, disjoint set structures.

Greedy algorithms: general characteristics, Graphs, Minimum spanning trees, Kruskal's algorithm, Prim's algorithm, Shortest path algorithms, Knapsack problem, Scheduling. Divide and Conquer: Introduction, Multiplying integers, general template, Binary search. Sorting: Merge sort, Quick sort, Insertion sort, Heap sort, finding median Matrix multiplication, Exponentiation.

Dynamic programming: binomial coefficients and World Series examples. Principle of optimality, Knapsack problem, Shortest path, chained matrix multiplication.

Exploring Graphs: Traversing trees, DFS for undirected and directed graphs, breadth first search, backtracking, branch and bound, the minimax problem, introduction to NP completeness: polynomial time, polynomial time verification, NP completeness and reducibility.

Text Books:

- 1.Fundamentals of Algorithmics ,G.Brassards, P.Brately,1st Edition, Prentice Hall of India Publication,1996
- 2.Fundamentals of Algorithmics, Horowitz and Sahni,3rd Edition, Galgotia Publication, 1999

Reference Book:

- 1.Introduction to Algorithms, Thomas H. Cormen, Leiserson, Rivest, Stein 2nd Edition, Prentice Hall of India, 2004.

IT606 COMPUTER NETWORK LABORATORY

Teaching Scheme : 02 P

Total 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

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- Minimum eight Experiment on following topics:
 - Process daemon process
 - Inter process communication in Unix.
 - Advanced socket system calls (Unix)
 - Socket implementation
 - Routing in the Internet
 - Client user interface
 - UDP and TCP implementation
 - Remote procedure calls

IT607 MICROPROCESSOR BASED DESIGN LABORATORY

Teaching Scheme : 02 P

Total 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

Minimum Eight Experiments On Following Topics: ○ 8086 minimum mode system & timings ○ I/O interfacing: methods of I/O interfacing,8255 ○ Interfacing with 8086. ○ 8251 interfacing with 8086. ○ 8237 interfacing with 8086. ○ Programmable Timer/counter 8254 ○ 8254 interfacing with 8086. ○ ADC 0800/0809 ○ DAC 0800/0808.

IT608 DATABASE MANAGEMENT SYSTEM LABORATORY

Teaching Scheme : 02 P

Total 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

The sample list of programs based on ORACLE or MY SQL is given below.

1. Consider the employee database, where the primary keys are underlined & Write the Queries using following clauses & also retrieve the data from the given database.

Employee (employee-name,street,city)

Works (employee-name,company-name,salary)

Company (company-name,city)

Manages(employee-name,manager-name)

I) Order By II) Between III) Group By IV) Having

2. Consider the above database & perform the different Join Operations which are as follows.

I) Inner Join II) Left Outer Join III) Right Outer Join IV) Full Outer Join

3. Consider the above database & Perform the different Set Operations Which are as follows.

I) Union II) Intersect III) Except/Minus

4. Consider the above database & perform the all Aggregate Functions.

5. Write an assertion for the bank database to ensure that the assets value for the 'perryridge' branch is equal to the sum of all amounts lent by the 'perryridge' branch.

Customer(customer-name, customer-street, customer-city)

Branch(branch-name, branch-city, asstes)

Loan(loan-number,branch-name,amount)

Borrower(customer-name,loan-number)

Depositor(customer-name, account-number)

Account(account-number,branch-name,balance)

6. Write an SQL trigger to carry out the following action: On delete of an account, for each owner of the account, check if the owner has any remaining accounts, and if she does not, delete her from the depositor relation.

7. Consider the above Bank database & write the SQL queries for the following views:

I) A view containing the account numbers the customer names for all accounts at the deer park branch.

II) A view containing the names and addresses of all customers who have an account with the bank, but do not have a loan.

8. Mini Project Using Oracle 10G & VB6

IT609 DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY

Teaching Scheme : 02 P

Total 02

Credit : 01

Evaluation Scheme : 25 Internal + 25 External

Total Marks : 50

- Analyze time complexity of "for" loops, while and repeat loops.
- Analyze time complexity using recursive calls.
- Implement and analyze Shortest path algorithms using Greedy algorithm
- Implement Knapsack problem. Scheduling using Greedy algorithm
- Analyze Merge sort, Quick sort, Insertion sort, Heap sort
- Implement Knapsack problem using Dynamic programming
- Implement DFS for undirected and directed graphs. Breadth
- Implement first search.
- Implement Backtracking,
- Implement Branch and bound.

IT 610 MINOR PROJECT

Teaching Scheme : 02P

Total 02

Credit : 02

Evaluation Scheme : 25 Internal+ 25External

Total Marks : 50

Minor Project based on following topics

- Web server.
- DNS Server.
- Database connectivity.
- Client-server Architecture.
- Networking.
- Data mining and Data Ware housing.
- Proxy Server.
- Mail Server.