

VII SEMESTER

SL No.	Sub Code	Title	Teaching Dept.	Teaching hours /week		Examination			
				Theory	Prac	Duration	I.A. Marks	Theory/ Pract.	Total Marks
1.	CS71	Engineering & Technology Management	CSE/ISE MCA	04	---	03	25	100	125
2.	CS72	Object Oriented Analysis & Design	CSE/ISE	04	---	03	25	100	125
3.	CS73	Java & CGI Programming	CSE/ISE	04	---	03	25	100	125
4.	CS74	Computer Networks-II	CSE/ISE	04	---	03	25	100	125
5.	CS753	Distributed Operating System Elective-II(Group B)	CSE/ISE	04	---	03	25	100	125
6.	CS761	C# programming and .NET Concepts Elective-III (Group C)	CSE	04	---	03	25	100	125
7.	CSL77	Network Laboratory	CSE/ISE	---	03	03	25	50	75
8.	CSL78	CGI Programming Laboratory	CSE	---	03	03	25	50	75
TOTAL				24	06	---	200	700	900

ENGINEERING & TECHNOLOGY MANAGEMENT

Sub Code : CS71 IA Marks : 25 Hrs/Week : 04
Exam Hours : 03 Total Hrs : 52 Exam Marks : 100

Planning and Forecasting	4 Hrs
Preview, Nature Of Planning, The Foundation for Planning, Some Planning Concepts, Forecasting, Strategies Technology.	
Decision Making	3 Hrs
Preview, Nature Of Decision Making, Management Science, Tools for Decision Making, Computer Based Information System, Implementation.	
Organizing	3 Hrs
Preview, Nature Of Organizing, traditional Organization Theory, Technology & modern Organization Structures, Teams.	
Some Human Aspects Of Organizing	4 Hrs
Preview, Staffing Technical Organizations, Authority & Power, Delegation, committees & Meetings.	
Motivating & Leading Technical People	5 Hrs
Preview, Motivation, Leadership, Motivating & Leading Technical Professionals.	
Controlling	2 Hrs
Preview, The Process of Control, Financial Controls, Non Financial Controls.	
Managing the Research Function	5 Hrs
Preview, Product & Technology Life Cycles, Nature of Research & Development, Research strategy & Organization, Selecting R&D Projects, Protection of Ideas, Creativity, Making R&D Organizations Successful.	
Managing Engineering Design	6 Hrs
Preview, Nature of Engg. Design, Systems Engg./New Product development, Concurrent Engineering & CAL's, Control System in Design, Product Liability & Safety, Designing For Reliability, Other "Iilities" in Design.	
Planning Production Activity	5 Hrs
Preview, Introduction, Planning Manufacturing Facilities, Quantitative Tools in Production Planning, Production Planning & Control, Flexible Manufacturing System.	
Managing Product Operations	5 Hrs
Preview, Assuring Product Quality, Productivity, Work Measurement, Maintenance & Facilities(Plant) Engineering, Other Manufacturing Functions.	
Engineering in Marketing & Service Activities	3 Hrs
Preview, Marketing & the Engineers, Engineers in Service Organizations.	
Project Planning & Acquisition	3 Hrs
Preview, Characteristics of the Project, The Project Proposal Process, Project Planning Tools, Types of Contacts.	
Project Organization, Leadership & Control	4 Hrs
Preview, Project Organization, The Project Manager, Motivating Project Performance, Controlling cost & Schedule.	

TEXT BOOK:

1. Daniel L. Babcock & Lucy C. Morse, Managing Engineering & Technology 3rd Edition, Pearson Education
Chapters: 3 to 15

OBJECT ORIENTED ANALYSIS AND DESIGN
(COMMON TO ISE)

Sub:Code :CS72
Exam Hours: 03Total

IA Marks : 25
Hrs :52

Hrs/Week :04
ExamMarks: 100

1. Introduction

12 Hrs

An overview of object systems development. Why an object orientation?. Overview of the united approach. Object basics : Introduction. An object-oriented philosophy. Objects . Classes. Attributes: Object behavior and methods. Encapsulation & information hiding. Class hierarchy . Polymorphism. Object relationships & associations. Aggregations & object containment. Case study: Payroll program. Advanced topics. Object-oriented systems development life cycle: Introduction. The software development process. Building high-quality software , Object oriented systems development. A use-case driven approach . Reusability.

2 Methodology, Modeling & UML

12Hrs

Object-oriented Methodologies, Introduction Survey of some of the object oriented methodologies , Rumbaugh's object modeling technique . The Booch methodology . The Jaccbosan Methodoogies . Pattern. Framework. The unified approach . unified modeling language . Introduction static & dynamic models , why modeling .Introduction to the unified modeling language . UML diagrams . UML class diagram. Use-case diagram . UML dynamic modeling, Model management : Packages and model organizations , UML extensibility , UML meta-model.

3. Object Oriented Analysis

12 Hrs

Object oriented Analysis, Process-identifying use cases: Introduction , Business object analysis: Understanding the business layer ,Use-case driven object analysis : The unified approach business process modeling . Use-case model. Development effective documentation. Csaen study : via net bank ATM. Object analysis –classification : Introduction, classification theory approaches for identifying classes . Noun phases approach. Commom class pattern approach. Use-case driven approach-identifying classes & their behaviour through sequence/collection modeling. Classes responsibilities & collaborator , Naming classes identifying object relationships, attributes & models : Introduction Associations Super –sub class relationships. A part of relationships-aggregation. Case study . Class responsibility : Defining attributes analyzing use cases & other UML diagrams , defining attributes for via net bank objects . Objects responsibility : Methods & messages . defining methods for via net bank objects.

4. Object oriented design

16 Hrs

The object oriented design process & design axioms : Introduction. The object oriented design process, The object oriented design axioms . corollaries . Design Pattens. Designing classes : Introduction. The object oriented design philosophy , UML object constraint language . Designing classes : The process Class visibility : Design well defined public , private & protected protocols. Designing classes : Refining attributes . Refining attributes for the via net bank projects. Designing methods and protocols .Designing methods for the via net bank objects , Packages & managing classes> Access layer-object storage & object interoperability:L Introduction. Object store & persistence : Distributed databases & client-server computing . Distributed objects computing . objects oriented database management systems, Designing access layer classes for the via net bank ATM . View layer designing interface objects. Introduction. User interface design as a creative process , Designing view layer classes . Macro level process identifying view classes by analyzing use case. Macro-level process . The purpose of a view layer interface , Prototyping the user interface , case study .

TEXT BOOKS:

1. Ali Bahrami: Object oriented system development, McGrawHill, 1999
(Chapter 1 to 12)

REFERENCE BOOKS:

- 1.Rebecca Wirfs: Designing object-oriented software. Prentice-Hall India, 1999.
2. Grady Booch: Unificed Modeling Language User Guide, Addison-Wesley, 1999
3. Gamma. E : Design patterns: Elements of reusable Object oriented software. Addison-Wesley,1995.
4. Martin. J & Odell J : Object oriented methods: A foundation. Prentice-Hall.1995.

Java and CGI Programming

Sub code: CS73

Total Hours: 52

Java Programming

1. Java Language

12Hrs.

The Java Revolution- Java Applets, Revolutionary Programming Language, Rich Object Environment, Java Language Introduction – Hello World, Lexical Issues, variables. Types – simple types, Arrays. Operators, Flow Control – Branching, Looping, Classes-Object References, Instance Variables, The New Operator, the Dot (.) Operator, Method Declaration, Method Calling, Constructors, Method Overloading , Inheritance, Method Overriding, Dynamic Method Dispatch, Abstract, Packages and Interfaces – packages, Interfaces.

1. Java Classes

14Hrs.

String Handling – Constructors, String Syntax, Character Extraction, Comparison, String Copy Modifications, Exception Handling – Exception Types, Uncaught Exceptions, Try and Catch , Multiple Catch Clauses , Nested Try Statements, Exception Subclasses, Threads and Synchronization – single thread Event Loop, The Java Thread Model, Thread Class, Runnable Interface, Thread Priorities, Synchronization, Inter-thread Communication, Thread API summary, Utilities- simple type wrappers, Enumeration, runtime, Input / Output – File, Input Stream, Output Stream, File Streams. Applets – HTML Applet tag, order of Applet Initialization, Repainting, sizing Graphics, Color, Color Methods, Fonts, Abstract window Toolkit – Components, Layouts, Menu Components.

CGI Programming

2. Structural.

8Hrs.

The Web Explained: How It Works, Apache web server- Introduction, Starting, Stopping and Restarting Apache, Configuration, Securing Apache, Create The Website, Apache Log files, MySQL- Introduction, Tutorial, Database Independent Interface, Table Joins, Loading and Dumping a Database

3. Dynamic

6Hrs.

The Common Gateway Interface- Introduction, Apache Configuration, A first CGI Program, What can go wrong?, CGI.pm Introduced, CGI.pm HTML Shortcuts, Information Received by the CGI Program, Form Widget methods, CGI Security Considerations, A Note about die(), Project-CGI/MySQL/DBI

4. Embedded

12Hrs.

Server Side Includes – Introduction, Security Considerations, PHP – Introduction, Embedding PHP into HTML, Configuration, Quick Examples, Language Syntax, Built-In PHP Functions, PHP and MySQL, Project.

Text Books:

- I. The Java Hand Book by Patrick Naughton, TMH, 11th Edition, 2002.
- Open Source Web Development with LAMP- using Linux , Apache, MySQL, Perl, and PHP by James Lee and Brent Ware, Addison- Wesley/Person Education Inc. 2003

Computer Networks –II

Sub code: CS74

Total Hours: 52

1. The Application Layer

15Hrs.

DNS- The Domain Name System: The DNS Name Space, Resource Records, Name Servers: Electronic Mail: Architecture and Services, The User Agent, Message Formats, Message Transfer, Final Delivery; The World Wide Web:

Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP, Performance Enhancements, The Wireless Web;

2. Multimedia Networking

19Hrs.

Multimedia Networking Applications; Streaming Stored Audio & Video; Making the Best of the Best-effort Service: An Internet Example; Protocols for Real Time Interactive Applications: RTP, RTP Control Protocol, SIP, H.323; Beyond Best Effort: Differentiated Scenarios; Scheduling and Policing Mechanisms; Integrated Services; RSVP; Differentiated Services; Internet Radio, Voice Over IP, Multimedia File Formats, Audio and video Compression, Video On Demand;

3. Security in Computer Networks

15Hrs.

Network Security, Principles of Cryptography; Authentication Protocols; Integrity; Key Distribution and Certification; Access Control: Fire Walls; Attacks and Countermeasures; Security in Many Layers: Case Studies; Web Security; Wireless Security; Social Issues.

4. Network Management

3Hrs.

Infrastructure of Network Management: The Internet Standard Management Framework, Structure of Management Information (SMI), Management Information Base (MIB), SNMP Protocol Operations and Transport Mappings, Security and Administration.

Text Books:

- 1) Andrew S. Tanenbaum, Computer Networks, Fourth Edition, PHI/Person Publication 2002.
- 2) James F. Kurose and Keith W. Ross, Computer Networking- A Top-Down Approach Featuring the Internet, 2nd edition, Pearson

**DISTRIBUTED OPERATING SYSTEMS
(COMMON TO ISE)**

Sub Code : CS753
Exam Hours : 03

I.A. Marks : 25
Total Hours : 52

Hrs/Week : 04
Exam marks : 100

1. Fundamentals 6 Hrs
What is Distributed Computing Systems?, Distributed Computing Systems Models, what is Distributed Operating Systems?, Issues in designing the a Distributed Operating Systems, Introduction to Distributed Computing Environment (DCE).
2. Message Passing 8 Hrs
Desirable Issues of good Message Passing, Issues in IPC by Message Passing, Synchronization, Buffering, Multidatagram Messages, Encoding and Decoding of Message data, Process Addressing, Failure Handling, Group communication, Case Study: 4.3 BSD UNIX IPC Mechanism.
3. Remote Procedure Calls 8 Hrs
The RPC Model, Transparency of RPC, Implementing RPC Mechanism, Stub generation, RPC Messages, Marshaling Arguments and Results, Server Management, Parameter-Passing Semantics, Call Semantics, Communication Protocols for RPCs, Complicated RPCs, Client-Server Binding, Exception Handling, Security, Case Studies : SUN RPC
4. Distributed Shared Memory 6 Hrs
General Architecture of DSM, Design and Implementation Issues of DSM, Granularity, Structure of Shared Memory Space, Consistency Models, Replacement Strategy, Thrashing.
5. Synchronization 10 Hrs
Clock Synchronization, Event Ordering, Mutual Exclusion, Deadlock, Election Algorithms
6. Resource Management 6 Hrs
Desirable features of Good Global Scheduling Algorithm, Task Assignment Approach, Load- Balancing, Load-Sharing approach.
7. Process Management 5 Hrs
Process Migration, Threads
8. Distributed File Systems 3 Hrs
Desirable Features of a Good Distributed File System, File Models, File-Accessing Models, File-Sharing Semantics, File-caching Schemes.

TEXT BOOK:

1. "Distributed Operating System: Concepts and Design", Pradeep. K.Sinha, 1997, PHI
[Chapter 1: 1.1, 1.3, 1.5, 1.7, Chapter 3: 3.2-3.11, Chapter 4: 4.2,4.15,4.20, Chapter 5: 5.2-5.8, Chapter 6: 6.2- 6.6, Chapter 7: 7.2-7.4, Chapter 8: 8.2- 8.3, Chapter 9: 9.3-9.6]

REFERENCE BOOK

1. "Distributed Operating System", Andrew S. Tanenbaum, Pearson Education ,2002

C# PROGRAMMING AND .NET CONCEPTS

sub code : CS761
Exam Hours : 03

IA Marks : 25
Total Hrs :52

Hrs/Week : 04
Exam Marks :100

1. Philosophy of .NET

Understanding the Previous state of Affairs, The .NET Solution, The Building Blocks Of the .NET Platform (CLR, CTS, CLS),The Role of the .NET Base Class Libraries, What C# Brings to the Table, Additional .Net – Aware Programming Languages, An Overview of .NET Binaries(aka Assemblies),The Role of the Common Intermediate Language, The Role of .NET Type Metadata, The Role of the Assembly manifest, Compiling, CIL to Platform specific Instructions, Understanding the CTS, Intrinsic CTS data types, Understanding the CLS, Understanding the CLR,A tour of the .NET Namespaces, Increasing your Namespaces Nomenclature, Deploying the .NET Runtime **5Hrs**

2. Building C# Applications

The Role of the Command Line Compiler (csc.exe), Building Application Using csc.exe, Working With csc.exe, Response Files, Generating Bug Reports, Remaining Compiler Options, The Command Line Debugger (cordbg.exe), Using the VS.NET IDE, Other Key Aspects of the VS.NET IDE, Documenting your Source code via XML, C# “Preprocessor” Directives, AN Interesting aside: The System. Environment Class, Building .NET Applications with Other IDEs. **6Hrs.**

3. C# Language Fundamentals

The Anatomy of a Basic C# Class, Creating Objects : Constructor Basics, The Composition of a Application, Default Assignment and Variables Scope, The Member Initialization Syntax, Basic I/P & O/P with the console Class, Understanding Values types & Reference Types, The Master Node : System .Object, The System Data Type (and Aliases),Converting Between Value Type & Reference Type :Boxing & Unboxing, Defining Program Constants, Iterations Constructs, Control Flows, The Complete set of Operators, Defining Custom Class Methods, Understanding static Methods, Method Parameter Modifiers, Array Manipulation in C#, String Manipulation, Enumerations, Defining Structures in C#, Defining Custom Namespaces. **10 Hrs.**

4. Object Oriented Programming with C#

Formal Definitions of C# Class , Definition the “Default Public Interface” of a Type, Recapping the Pillars of OOP, The first Pillar: C#'s Encapsulation services, The Second Pillar: C#'s Inheritance Supports, Keeping Family Secrets: “ Protected” Keyword, Nested Type Definations, The Third Pillar: C#'s Polymorphic Support, Casting Between Types, Generating Class Definitions Using VS.NET. **6 Hrs.**

5. Exceptions and Object Lifetime.

Ode to Errors, Bugs and Exceptions, The Role Of .NET Exception Handling, The System Exception Base Class, Throwing a Generic Exception, Catching Exception, CLR System - -Level Exceptions(System.SystemException), Custom Application-Level Exception (System.ApplicationException), Handling multiple Exceptions, The Finally Block, The Last Chance Exception, Dynamically Identifying Application and System Exceptions, Debugging System Exception Using VS.NET, Understanding Object Lifetime, The CIL of “new”, The Basic of Garbage Collection, Finalizing a Type, The Finalization Process, Building an Ad Hoc Destruction method, Garbage Collection Optimizations, The System .GC Type. **5Hrs.**

6. Interfaces & Collections.

Defining Interfaces Using C#, Invoking Interfaces Members at Object Level, Exercising the Shapes Hierarchy, Understanding Explicit Interfaces implementation, Interface As Polymorphic Agents ,Building Interfaces Hierarchies, Implementing Interfaces Using VS.NET,Understanding the IConvertible Interfaces, Building a Custom Enumerator (IEnumerable and IEnumerator), Building Clonable Objects (ICloneable), Building Comparable Objects (IComparable), Exploring the System. Collections Namespace, Building a Custom Container (Retrofitting the Cars Type). **6Hrs.**

7. Callback Interfaces, Delegates, and Events.

Understanding Callback Interfaces, Understanding the .NET Delegate Type, Members of System.MulticastDelegate, The Simplest Possible Delegate Example, Building a More Elaborate Delegate Examples, Understanding Asynchronous Delegates, Understanding (and Using) Events. **4Hrs.**

8. Advanced C# Type Construction Techniques,

The Advances Keywords of C#, A Catalog of C# Keywords, Building a Custom Indexer, A Variation of the Cars Indexer, Internal Representation of Type Indexers, Using the C# Indexer from VB.NET, Overloading Operators, The Internal Representation of Overloaded Operators, interacting with Overloaded Operators from Overloaded-Operator-Challenged Languages, Final Thoughts Regarding Operator Overloading, Understanding Custom Type Conversion, Creating Custom Conversion Routines, Defining Implicit Conversion Routines, The Internal Representation of Custom Conversion Routines. **5Hrs.**

9. Understanding .NET Assemblies.

Problems with Classic COM Binaries, An Overview of .NET Assembly, Building .NET Client Application, Cross-Language Inheritance, Exploring The CarLibrary Manifest, Using the Multifile Assembly, Understanding Private Assembly, Probing for Private Assembly, Probing for Private(the detail),Understanding Shard Names, Building a shared Assembly, Understanding Delay signing, Installing/Removing Shared Assembly,, Using a Shared Assembly. **5Hrs.**

TEXT BOOKS:

1. C# and the .NET Platform, Andrew Troelsen, Second Edition,2003, Dreamtech press, India.
Chapters: 1 to 8,9(up to pp.436)

REFERANCE BOOK:

1. Inside C#, Tom Archer,2001,WP Publishers.

Note: Student is required to solve one problem from PART-A and one problem from PART-B. Both Parts will have equal weightage.

**Expt Experiment
No.**

PART A – Simulation Exercises

The following experiments may be conducted using NS-2.28/OPNET/Any other Simulators.

- 1 Simulate a three nodes point – to – point networks with a duplex links between them. Set the queue size and vary the bandwidth and find the number of packets dropped.
- 2 Simulate a four node point – to – point network, and connect the links as follows: n0-n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP n1-n3. Apply relevant applications over TCP and UDP agents changing the parameters and determine the number of packets send by TCP/UDP.
- 3 Simulate the different types of Internet Traffic such as FTP, TELNET over a network and analyze the throughput
- 4 Simulate the transmission of ping messages over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.
- 5 Simulate an Ethernet LAN using N nodes (6-10), change error rate and data rate and compare throughput.
- 6 Simulate and Ethernet LAN using N nodes and set multiple traffic nodes and determine collisions across different nodes.
- 7 Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and plot congestion window for different source/destination
- 8 Simulate simple BSS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets

PART B

The following experiments may be conducted by using C/C++

- 1 Write a program for error detecting code using CRC-CCITT (16-bits)
- 2 Write a program for frame sorting technique used in buffers
- 3 Write a program for distance vector algorithm to find suitable path for transmission.
- 4 Write a program for spanning tree algorithm (Kruskal's /Prim's) to find loop less path
- 5 Using TCP/IP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present
- 6 Implement the above program using as message queues or FIFOs as IPC channels.
- 7 Write a program for simple RSA algorithm to encrypt and decrypt the data
- 8 Write a program for Hamming Code generation for error detection and correction
- 9 Write a program for congestion control using leaky bucket algorithm.

CGI PROGRAMMING LABORATORY

(COMMON TO ISE)

Sub code : CSL78

Hrs/Week : 03

Total Hrs : 42

IA Marks : 25

Exam Hours : 03

Exam Marks :50

Develop and execute the following programs using HTML and PERL. Create Database using MYSQL wherever necessary.

1. a) Program to display, varies Server Information like - server Name .server software .server protocol CGI Revision etc.
b) program to accept UNIX command from a HTML form and to display the output of the command executed.
2. a) Program to accept the user name and display a greeting message.
b) Program to keep track of the number of visitors. Visited the web page and display the counter with proper headings.
3. Program to display a greeting based on the access time of the web server. also to verify whether the webmaster is currently logged in.
4. Program to display a digital clock which displays the current time of the server.
5. Program to display the contents of the table in a database.
6. Program to insert new name and age information entered by the user into the database.
Develop and execute the following programs using HTML and PHP Create database using MYSQL wherever necessary.
7. Program to query the database and to display the results on a web page.
8. Program to accept book information viz. Accession number. Title. Authors. Edition and publication from a web page and to store those in a database.
9. Program to search a book for a title given by the user on a web page and display the search results with proper headings.

Develop and execute the following programs using HTML and JAVA Servlets.

- 10 a) Program to Accepts user name and display a greeting message.
b) Program to change the background color of the page based on the color selected by the user.
- 11 Program to display a greeting based on the access time of the server
- 12 Program create and display a cookie.
- 13 Program to create a session and display session inform session Id creation time and last accessed.
- 14 Program to request server information viz requests met Protocol and remote address.
- 15 Program to accept User name and address and display then page by passing parameters.

Note : one exercise must be asked in the examination.

The assignment of the exercise must be based on lots.

VIII SEMESTER

SL No.	Sub Code	Title	Teaching Dept.	Teaching hours /week		Examination			
				Theory	Prac	Duration	I.A. Marks	Theory/ Pract.	Total Marks
1.	CS81	Constitution of India & professional Ethics	Any Dept.	04	---	03	25	100	125
2.	CS82	Advanced Computer Architecture	CSE	04	---	03	25	100	125
3.	CS831	Mobile Communication Elective-IV(Group D)	CSE/ISE	04	---	03	25	100	125
4.	CS843	Cryptography and Network Security Elective-V (Group E)	CSE/ISE	04	---	03	25	100	125
	CS844	Linux Internals (Group E)	CSE/ISE	04	---	03	25	100	125
		Web Commerce	CSE	04	---	03	25	100	125
5.	CS85	Project work	CSE/ISE	---	03	03	25	50	75
6.	CS86	Seminar on Project	CSE	---	03	03	25	50	75
TOTAL				24	06	---	200	700	900

CONSTITUTION OF INDIA AND PROFESSIONAL ETHICS
(COMMON TO ALL BRANCHES)

Sub:Code :81
Hrs/Week :04
TotalHrs :52

IA Marks : 25
Exam Hours: 03
ExamMarks: 100

1. Preamble to constitution fo India. – Evolution of costitutional Law	02 Hrs
2. Scope & Extent of fundamental Rights under Part –III Details of Exercise of Rights, Limitations & Important Cases.	10 Hrs
3. Relevance of Directive Principles of State Policy under part –IV	10 Hrs
4. Significance of Fundamental Duties under Part – IV	01 Hrs
5. Union Executive President , Vice-President, Prime Minister, Council of Ministers, Parliament & Supreme Court of India.	03 Hrs
6. State Executive, Governor, Chief Minister, Council of Ministers, Legislature & High Courts.	04 Hrs
7. Constitutional provisions for scheduled Castes & Tribes : Women & Children & Backward classes.	04 Hrs
8. Emergency Power, Major constitutional Amendments.	04 Hrs
9. Electrol Process.	02 Hrs
10. Scope & Aims of Engineering Ethics	02 Hrs
11. Responsibility of Engineers- Impediments to Responsibility.	02 Hrs
12. Honesty,Integrity & Reliability	04 Hrs
13. Risk Safety & Liability in Engineering.	04 Hrs

TEXT BOOKS:

1. Durga Das Basu : Introduction to the Constitution of India(Students Edition)Prentice-Hill EEE, 19th /20th Edn., 2001
2. V.N.Shukla: Constitution of India(Last Edn)
3. Engineering Ethics by Charles. E. Harris, Michael. S.Pritchard & Michael. J. Robins Thompson Asia, 2003-08-05

REFERENCE BOOKS:

1. An introduction to Constitution of Indiaby M. V. Pylee Vikas Publishing, 2002
2. Ethics in Engineering by Mike W. Martin & Roland Schinzinger
3. Introduction to Engineering Ethics by Roland Schinzinger & by Mike W. Martin, 2002
4. Introduction to Constitution of India by BrijKishore Sharma, Prentice Hall of India, 2002

ADVANCED COMPUTER ARCHITECTURE

Sub code : CS78
Exam Hours : 03

IA Marks : 2
Total Hrs : 52

Hrs/Week : 04
Exam Marks :100

Parallel Computer models	6Hrs
The state of Computing	
1.1.1 Computer development Milestones	
1.1.2 Element of modern computers	
1.1.3 Evolution of computer Architecture	
1.1.4 System Attributes to Performance	
Multiprocessors and Multicomputers	
Shared – Memory Multiprocessors	
Distributed –Memory Multiprocessors	
A Taxonomy of MIMD Computers	
Multivector and SIMD Computers	
Vector supercomputers	
SIMD supercomputers	
Program and Network Properties	8Hrs
Conditions of the parallelism	
Data and Resource Dependences	
Hardware and software parallelism	
The role of computers	
Program partitioning and scheduling	
Grain sizes and latency	
Grain packing and scheduling	
Program flow Mechanisms	
Control flow versus data flow	
Demand –drive mechanisms	
System Interconnect Architecture	
Network properties and Routing	
Static Connection networks	
Dynamic Connection Networks	
Processor and Memory Technologies	6Hrs
Advanced Processor Technology	
Instruction Pipeline, Processors and Co-processors	
Instruction – Set Architectures	
CISC scalar Processor (exclude CISC Microprocessor families)	
RISC scalar Processor (exclude Sun Microprocessor SPARC Architecture)	
Superscalar and Vector Processors	
Superscale Processors (exclude IBM Rs/6000 Architecture	
VILW Architecture	
Backplane bus System	
Backplane bus Specification	
Addressing and timing Protocols	
Arbitration, transaction and interrupt	
IEEE Future bus + standards	
Shared –Memory Organizations	
Interleaved Memory Organizations	
Bandwidth and fault tolerance	
Memory Allocation schemes (exclude swapping in Unix, Demand paging system and hybrid paging system)	

Pipelining and Superscalar Techniques**10Hrs**

- Linear Pipeline Processors
 - Asynchronous and Synchronous Models clocking and Timing control
 - Speed up , Efficiency Throughput
- Non –linear pipe line Processors
 - Reservation and latency Analysis
 - Collision –free Scheduling
- Instruction pipeline Design
 - Instruction Execution Phases
 - Mechanism for Instruction pipelining
 - Dynamic Instruction Scheduling
 - Branch Handling Techniques
- Arithmetic Pipeline Design
 - Computer Arithmetic principles
 - Static Arithmetic pipeline
 - Multifunctional Arithmetic Pipeline (exclude IBM360 Floating Point Unit)

Multiprocessors and Multi-computers**8Hrs**

- Multiprocessor System Interconnect
 - Hierarchical bus Systems
 - Crossbar switch and Multiport memory
 - Multistage and coming networks
- Cache coherence and Synchronization mechanisms
 - The cache coherence problem
 - Snoopy bus protocol
 - Hardware synchronization Mechanisms
- Message passing Schemes
 - Message routing Schemes
 - Deadlock and Virtual Channels
 - Flow control strategies

Parallel Program**8Hrs**

- Parallel Application case Studies
 - Simulating ocean Currents
 - Simulating the evolution of galaxies
 - Visualizing complex scenes using ray Tracing
 - Mining data for Associations
- The parallelization Process
 - Steps in the Process
 - Parallelizing computation versus data
 - Goals of the parallelization Process
- Parallelization of an Example program
 - The Equation solver kernel
 - Decomposition assignment
 - orchestration under the data parallel model
 - orchestration under the shared address space model
 - orchestration under the message –passing model

Scalable multiprocessors

6Hrs

Scalability

- Bandwidth scaling
- Latency scaling
- Cost scaling
- Physical scaling
- Scaling in a Generic parallel Architecture
- Realizing Programming model
- Primitive network Transactions
- Shared address space
- Message passing

TEXT BOOKS

- 1 Kai Hwang , Advanced computer Architecture – parallelism Scalability, programmability , McGraw Hill, 1993 (chapter 1.1, 1.3, 2.1 ,2.4, 4.1 (only specified topics) , 4,2, 1.4 ,2.2,5.1,5.3,6.1,6.4,7.1,7.2,7.4,1,7,4.2,7.4.3)
- 2 Davide E culler J P Singh .Anoop Gupta ,parallel computer Architecture harcoust Asia and Morgan kaufmann 1999 chapter(2,7.1,7.2,1-7,2.3)

REFERENCE BOOKS

- 1 john p hayes ,hayes , computer architecture and Organization , 3rd edition , McGrawhill 1998
- 2 V Rajaraman C siva ram Murthy parallel computer Architecture and Programming PHI ,2000

VIII semester

MOBILE COMMUNICATIONS

(COMMON TO ISE)

Sub Code	: CS831	IA Marks	: 25
Hrs/Week	: 04	Exam Hours	: 03
Total Hrs.	:52	Exam Marks	: 100
1. Introduction			03 hrs.
Applications : Vehicles, Emergencies, Business, Replacement of wired networks, Infotainment and more, Location dependent services, Mobile and wireless devices, A short history of wireless communication, A market for mobile communications, some open research topics, a simplified reference model.			
2. Wireless transmission:			04 Hrs.
Frequencies for radio transmission , Regulations; Signals, Antennas; Signal propagation, Path loss of radio signals, Additional signal propagation effects, Multipath propagation; Multiplexing; space division multiplexing, Frequency division multiplexing, Time division multiplexing, code division multiplexing; Modulation Amplitude shift keying, Frequency shift keying, phase shift keying, Advanced frequency shift keying, Advanced phase shift keying, multicarrier modulation, Spread spectrum, Direct sequence spread spectrum, frequency hopping spread spectrum; cellular systems.			
3. Medium Access Control:			04 Hrs.
Motivation for a specialized MAC: Hidden and exposed terminals, Near and far terminals, SDMA, FDMA, TDMA, Fixed TDM, Classical Aloha, Slotted Aloha, Carrier sense multiple access, Demand assigned multiple access, PRMA packet reservation multiple polling, Inhibit sense multiple access, CDMA, Spread Aloha multiple access, Comparison of S/T/F/CDMA.			
4. Telecommunications Systems:			11 Hrs.
GSM, Mobile services, System architecture, Radio interface, Protocols, Localization and Calling, Handover, Security, New data services; DECT: System architecture, Protocol architecture; TETRA; UMTS and IMT-2000;UMTS releases and standardization, UMTS system architecture, UMTS radio Interface, UTRAN, Core Network Handover.			
5. Satellite Systems:			2 Hrs.
History; Applications; Basics: GEO,LEO,MEO, Routing, Localization; handover			
6. Broadcast Systems:			2 Hrs.
Overview, Cyclic repetition of data, Digital audio broadcasting: multimedia object transfer protocol; Digital Video broadcasting; DVB data broad casting, DVB for Convergence of broadcasting and mobile communications.			
7. Wireless LAN:			6 Hrs.
Infrared vs. radio transmission, infrastructure and ad hoc network, IEEE 802.11; System architecture, Protocol architecture, physical layer, MAC layer, MAC management, 802.11b,802.11a, newer developments, HIPERLAN; Historical: HIPERLAN1, WATM, BRAN, Hiperlan2; Bluetooth; user Scenarios, architecture, radioLayer, Baseband Layer, Link manager protocol, L2CAP, Security, SDP, Profiles, IEEE 802.15.			
8. Mobile Network Layer:			07 Hrs.
Mobile IP: Goals, assumptions, and requirements, Entities and terminology, IP packet delivery, Agent discovery, Registration, Tunneling and encapsulation, optimization, reverse tunneling, Ipv6,IP micro mobility support; dynamic host configuration protocol; mobile Ad- hoc networks, routing, destination sequence distance vector, Dynamic, source routing, Alternative metrics, Overview of Ad-hoc routing protocols.			
9. Mobile Transport Layer:			03 Hrs.
Traditional TCP: Congestion, control, Slow start, Fast retransmit/fast recovery, implications on mobility, classical TCP improvements, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission/timeout freezing, selective retransmission, transaction oriented TCP;TCP over 2.5/3 G wireless networks.			

TEXT BOOK:

1. Jochen Schiller, Mobile Communications, Pearson 2004.
(Chapters: 1.1 to 1.5, 2.1 to 2.8, 3.1 to 3.6, 4.1 to 4.4, 5.1 to 5.6, 6.1 to 6.5,7.1 to 7.5, 8.1 to 8.3,9.1 to 9.3)

CRYPTOGRAPHY AND NETWORK SECURITY

Subject code: CS843

Total Hours: 52

- 1. Symmetric Ciphers** **18 Hrs**
Overview: Services, Mechanisms and Attacks, The OSI Security Architecture, A Model of Network Security, Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography, Block Cipher and the Data Encryption Standard, The Strength of DES, Differential and Linear Cryptanalysis. Symmetric Ciphers: Triple DES, Blowfish. Confidentiality Using Conventional Encryption: Placement of Encryption Function, Traffic Confidentiality, Key Distribution, Random Number Generation.
- 2. Public-Key Encryption, Digital signatures and Authentication Protocols** **14 Hrs**
Number Theory: Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality. Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, The RSA Algorithm, Key Management, Diffie Hellman Key Exchange. Message Authentication: Authentication Requirements, Authentication Functions, Message Authentication Codes, MD5 Message Digest Algorithm, Digital Signatures and Authentication Protocols: Digital Signatures, Authentication Protocols, Digital Signature Standard.
- 3. Network Security** **16 Hrs**
Authentication Applications: Kerberos, X.509 Directory Authentication Service. Electronic Mail Security: Pretty Good Privacy. IP Security: Overview, IP Security Architecture, Authentication Header, Encapsulation Security Payload. Web Security: Web Security Requirements, Secure Sockets Layer and Transport Layer Security, Secure Electronic Transaction.
- 4. System Security** **4 Hrs**
Intruders: Intruders, Malicious Software: Viruses and Related Threats, Countermeasures, Firewalls: Firewall Design Principles.

Text Book:

William Stallings, Cryptography and Network Security, Third Edition, Pearson Education/PHI. 2003.