

Annexure No.	31 E
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY : COIMBATORE**M. Sc. (INFORMATION TECHNOLOGY)
With Compulsory Diploma in Open Systems**

For Affiliated Colleges
(Effective from 2007-2008)

1. Eligibility for Admission to the Course

Candidates for admission to the first year course leading to the Degree of Master of Science (M.Sc.) in **INFORMATION TECHNOLOGY** will be required to possess a pass with 50% of marks in B.Sc. Computer Science / B.C.A. /B.Sc. Computer Technology / B.Sc. Information Technology /B.Sc Information Sciences/B.Sc Information Systems/ B.Sc. Software Systems/B.Sc Software Sciences / B.Sc Applied Sciences (Computer Science/Computer Technology)

In case of SC/ST candidates, a mere pass in the qualifying examination will be sufficient.

2. Duration of the Course

This Course of Study shall be based on Semester System. This Course shall consist of four Semesters covering a total of two Academic Years. For this purpose, each Academic Year shall be divided into two Semesters; the first and third Semesters: July to November and the second and the fourth Semesters: December to April. The Practical Examinations shall be conducted at the end of each Semester.

3. Course of Study

The Course of the Degree of Master of Science in **INFORMATION TECHNOLOGY** shall be under the Semester System according to the Syllabus to be prescribed from time to time. This Course consists of Core Subjects and Elective Subjects. There shall be one Paper on applied Skill Oriented, subject preferably in each semester as part of the adjunct Diploma Programme DOS (**Diploma in Open Systems**).

4. Scheme of Examinations

M.Sc (INFORMATION TECHNOLOGY)

Sem	Subject and Paper		Instructional Hours/ week	University Examination	
				Duration in Hrs	Max marks*
I	Paper I	Object Oriented Analysis and Design	4	3	100
	Paper II	Advanced Computer Architecture	5	3	100
	Paper III	Advanced Java Programming	5	3	100
	Paper IV	Distributed Computing	4	3	100
	Paper V	Information Coding Techniques	4	3	100
	Practical I	Advanced Java Lab	5	3	100
Diploma Paper I			3	3	100
II	Paper VI	Programming in C# and .NET Framework	5	3	100
	Paper VII	Multimedia Systems	5	3	100
	Paper VIII	Network Security and Management	5	3	100
	Paper IX	Elective I	6	3	100
	Practical II	C# & .Net Programming Lab	6	3	100
Diploma Paper II			3	3	100
III	Paper X	Embedded Systems	5	3	100
	Paper XI	Component Based Systems	4	3	100
	Paper XII	Web Services	5	3	100
	Paper XIII	Elective II	5	3	100
	Practical III	Computing Tools and Web Programming Lab	5	3	100
Diploma Paper III			3	3	100
Diploma Paper IV			3	3	100
IV	Project Work and Viva voce(150+50)				200

For the project work and viva-voce (External) The break-up is:

Project Evaluation : 100

Viva-voce : 50

Project Evaluation will be by External and Internal Examiners.

*Includes 25% continuous internal assessment marks

ELECTIVES FOR SECOND SEMESTER**ELECTIVE I**

- E.1.1 Data Mining and Warehousing
- E.1.2 Digital Image Processing
- E.1.3 Artificial Intelligence

ELECTIVES FOR THIRD SEMESTER**ELECTIVE II**

- E.2.1 Software Project Management
- E.2.2 E-Commerce
- E.2.3 WAP

**COMPULSORY DI-PLOMA IN OPEN SYSTEMS
SCHEME OF EXAMINATION**

Subject and Paper		Instructional Hours per week/Credits	University Examinations	
			Duration in Hrs	Max Marks
Paper I	Introduction to Open Source Tools	3/4	3	100
Paper II	Introduction to Open Source Environment	3/4	3	100
Paper III	Advanced Programming in Open Source - PHP	3/4	3	100
Paper IV	Web Application in PHP Programming-lab	3/4	3	100
Total		12/16		400

5. Requirement to appear for the Examinations

- a) A candidate will be permitted to take the University Examination for any Semester, if
 - i) he/she secures not less than 75% of attendance out of the 90 instructional days during the Semester.
 - b) A candidate who has secured attendance less than 75% but 65% and above shall be permitted to take the Examination on the recommendation of the Head of the Institution to condone the lack of attendance as well as on the payment of the prescribed fees to the University.
 - c) A candidate who has secured attendance less than 65% but 55% and above in any Semester, has to compensate the shortage of attendance in the subsequent Semester besides, earning the required percentage of attendance in that Semester and take the Examination of both the Semester papers together at the end of the latter Semester.
 - d) A candidate who has secured less than 55% of attendance in any Semester will not be permitted to take the regular Examinations and to continue the study in the subsequent Semester. He/she has to re-do the Course by rejoining the Semester in which the attendance is less than 55%.

e) A candidate who has secured less than 65% of attendance in the final Semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the Course.

6. Restriction to take the Examinations

a) Any candidate having arrear paper(s) shall have the option to take the Examinations in any arrear paper(s) along with the subsequent regular Semester papers.

b) Candidates who fail in any of the papers shall pass the paper(s) concerned within 5 years from the date of admission to the said Course. If they fail to do so, they shall take the Examination in the revised Text / Syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the Text / Syllabus they shall take the Examination in that paper with the Syllabus in vogue, until there is a change in the Text or Syllabus.

In the event of removal of that paper consequent to the change of Regulations and / or Curriculum after a 5 year period, the candidates shall have to take up on equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per Regulations/Curriculum for the award of the Degree.

7. The Medium of Instruction and Examinations

The medium of instruction and Examinations shall be in English.

8. Submission of Record Notebooks for Practical Examinations & Project Viva-Voce.

Candidates taking the Practical Examinations should submit bonafide Record Note Books prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Practical Examinations.

Candidates taking the Project Viva Examination should submit Project Report prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Project Viva-voce Examination.

9. The Minimum (Pass) Marks

A candidate shall be declared to have passed in a paper if a student obtains not less than 50% of marks in that paper. A candidate shall be declared to have passed the whole Examination if the student passes in all the papers.

10. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks secured in their first attempt shall reappear once within the subsequent Semester. The improved marks shall be considered for classification but not for ranking. If there is no improvement there shall not be any change in the original marks already awarded.

11. Classification of successful candidates

A candidate who passes all the Examinations in the first attempt within a period of two years securing 75% and above marks in the aggregated shall be declared to have passed with First Class with Distinction.

Successful candidates passing the P.G. Degree Examinations, securing 60% marks and above shall be declared to have passed the exam in First class. All other successful candidates shall be declared to have passed the Examination in Second Class.

12. Ranking

A candidate who qualifies for the PG Degree Course passing all the Examinations in the first attempt, within the minimum period prescribed for the Course of Study from the date of admission to the Course and secures 1st or 2nd Class shall be eligible for ranking and such ranking will be confined to 10% of the total number of candidates qualified in that particular subject to a maximum of 10 ranks.

The improved marks will not be taken into consideration for ranking.

13. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she has undergone the prescribed Course of Study for a period of not less than four Semesters in an Institution approved of by and affiliated to the University or has been exempted there from in the manner prescribed and has passed the Examinations as have been prescribed.

14. Evening College

The above Regulations shall be applicable for candidates undergoing the respective Courses in the Evening Colleges also.

15. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

16. Transitory Provision

Candidates who have undergone the Course of Study prior to the Academic Year 2007-2008 will be permitted to take the Examinations under those Regulations for a period of four years i.e. up to and inclusive of the Examination of April 2012 thereafter they will be permitted to take the Examination only under the Regulations in force at that time.

17. Question Paper Pattern :

The Pattern of the question papers for all the subjects shall be as follows:

Maximum 75 Marks

Section A: Objective type of questions with no choice (10 Questions - 2 each from every unit)	10 X 1 = 10
Section B: Short answer questions of either/or type (5 Questions - 1 each from every unit)	5 X 5 = 25
Section C: Essay – Type questions of either/or type (5 Questions - 1 each from every unit)	5 X 8 = 40

SEMESTER I
PAPER I - OBJECT ORIENTED ANALYSIS AND DESIGN

Subject Title : OBJECT ORIENTED ANALYSIS AND DESIGN

Course Number:

Subject Description

This Course presents the object oriented analysis and design emphasizing the software engineering aspects, methodologies in object oriented techniques.

Goals

To enable the students to learn the object oriented techniques to system analysis and design.

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of object oriented methodologies.
- Gained problem solving skills using developing object based models.

Contents

UNIT I

Object Orientation – System Development – Review of Objects – Inheritance – Object Relationships – Dynamic binding – OOSD life cycle – Process – Analysis- Design - Prototyping – Implementation – Testing – Overview of Methodologies

UNIT II

OMT – Booch methodology, Jacobson – Methodology – patterns – Unified approach– UML –Class Diagrams – Dynamic Modeling

UNIT III

Using Case model – Creation of classes – Noun Phrase approach – responsibilities – Collaborators and relationships – Super – Sub class - Aggregation

UNIT IV

OO Design axioms – Class visibility – refining attributes- Methods – Access layer – OODBMS – Class mapping view layer

UNIT V

Quality Assurance testing – Inheritance and testing - Test Plan – Usability testing – User satisfaction testing

References:

1. Ali Brahmi , “ Object Oriented System Development” , *McGraw-Hill International Edition*
2. Object-Oriented Analysis and Design by Grady Booch, *Addison – Wesley*
3. Object Oriented Modelling and Design by James Rumbaugh , *Micheal Blaha, Prentice Hall*

SEMESTER I

**PAPER II - Subject Title : ADVANCED COMPUTER ARCHITECTURE
(for the candidates admitted during 2007-08 only)**

Number of Instruction Hours: 4

Subject Description

This Course presents the Advanced Computer Architecture emphasizing parallel processing, solving problems in parallel and vector processors.

Goals

To enable the students to learn the parallel processing concepts and standards.

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of vector processing in computers.
- Gained problem solving skills using parallel algorithms.

UNIT I

Overview of Computer Design – RISC Vs CISC - Performance related issues – Performance Parameters – Instruction set architecture design- compiler related issues

UNIT II

Pipelining – Pipeline hazards – Overcoming hazards – Instruction set design and pipelining – Concepts of dynamic Scheduling – Dynamic hardware branch prediction

UNIT III

Vector processors – Compiler support for ILP – extracting parallelism - speculation

UNIT IV

Virtual Memory architectures, Distributed shared memory architectures – synchronization – cache coherence issues

UNIT V

Standards- SCSI – Typical RISC processor, stack processors – data flow systems

Reference:

1. J. L. Hennessy and D. A. Patterson, Computer Architecture: A Quantitative Approach, Harcourt Asia, for Morgan Kaufmann Publishing Co 1999 .
2. Advanced Computer Architecture: Parallelism, Scalability, Programmability by Kai Hwang : Tata Mc Graw Hill.

SEMESTER I
PAPER III ADVANCED JAVA PROGRAMMING

Subject Title : ADVANCED JAVA PROGRAMMING

Course Number:

Subject Description : This Course presents the Advanced Java programming techniques emphasizing problem solving using Java.

Goals : To enable the students to learn the Advanced Java.

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of problem solving using Java as a internet tool.
- Gained problem solving skills using advanced Java.

Contents

Unit I

Java Basics Review: Components and event handling – Threading concepts – Networking features – Media techniques

Unit II

Data structures in Java – Ordered structures – sorting – trees

Unit III

Advanced Networking and BEANS- Sockets- Content and Protocol Handlers – developing distributed applications – remote objects – object serialization – bean concepts – events in bean box- Bean –persistence

Unit IV

Java in Databases- JDBC principles – database access- Interacting- database search – Creating multimedia databases – Database support in web applications

Unit V

JAR file format creation – Internationalization – Swing Programming – Advanced java techniques

Reference:

1. Jane Jaworski, “Java Unleashed” , *SAMS Techmedia Publications 1999*
2. Campione, Walrath and Huml, *The Java Tutorial*”, *Addison Wesley 1999*

SEMESTER I
PAPER IV DISTRIBUTED COMPUTING

Subject Title : DISTRIBUTED COMPUTING

Course Number:

Subject Description

This Course presents the distributed computing techniques emphasizing the client server model

Goals

To enable the students to learn the concepts of distributed computing

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of distributed computing

Contents

UNIT I

Distributed Systems: Fully Distributed Processing systems – Networks and interconnection structures – designing a distributed processing system.

UNIT II

Distributed systems: Pros and Cons of distributed processing – Distributed databases – the challenges of distributed data – loading, factors – managing the distributed resources division of responsibilities.

UNIT III

Design considerations: Communication Line loading – line loading calculations- partitioning and allocation - data flow systems – dimensional analysis- network database design considerations- ration analysis- database decision trees- synchronization of network databases

UNIT IV

Client server network model: Concept – file server – printer server and e-mail server

UNIT V

Distributed databases: An overview, distributed databases- principles of distributed databases – levels of transparency- distributed database design- the R* project techniques problem of heterogeneous distributed databases

Reference:

1. John a. Sharp, “An introduction to distributed and parallel processing g” *Blackwell Scientific Publication(Unit I & III)*
2. Uyles D. Black, “Data communication and distributed networks”(unit II)
3. Joel M.Crichlow “introduction to distributed & parallel computing (Unit IV)
4. Stefans Ceri, Ginseppe Pelagatti “Distributed database Principles and systems” *McGraw Hill*

SEMESTER I
PAPER V INFORMATION CODING TECHNIQUES
(for the candidates admitted during 2007-08 batch only)

Number of Credits : 4

Subject Description:

This course presents the Information Entropy Fundamentals, Data and Voice Coding, error control coding and encryption coding techniques

Goal:

To enable the students to learn the fundamentals of information coding techniques

Objectives:

On successful completion of the course the students should have:

- Understood the Information Entropy Fundamentals.
- Learnt various coding techniques

UNIT I

Information Entropy Fundamentals: Relation between information and probability, mutual and self information entropy, Shannon's Theorem, Code design, Shannon-Fano coding, Huffman coding, implementation of Huffman Code.

UNIT II

Data and Voice Coding: context dependent coding, arithmetic codes, overall efficient consideration – voice coding, delta-modulation and adaptive modulation, linear predictive coding, silence coding, sub-band coding

UNIT III

Image and Video Compression: direct cosine transform, quantization loss, loss estimation – JPEG components and standards – Inter-frame coding, motion compensation techniques, MPEG-2 standards, Introduction to MPEG-4.

UNIT IV

Error Control coding: Backward error correction, linear block codes, BCH codes, Golay codes, efficiency of LBC, performance of simple ARQ, go back-n and selective repeat schemes – Forward correction codes- Convolution coding, decoding algorithms, Viterbi decoding, optimum decoding, performance measures.

UNIT V

Encryption Coding: Transposition and substitution coding, Data Encryption Standards (DES), key distribution problem, public key encryption, public key decryption and MIT algorithm- Direct sequence CDMA based encryption, orthogonal sequences, and R-S code

Reference:

1. Viterbi, "Information Theory and Coding", McGrawHill, 1982.
2. Proakis, "Digital Communication", McGrawHill, 1994.
3. "Data compression Book" BPB publication, 1992.

SEMESTER II
PAPER VI PROGRAMMING IN C# AND .NET FRAMEWORK

Subject Title : PROGRAMMING IN C# AND .NET FRAMEWORK

Course Number:

Subject Description

This Course presents the programming in C# and .Net framework

emphasizing problem solving using C#.

Goals

To enable the students to learn the concepts of . Net framework and C# language.

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of .Net framework
- Gained problem solving skills using C#.

Contents

UNIT I

Introduction to .NET frame work - . NET objects – ASP .NET - .NET
Web services – Windows forms

UNIT II

Introduction to C# - Understanding c# in .NET - Overview of C# -
Literals, variables and data types

UNIT III

Operators, Expressions, Branching and looping operations – Methods,
Arrays, Strings

UNIT IV

Structures and Enumerations – Classes and Objects – Inheritance and
Polymorphism, Multiple Inheritance

UNIT V

Operator overloading, Events, console I/O operations and Exceptions

References:

1. E. Balagurusamy, “Programming in C#”, *Tata McGraw-Hill, 2002*
2. David S. Platt, “Introducing Microsoft .NET”, *Microsoft Press, SAARC Edition, 2001*
3. Microsoft, “C# Language Specifications”, *Microsoft Press, 2001*

SEMESTER II
PAPER VII MULTIMEDIA SYSTEMS

Subject Title : MULTIMEDIA SYSTEMS

Course Number:

Subject Description

This Course presents the elements of multimedia systems .

Goals

To enable the students to learn the concepts of multimedia systems

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of multimedia systems

Contents

UNIT I

Elements of Multimedia systems – Needs – Benefits – Converging of Multimedia application development, multimedia building blocks - Text – Sound – images – video - animation

UNIT II

PC Platform – SCSI , MCI(Media control interface), Storage for Multimedia – DVD &CD, Input devices and Output Hardware, communication devices, multimedia workstation

UNIT III

Hypertext – hypermedia – document architecture – MPEG, Basic tools – image forming, painting and drawing tools – sound editing programs, Video formats – quick time, Linking multimedia objects – OLE , DDE. Office suites – presentation tools- User interface design

UNIT IV

Application Subsystem , Transport subsystem , QOS, Synchronization, Presentation, Multimedia Synchronization- single user – multimedia on networks

UNIT V

Multimedia OS – Process Management – File handling , Multimedia DBMS – Data structures for storage – Indexing techniques – Information retrieval, Search Engine – Case study.

Reference:

1. Steinmetz and Klara Nahrstedt, “Multimedia Computing, communication and application”, *Pearson Education Asia, 1995*
2. Tay Vaughnan, “Multimedia: Making it work” 5th Edition, *Tata McGraw-Hill 2001*
3. Jeffcoat, “Multimedia in Practice- Technology and applications”, *PHI 1995*

SEMESTER II
PAPER VIII NETWORK SECURITY AND MANAGEMENT

Subject Title : NETWORK SECURITY AND MANAGEMENT

Course Number:

Subject Description

This Course presents the elements of network security and management emphasizing the TCP/IP framework.

Goals

To enable the students to learn the concepts of network security and management

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of network security and management

Contents

UNIT I

Network Monitoring – Network control – OSI, Internet and IEEE network management standards – SNMP – MIBS

UNIT II

SNMP Concepts, MIBs, Implementation issues – SNMPv2 – SNMPv3, RMON - CMIP

UNIT III

Public Key , Private key, DES/RSA- Authentication - PGP – PEM – Kerberos –Auditing & Logging

UNIT IV

TCP/IP security, NFS security, WWW security – Firewalls

UNIT V

High speed network protocols – secure protocols and current trends

References:

1. William Stalling “SNMP, SNMPv2, SNMPv2, and RMON and 2” Addison Wesley
2. Garfinkel and Gene Spafford “Practical Unix and Internet Security” O’Reilly
3. William Stalling, Cryptography and network security.
4. Uday O Pabrai, Vijay K Gurbani “Internet & TCP/IP Network Security”, McGraw-Hill

SEMESTER III
PAPER X EMBEDDED SYSTEMS

Subject Title : EMBEDDED SYSTEMS

Course Number:

Subject Description

This Course presents the elements of embedded systems

Goals

To enable the students to learn the concepts of embedded systems

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of embedded systems

Contents

UNIT I

Introduction to embedded systems: Processor in the system – other hardware units – software embedded into a system – exemplary embedded systems – on chip VLSI Circuit. Processor and memory selection or embedded systems

UNIT II

Devices and buses for device networks devices – timer and counting devices, device drivers and interrupts servicing mechanism: Device drivers- parallel port device drivers in a system –serial port device in a system – device drivers for internal programmable timing devices – interrupt servicing mechanism- context and periods for context switching, deadlines and interrupt latency

UNIT III

Program modeling concepts in single & multiprocessor system software development process: Modeling processes for software analysis before software implementation – programming, models for event controlled or response time constrained real time programs – modeling for microprocessor systems. Software engineering practices in embedded software development process.

UNIT IV

Inter-process communication and synchronization of process, tasks and threads, multiple processes in an application- Data sharing in multiple tasks and routines – inter process communication – real time OS-Embedded system OS

UNIT V

Hardware –software co-design in embedded systems: embedded system Project management – embedded system design and co design issues in system development – design cycle – Uses of target system; Adaptive cruise control system –Case study

Reference:

1. Raj Kamal, "Embedded Systems – Architecture, programming and design" *Tata Mc GrawHill – 2004*
2. David E.Simon "An embedded software primer" *Pearson Education Asia 2003*

SEMESTER III
PAPER X COMPONENT BASED SYSTEMS

Subject Title : COMPONENT BASED SYSTEMS

Course Number:

Subject Description

This Course presents the elements of component based systems with an emphasis CORBA

Goals

To enable the students to learn the concepts of component based systems

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of component based systems

Contents

UNIT I

Concepts: Software Components – COM/DCOM- Java Beans – CORBA- Distributed objects, request and response – remote reference – IDL interface – proxy – Marshalling

UNIT II

Factory – Broker – Garbage collection on the Client and Server, Handling remote references – Transactions – Concurrency in Server Objects – Event driven programming

UNIT III

CORBA : Java programming with CORBA – Overview of Java ORBs – First Java ORBOMG IDL to Java mapping – ORB runtime system – Discovering Services(Naming and Building applications- advanced features(DSI, DII, Interface depository)CORBA Events-applications

UNIT IV

Distributed Object Database management: Object model features – fundamental object management and DOM architectures – object caching – object clustering – object migration – Query processing in Object DBMS –Transaction management in distributed object DBMS

UNIT V

COM – Distributed CO –COM- Facilities and services – Applying COM objects – Class – Factory components –servers –clients – object orientation infrastructure – transparency – concurrency – security – building components with ATL –ActiveX Controls

Reference:

1. Andreas Vogel, Keith Duddy “Java Programming with CORBA” *John Wiley & Sons*
2. George Shepher Brad King “Inside ATL”, *WP Publishers and Distributors*
3. Ozsu and Valduries “Principles of Distributed Database Systems “, *Prentice Hall*
4. “InsideCOM” *Microsoft Press*

SEMESTER III - PAPER XI WEB SERVICES**Subject Title : WEB SERVICES****Course Number:****Subject Description :** This Course presents the elements of web services with an emphasis building client server applications with XML**Goals :** To enable the students to learn the concepts of web services**Objectives**

On successful completion of the course the students should have:

- Understood the trends and principles of web services

Contents

UNIT I

Introduction to Web services – Industry standard, Technologies and concepts underlying web services – their support to Web Services, Application that consume Web Services.

UNIT II

XML – its choice for Web Services – Network protocol to backend data base – Technologies – SOAP, WSDL, exchange of information between application in distributed environment – Locating remote Web Services – its access and usage, UDDI Specifications – an introduction.

UNIT III

A brief outline of Web Services – conversation static and interactive aspects of systems interface and its implementation. work flow- Orchestration and Refinement, Transactions, Security issues – Common attacks – Security Attacks facilitated within Web Services – Quality of service - Architecting of system to meet users request with respect to latency, performance reliability, QOS metric, mobile and wireless services – energy consumption – Network bandwidth utilisation, portal and service management.

UNIT IV

Building real world enterprise application using Web Services – sample source codes to develop Web Services – steps necessary to build and deploy Web Services and Client application to meet customer's requirement – Easier development, customisations, maintenance, Transaction requirement, seamless porting to multiple devices and platform.

UNIT V

Development of Web services and application onto to meet application server and AXB SOAP server (both are freewares) – Web Services platform as a set of enabling technologies for XML base d distributed computing.

Reference:

1. Sandeep Chatterjee, James Webber: "Developing Enterprise Web Services: An Architect Guide", *Prentice Hall 2003*.
2. Keith Ballinger "Net Web Server: Architecture and Implementation with .NET": *Pearson Education 2003*.
3. Anne Thomas Manes, "Web Server : A Manager Guide": *Addison Wesley*

ELECTIVES FOR SECOND SEMESTER

ELECTIVE I

E.1.1 DATA MINING AND WAREHOUSING

Subject Title : DATA MINING AND WAREHOUSING

Course Number:

Subject Description

This Course presents the elements of data mining and warehousing with an emphasis building data mining applications using case studies

Goals

To enable the students to learn the concepts of data mining and warehousing

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of data mining and warehousing

Contents

UNIT I

Introduction: Definitions – Taxonomy of Data mining tasks – Steps in DM process – Overview of data mining techniques

UNIT II

Predictive modeling: Predictive modeling – classification – Decision trees – Patterns – association rules – algorithms

UNIT III

Other approaches: Visualization – statistical perspective – clustering – regression analysis – Time series analysis –rule learning – inductive logic programming

UNIT IV

Data warehousing: Dimensional modeling – Meta data- performance issues and indexing Development life cycle and merits.

UNIT V

Applications: Tools, applications and case studies

Reference:

1. Usama M.Fayyad , Gregory Piatesky – “Advances in Knowledge discovery and data mining “ *M.I.T Press*
2. Ralph Kimball, “The Data warehouse life cycle tool kit” *John Wiley & Sons*
3. Sean Lelly , “Data Mining in action” *John Wiley & Sons*

E.1.2 Digital Image Processing

Subject Title : Digital Image Processing

Course Number:

Subject Description

This Course presents the elements of Digital Image Processing with an emphasis on various compression techniques

Goals

To enable the students to learn the concepts of Digital Image Processing

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of Digital Image Processing

Contents

UNIT I

Digital Image Fundamentals: Digital image, applications of digital image processing- elements of digital image processing-digital camera, line scan CCD sensor – area sensor - flash A/D converter – display element perception – luminance – brightness, contrast- mach band fidelity criteria – color models – RGB, CMY, HIS mathematical preliminaries of convolutions Fourier transforms - ZS transform – orthogonal matrices

UNIT II

Image transform: Properties of Unitary transform – 2d DFT – DCT- DST- Discrete wavelet transform- Hotelling Transform – SVD transform – Slant, Haar transforms

UNIT III

Image enhancement and restoration: Contrast stretching – intensity level slicing – Histogram equalization – spatial averaging – smoothing – Median filtering – non linear filters – maximum , minimum, geometric mean, Lp mean filters – edge detection – degradation model – unconstrained and constrained filtering – removal of blur –Wiener filtering

UNIT IV

Image compression: Huffman’s coding- truncated Huffman’s coding – B2, binary codes, arithmetic coding, contrast area coding, run length coding- transform coding – JPEG and MPEG coding

UNIT V

Image segmentation: Pixel based approach – feature threshold – choice of feature – optimum threshold – threshold selecting method- region based approach – region growing – region splitting – region merging

Reference:

1. Gonzalez R.C and Woods R. E , “Digital image processing “ *Addison Wesley*
2. Anil K Jain Fundamentals of Digital image processing , *Prentice Hall*

E.1.3 ARTIFICIAL INTELLIGENCE

Subject Title : ARTIFICIAL INTELLIGENCE

Course Number:

Subject Description

This Course presents the elements of artificial intelligence with an emphasis on various compression techniques

Goals

To enable the students to learn the concepts of artificial intelligence

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of artificial intelligence

Contents

UNIT I

Introduction : Foundation and history of AI, AI problems and techniques – AI programming – Introduction to :LISP and PROLOG – Problem spaces and searches – Blind search strategies- Depth first – Heuristic search techniques Hill climbing –Best first – A* algorithm AO*, trees- Minimax algorithm- Game playing and alpha beta pruning

UNIT II

Knowledge representation: Issues of Knowledge representation, - Predicate logic - = logic programming – Semantic inheritance – constraints propagation – Representing Knowledge using rules

UNIT III

Reasoning under uncertainty: Uncertain Knowledge – Review of probability – Baye’s Probabilistic Inferences and Heuristic methods – symbolic reasoning under uncertainty- statistical reasoning – fuzzy logic – temporal reasoning – Non monotonic reasoning

UNIT IV

Planning in situational calculus – representation for planning – partial order algorithm. Learning from examples – discovery as learning – learning by analogy explanation – Neural nets and genetic algorithms

UNIT V

Applications, NLP – Rule based systems architecture – expert systems – Knowledge based concepts – AI applications to robotics – current trends in intelligent systems

Reference:

1. Rich and Kevin Knight “Artificial Intelligence” *Tata McGraw Hill*
2. Russel and Peter Norvig, “Artificial Intelligence-A modern approach” *Prentice Hall*
3. Patrick Henry Winston “AI” *Addison Wesley*

ELECTIVES FOR THIRD SEMESTER

ELECTIVE II

E.2.1 SOFTWARE PROJECT MANAGEMENT

Subject Title : SOFTWARE PROJECT MANAGEMENT

Course Number:

Subject Description

This Course presents the elements of software project management

Goals

To enable the students to learn the concepts of software project management

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of software project management

Contents

UNIT I

Product life cycle: Introduction – idea generation – prototype development phase – alpha phase – beta phase – protection phase – Maintenance and obsolescence phase. Project Life cycle models – What is it ? A framework for studying different life cycle models – waterfall model, prototype model, RAD model, spiral model. Metrics: Metric roadmap- metric strategy- why to measure- set target, track them, understand and minimize variability, Act on data- Common fit falls

UNIT II

Software configuration management: Basic definitions and terminology- the process and activities of Software configuration audit – software configuration management in geographically distributed teams- metrics in software configuration management – tools and automation. Software quality assurance Defining quality, importance of quality, quality control and assurance – cost and benefits of quality – software quality analyst's functions, SQA tools, measures for SQA success- pitfalls. Risk management

UNIT III

Requirement gathering; inputs and start criteria for requirements, dimensions for requirement gathering, steps, to be followed, output and quality records, skill sets Estimation – what is estimation, when and why is it needed, three phases of estimation – estimation methodology-models for size estimation-converting effort to schedule

UNIT IV

Design and development phase: Some differences in chosen approach – salient features of design- evolving an architecture, blue print- design for reusability- technology choices/ constraints – design standards – design for portability- user interface issues – design for testability – design for diagnosability- design for maintainability- designs for installability and interoperability

UNIT V

Project management testing and maintenance: Testing – activities that make testing- test scheduling and types of tests – people issues in testing management structures for testing – metrics. Introduction to management phase- configuration management, skill sets, estimating size , effort, and people resources for maintenance, metrics

Reference:

1. Gopalswamy Ramesh Managing Global software projects” *Tata Mcgraw Hill*
2. S.A. Kelkar “Software project management – a concise study” *PHI, 2003*

E.2.2 E-COMMERCE

Subject Title : E-COMMERCE

Course Number:

Subject Description

This Course presents the elements of e-commerce

Goals

To enable the students to learn the concepts of e-commerce

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of e-commerce

Contents

UNIT I

E-Commerce Framework- E-commerce of Media Convergence – Anatomy of E-commerce Applications – E-commerce Organization applications – Market forces influencing the I-way – components of I-way – Network Access equipment

UNIT II

Architectural Framework for electronic commerce – World wide Web-background, Hypertext publishing , technology behind the web; security in web-consumer oriented applications – Mercantile models for consumer perspective, Mercantile models for merchants perspective

UNIT III

Types of electronic payment system – Digital token based electronic payment systems, smart cards and electronic payment systems, credit card based systems; Risk and electronic payment- Designing electronic payment systems – electronic data interchange – EOI Applications in Business – EDI: legal, security and Privacy issues –EDI and E-Commerce

UNIT IV

Internal Information systems – Macro forces and Internal Commerce –work flow automation and coordination customization and internal commerce – supply chain commerce system – making a business case for a document library – types of digital documents – Issues behind Document infrastructure- corporate Data warehouses

UNIT V

The new age of information based marketing – advertising on the internet- charting, the online marketing process- market research – search and resource discovery paradigm- information search and retrieval – e-commerce catalogs and directories – information filtering – consumer- data interface emerging tools.

Reference:

1. Ravi Kalakota, Andreq B.Winston “Frontiers of Electronic Commerce” *Pearson Education Asia* , 2003
2. Jeffery F. Rayport, Bernard J.Jaworski , “E-commerce”, *TMCH*, 2002

E.2.3 WAP

Subject Title : WAP

Course Number:

Subject Description

This Course presents the elements of wireless application protocol

Goals

To enable the students to learn the concepts of WAP

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of WAP

Contents

UNIT I

Mobile Internet: Introduction, Mobile Data – connectivity- Key services for mobile internet access and application service providers: Content providers and developers

UNIT II

Mobile Internet Standards: Current web technologies for wires applications: origin , WAP components of wap standard: Network Infrastructure service supporting WAP –Principle tools, Software editors and emulators

UNIT III

Implementing WAP services: WML Basics and Document model; content generation, enhanced WM: WML Script, rules of script, standard libraries, user interface design

UNIT IV

Tailoring contents to client: Techniques using HTTP1.1; WAP Push, Push access, Push Technology, MIME media types for push messages; Proxy gateway; data base driven applications for WAP ; Object Model- ActiveX database objects(ADO); End-to-end WAP services-Security issues

UNIT V

WTA Architecture; client framework; Server and security; Design of Application creation Toolbox; WA enhancements; Technology, Bluetooth and voice xml

Reference:

1. Sandeep Singal et al. "WAP writing applications for Mobile Internet" *Pearson Education*
2. Data Bubrook "WAP:A beginners guide", *Tata McGraw Hill*

**DIPLOMA PAPER I: Introduction to Open Source Tools
(for the candidates admitted during 2007-08 batch only)**

Course Number :

Number of Instruction Hours: 3

Number of Credits: 4

Subject Description :This Course presents the introduction to the open source tools ,
Goals :

To enable the students to learn the Introduction to Linux, Unix networking programming, PHP programming Basics, and Perl programming.

Objectives :

On successful completion of the course the students should have:

- Understood the Linux concept
- Understood the Unix networking programming
- Understood the PFP programming Basics
- Understood Perl programming

Contents:

Unit 1: Introduction to Linux – What every Linux users knows- The shell-The X windows system –Files and Directories.

Unit 2: Viewing Text – Editing Text – Pattern matching, Vi,Ex and Vim editors .

Unit 3: Unix Network Programming-Introduction to TCP/IP: Introduction –The Transport Layer TCP and UDP.

Elementary sockets: Sockets Introduction, Elementary TCP sockets – I/O multiplexing – Socket options

Unit 4: PHP Programming Basics

PHP - Introduction, PHP Basics: - Syntax- Variables- Controls and functions-Strings. Arrays: - Using Arrays, Manipulating Arrays, Associative Arrays

Unit 5: Perl Programming

Perl - Introduction, Perl Basics: - Syntax, Variables, Strings, Numbers, Operators, Arrays: - Using Arrays, Manipulating Arrays, Associative Arrays, Chop, Length, and Sub string. Hashes, Arguments, Logic, Looping, Files, Pattern Matching, Environment Variables, Using cgi-lib for Forms.

File Management PERL: - File Handling, Reading From Files, Appending Files, Writing to Files, File Checking, Reading Directories.

Databases PERL: - DBI Module, DBI Connect, DBI Query, MySQL Module, MySQL Connect, MySQL SelectDB, MySQL Query.

REFERENCES

1. Linux Ina Nutshell – A desktop Quick Reference – O’Reilly 5th Edition, Ellen sivever, Aarom weber, Stephen Figgins, Robers Love and Arnold Robbins
2. Linux CookBook 2nd Edition Michael Stutz , SPD Pvt.ltd 2004 edition.
3. PHP 5 and MySQL Bibble Wiley Dream tech India Pvt.ltd 2006 Edition.
4. Perl CookBook –Tom Christinasen & Nathan Torkington , O’Relliyy ,SPD Pvt ltd,2006 Edition.

**DIPLOMA PAPER II: Introduction to Open Source Environment
(for the candidates admitted during 2007-08 batch only)**

Subject Description : This Course presents the Open Source environment

Goals : To enable the students to learn the Concepts OOP with PHP,PHP and MySQL/Postgre SQL, Case studies in PHP and Ruby on Rails

Objectives :

On successful completion of the course the students should have:

- Understood the concepts OOP with PHP
- Understood the concepts of PHP and MySQL/Postgre SQL
- Understood the Open Source Projects case studies in PHP
- Understood the concepts of Ruby on Rails

Contents:

Unit 1: OOP with PHP –Advanced Array functions-Sessions-cookies and HTTP

Unit 2: String and regular Expression function –Files system and System function, PEAR-Security-Apache Tricks.

Unit 3: PHP and MySQL/Postgre SQL

Unit 4: Open Source Projects- Case studies : Apache Software Foundation, Blender, CodePlex, Debian, Drupal, Eclipse Foundation, Fedora Project, FreeBSD, GIMP, GNU, Inkscape, Java, JBoss, LibreSource, Linux, Mozilla Foundation, MySQL, Gaia Ajax Widgets, NetBSD, OpenBSD, Open-Xchange, OpenOffice.org, OpenSuse, Open solutions alliance, Open Source Development Labs, Open Source Initiative, Open Source Geospatial Foundation, PHP, Python, SourceForge, SugarCRM, SugarForge, Zimbra.

Unit 5: Ruby on Rails: How Ruby works - How Rails works Ruby – Informed Rails Development.

Reference Book

1. PHP 5 and MySQL Bible Wiley Dreamtech India Pvt.ltd 2006 Edition
2. Professional LAMP Linux, Apache,MySQL and PHPs Web Development Wiley dreamtech 2006 Edition
- 3 Ruby for Rails, David A Black Dream tech Press 2006

Diploma Paper III : Advanced Programming in Open Source – PHP

Subject Description :This Course presents the Advanced programming in Open Source

Goals : To enable the students to learn the Concepts PHP in MySQL, AJAX, Smarty, SOAP, CMS(Joomla)

Objectives :

On successful completion of the course the students should have:

- Understood the concepts of PHP and My SQL
- Understood the concepts of PHP and AJAX
- Understood the concepts of PHP and Smarty
- Understood the concepts of PHP SOAP
- Understood the concept of PHP and CMS(Joomla)

Contents :

Unit 1: PHP and MySQL Part II: SQL tutorial - PHP/MySQL function – Displaying Queries in Tables- Building forms from Queries.

Unit 2: PHP and AJAX: AJAX Introduction, History of AJAX, How does AJAX work, IE memory leaks, XML HTTP Request - GET or POST?, XML Http Request in IE FireFox, callback URL and URL rewriters, Problems and Challenges, Benefits of AJAX, How and when to use AJAX, Selecting the right tools and framework for Ajax.

Unit 3: PHP and Smarty: What is Smarty?, Basic Syntax, Variables, Variable Modifiers, Combining Modifiers, Built-in Functions, Custom Functions, Config Files, Debugging Console, Constants, Smarty Class Variables, Smarty Class Methods, Caching, Advanced Features, Extending Smarty With Plugins, Troubleshooting: Smarty/PHP errors, Tips & Tricks, Resources, BUGS.

Unit 4: PHP and SOAP: Introduction to Web Services SOAP, Creating and Consuming Web Services With PHP, XML-RPC, Creating an XML-RPC Web service, Consuming an XML-RPC Web service, NuSOAP and PHP, Creating a NuSOAP Client using PHP, Creating a NuSOAP Web service, Creating a NuSOAP Web Service Client, REST, Consuming an XML Web service using REST.

Unit 5: PHP and CMS(Joomla): Types of CMS – Open source web CMS packages, All Inclusive web CMS's, Micro CMS, Other Helpful Resources.

Reference Book

1. PHP 5 and MySQL Bible Wiley Dream teck India Pvt.ltd 2006 Edition.
2. Professional LAMP Linux, Apache ,MySQL and PHPs Web Development – Wiley dream teach 2006 Edition.
3. www.phpfreaks.com - Smarty
4. www.w3schools.com - AJAX
5. www.php.net/manual/en - PHP notes

Diploma Paper 4. Web Application in PHP Programming-lab

1. Write a program to send an HTML formatted Email with attachment in PHP.
2. Write a program for login authentication using PHP and MySQL .
3. Write a program to upload a file in PHP.
4. Write a program to create a RSS feed using PHP and MySQL .
5. Create a Pay slip for an employee using PHP and MySQL
6. Download a small project module and convert into our Requirement Example website
 1. www.phpclasses.com
 2. www.codeguru.com

BHARATHIAR UNIVERSITY
MODEL QUESTION PAPER M. Sc. I.T. (REGULAR)
I YEAR - I SEMESTER – PAPER I
OBJECT ORIENTED ANALYSIS AND DESIGN

Time: 3 hrs

Marks:75 marks

ANSWER ALL QUESTIONS
SECTION A – (10 X 1 = 10)

1. The conceptual framework of object oriented model is
 - a. Algorithm
 - b. Classes and Objects
 - c. Procedures
 - d. None of the above
2. Which of the following is not a relationship among classes?
 - a. Association
 - b. Inheritance
 - c. Polymorphism
 - d. Aggregation
3. Wrapping of data and function into a single unit is called _____.
4. Which of the following operator cannot be overloaded in C++?
 - a. +
 - b. %
 - c. *
 - d. ::
5. _____ is used to achieve runtime polymorphism.
6. Two kinds of object hierarchies are _____ and _____ relationships.
7. _____ is used to create objects.
8. A member can always access the data
 - a. in the class of which it is a member
 - b. in any objects of the class of which it is a member
 - c. in the public part of its class
 - d. none of the above.
9. Object communicate with other objects by _____.
10. State true/false: C++ has all the features of Object oriented language.

SECTION B – (5 X 5 = 25)

11. a. Explain strong and weak typing with examples. (OR)
- b. Explain the 2 kinds of hierarchies in OOAD.
12. a. What are the different metrics used to measure the quality of abstraction? (OR)
- b. Discuss use case analysis as described by Jacobson.
13. a. What are the two processes involved in identification of key abstraction. (OR)
- b. Explain the components of a class diagram with an example.
14. a. Discuss the importance of exception handling (OR)
- b. Explain the different features of polymorphism
15. a. Explain aggregation. (OR)
- b. Discuss the noun phrase approach to identify objects and classes in an environment

SECTION C – (5 X 8 = 40)

16. a. Explain the OOSD life cycle in detail. (OR)
- b. Explain the four major elements of Object model.
17. a. Explain the different kinds of relationships among objects.(OR)
- b. Explain the identification of classes and objects.

18. a. Explain states events, scenarios and operations. (OR)
b. State the uses of instant diagrams and state diagrams.
19. a. Explain the features of UML. (OR)
b. Define OMT. How is the object oriented approach different from procedure oriented approach.
20. Give a detailed object model of
a. A simplified window management system(OR)
b. A simplified airline reservation system.

**I YEAR - I SEMESTER – PAPER II
AVANCED COMPUTER ARCHITECTURE**

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A – (10 X 1 = 10)

1. A pipeline computer performs overlapped computations to exploit
 - a. Temporal parallelism
 - b. spatial parallelism
 - c. both (a) and (b)
 - d. None of the above
2. The lower bound _____ is known as Minsky's conjecture.
 - a. $\log_2 n$
 - b. $\log_2 2n$
 - c. $\log_2 n^2$
 - d. None of the above
3. The _____ is a processor that is responsible for mapping addresses and routing data between sources
 - a. P map
 - b. K map
 - c. KP map
 - d. None of the above
4. The data buffer is used to hold the block of data fetched from the _____.
 - a. CPU
 - b. Memory
 - c. Hard disk
 - d. None of the above
5. _____ is a string of bits
 - a. Bit slice
 - b. Byte slice
 - c. Word slice
 - d. None of the above
6. A latency sequence that repeats itself is called _____.
7. _____ are triggered by inter instruction dependencies.
8. The _____ machines are especially designed to perform vector computation over matrices or arrays of data.
9. A synchronous array of parallel processor is called an _____
10. An _____ refers to the start of a single function evaluation

SECTION B – (5 X 5= 25)

11. a. Explain the basic uniprocessor architecture. (OR)
b. Explain multiprogramming and timesharing.
12. a. Write a note on comparison of Temporary and Data Parallel Processing (OR)
b. Explain inter task dependency.
13. a. Describe the multifunction and array pipelines (OR)
b.. Explain hazard detection and resolution

14. a. Discuss the SIMD computer organizations. (OR)
 b. Explain the inter PE communications.
15. a. Explain the analysis of parallel algorithm. (OR)
 b. Write short notes on models of computations.
- SECTION C – (5 X 8 = 40)
16. a. Write short notes on “Trends towards parallel processing. (OR)
 b. Describe parallel processing mechanism.
17. a. Explain the structure of parallel processing computers (OR)
 b. Describe the data parallel processing with centralized processor
18. a. Discuss the classification of pipeline processors. (OR)
 b. Explain interleaved memory organizations
19. a. Explain the SIMD interconnection in detail (OR)
 b. Describe the loosely coupled multiprocessor
20. a. Discuss the principles of prefix computations and sorting (OR)
 b. Discuss the method of matrix operations in parallel algorithms.

**MODEL QUESTION PAPER M.SC I.T (REGULAR)
 I YEAR - I SEMESTER – PAPER III
 ADVANCED JAVA**

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A – (10 X 1 = 10)

1. What is a animated object?
2. The _____ operator is closely related to if-else structure.
3. Wrapping of data and function into a single unit is called _____.
4. The _____ language is sometimes referred to as “WORA”
 a. COBOL b. JAVA c. C d. C++
5. _____ is a natural way of thinking about the world and writing computer programs.
6. Define array.
7. _____ is a method with the same name as the class.
8. The data structure used to implement information hiding is
 a. stack b. queue c. tree d. list
9. What is a string?
10. State true/false: A set is a collection that contains unique element.

SECTION B – (5 x 5 = 25)

11. a. (i) Explain increment and decrement operator.
 (ii) Primitive data type. (OR)
 b. Explain the general structure of a JAVA program with a suitable example.

12. a. Describe the various types of scope with a suitable example (OR)
b. What is a package? Discuss the procedure to create a package with an example.
13. a. Write an applet to display the following image using the class Graphics:
(i) Line (ii) 3D Rectangle (iii) Oval (OR)
b. What is a button? Explain its different types with example.
14. a. Discuss the benefits of thread synchronization. Illustrate with a program (OR)
b. Explain with example how to create a sequential access file
15. a. Explain the feature of HTTP GET request and HTTP POST request. (OR)
b. Discuss the purpose of various bitwise operators with a program.

SECTION C – (5 X 8 = 40)

16. a. (i) What is the purpose of using break and continue statements?
Explain with example.
(ii) Write a java program to read two integer values from the user and display their sum using JOptionPane class. (OR)
b. Write a Java program to create a mark list of a student using for statement including the inputs- register number, name, marks, total and average
17. a. (i) Write a Java program to print the first n terms of Fibonacci series.
(ii) Discuss about the concept of method overloading giving a suitable example (OR)
b. Explain multiple subscripted arrays using a program that performs various matrix operations
18. a. Write a program to read a string and find string length, string reverse and display character array of string. (OR)
b. Discuss the following with examples:
(i) Event Handling model (ii) JTest field and JPasswordField.
19. a. Explain exception handling mechanism with suitable example. (OR)
b. Write a java program to create a pay bill for employees using files
20. a. Discuss the differences between various features of sets and maps with suitable examples. (OR)
b. Explain the following with suitable example
(i) Adding Beans to Bean box
(ii) Connecting Beans with events in the Bean box.
- - - - -

I SEMESTER PAPER IV – DISTRIBUTED COMPUTING

Time: Three hours

Maximum: 75 marks

Answer all Questions

SECTION A – (10 X 1 = 10)

Fill in the blanks:

1. _____ is the physical connection between the components.
2. Local access of data can improve _____, once delays of remote transmission are eliminated.
3. Computer generated dial-ups are, in effect, a form of _____.
4. _____ means that the user has no knowledge of which location is being accessed in a client-server system.
5. _____ means different names are used for the same fact.

Choose the correct answer

6. _____ can be distributed in a computer system
 - a. hardware
 - b. data base
 - c. both (a) and (b)
 - d. neither (a) nor(b)
7. _____ is an advantage of DDP
 - a. Duplication of data
 - b. Improved response time
 - c. Decentralization
 - d. All the above
8. _____ is not included in network transaction time
 - a. computer processing time
 - b. line turn around time
 - c. time required to move the complete transaction
 - d. none of these.
9. What is atomic transaction?
 - a. very small transaction
 - b. transactions that can be performed concurrently
 - c. transaction that either complete successfully or has no effect
 - d. None of these
10. _____ means representing different facts by the same name
 - a. collision
 - b. reference
 - c. homonym
 - d. None of these

SECTION B – (5 X 5 = 25 MARKS)

- 11.(a) Explain the 3 basic distributed system structures? (or)
- (b) Explain the three phases of communication in circuit switching.
12. (a) What is meant by (i) transaction (ii) consistent state in distributed systems? Explain. (or)
- (b) Explain any two types of data base distribution.
13. (a) Write short notes on throughput. How is it calculated? (or)
- (b) Write short notes on block error rate with respect to line-loading calculations.
- 14.(a) List the steps involved in sending e-mail? (or)
- (b) Write a note on directory and replication servers..
15. (a) Explain four advantages of distributed databases (or)
- (b)What are the rules to be followed when refining data fragments?

SECTION C – (5 X 8 = 40)

16. (a) Explain the three possible ways for achieving use of transmission path in bus and ring structures. Explain. (or)

(b) Explain the packet switching concepts elaborating on any 2 techniques for implementing it.

17. (a) Explain the DAM architecture. (or)

(b) Explain the division of responsibilities in creating and managing distributed data systems?

18. (a) Explain the use of data flow systems with a suitable example. (or)

(b) Explain the TM/DM architecture.

19. (a) Explain the Petri net model of the three message protocol. (or)

(b) Discuss the security and integrity problem in a filing system.

20. (a) Explain any two types of data fragmentation. (or)

(b) Explain the objectives of the design of data distribution..

I YEAR - I SEMESTER – PAPER V INFORMATION CODING TECHNIQUES

Answer all Questions

SECTION A – (10 X 1 = 10)

Define the following terms:

1. Information
2. Entropy
3. Cyclic codes
4. Hamming Distance
5. Digitized documents
6. Lossless techniques
7. L-Z coding
8. Bit rate
9. Error control
10. Source encoding

SECTION B – (5 X 5 = 25)

11. State and explain Shannon's Theorem. (or)

Explain Prefix coding with suitable example.

2. Explain the PCM generator with a neat block diagram. (or)

Differentiate delta modulation and adaptive delta modulation.

3. What is error control coding? Explain the types of codes used. (or)

Explain the functional blocks of a communication system that accomplish error control.

4. What are the principles of data compression? Explain using a block diagram. (or)

Explain the working of LPC coder and decoder for speech.

5. What are the different methods to digitize sound? Explain MIDI. (or)

7. What is distortion? How is it overcome in ADM?

SECTION C – (5 X 8 = 40)

1. A discrete memoryless source has a alphabet of five symbols whose probabilities of occurrence are described below:

Symbol	Probability
A	0,2
B	0.2
C	0.1
D	0.1
E	0.4

Calculate the Huffman code for this source. Calculate the efficiency of the source encoder. (Or)

Explain Huffman's code with suitable example.

2. What is the technique used in DCPM? How does it differ from PCM (or)

Explain MIDI format and perpetual coding.

3. Draw the JPEG encoder and explain in brief. (or)

Elucidate the GIFF and TIFF image compression format

4. Explain the DM system with a block diagram. (or)

Explain Cyclic and convolution codes.

5. With the following symbols and their probability of occurrence, encode the message "went#" using arithmetic coding algorithms.

Symbol:	e	n	t	w	#
Probability:	0.3	0.3	0.2	0.1	0.1

(or)

Explain arithmetic coding algorithm with an illustration.

I YEAR - II SEMESTER – PAPER VI
PROGRAMMING IN C# AND .NET FRAMEWORK

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A(10 X 1 = 10)

State true or false

1. All code written in c# will always run in .NET framework.

2. C# is not a language in its own right.

Choose the correct answer

3. C# is

- | | |
|--------------------------------|-----------------------------|
| a. procedure oriented language | b. object oriented language |
| c. low level language | d. None of the above |

4. Two of the predefined integer types in C # are

- | | |
|--------------------|----------------------|
| a. int and uint | b. int and unsigned |
| c. uint and signed | d. none of the above |

5. Object is a

- | | |
|---------------------------------|--------------------------------------|
| a. User defined data type in C# | b. User defined reference type in C# |
| c. Predefined data type in C# | d. Predefined reference type in C# |

6. _____ is a data type which can take values either true or false.

7. _____ is a modifier which describes a method that can be overridden by a derived class
8. The _____ operator is used to create objects
9. C# begins execution with a method named _____.
10. To use a C# keyword as an identifier it has to be prefixed with ____ symbol.

SECTION B (5 X 5 = 25)

11. a. Explain the fundamental data types in C#. (OR)
b. Explain how classes and methods are declared and called in C#.
12. a. Explain a sealed class and method in C# with suitable example (OR)
b. Explain the various access modifiers in C#.
13. a. Describe the various 'properties' defined in c# (OR)
b. Illustrate implementing Dispose() and destructor using an example.
14. a. Discuss the differences between using keyword class and struct. Give examples. (OR)
b. Write a note on calling constructors from other constructors.
15. a. Mention the various format strings used with their descriptions. (OR)
b. Explain single implementation inheritance with an example.

SECTION C – (5 X 8 = 40)

16. a (i) Bring out the relationship of C# to .NET
(ii) Describe the components of .NET framework (OR)
b. Describe the various types of constructors in C#.
17. a. Explain the looping structures in C# with suitable example statements. (OR)
b. Describe these various operators and their usage in c# - is, sizeof, checked and unchecked, typeof.
18. a. Describe method overloading concept using suitable example. (OR)
b. Explain the array syntax in C#.
19. a. Explain the operator overloading concept using suitable example (OR)
b. Explain how a console event can be handled with an appropriate program
20. a. Explain the console I/O methods in C# (OR)
b. Elaborate on error and exception handling in C#.

I YEAR - II SEMESTER – PAPER VII
MULTIMEDIA SYSTEMS

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A(10 X 1 = 10)

1. Which of the following is a fully featured web creation and management tool?
a. Power point b. Front page c. HTML d. XML
2. Paint shop pro and graphic converter are called.
a. Firmware b. shareware c. software d. hardware
3. The physical measure of tone is
a. frequency b. Pitch c. Amplitude d. None of the above

4. SGML is called

- a. Standard generalized markup language
- b. Synchronized generalized markup language
- c. Standard general markup language
- d. Synthesized generalized markup language

5. _____ is called Boom

- a. Bipolar omni orientation monitor
- b. Binocular omni orientation monitor
- c. Bidirectional omni orientation monitor
- d. Binocular omni orientated monitor

6. _____ is one of the most interesting multimedia effects

7. A _____ file is a bitmapped graphic residing somewhere on the computer's disk drive.

8. The _____ in a digital video image occurs when the same information is transmitted more than once.

9. HTML is called as _____

10. _____ in an environment is related to the quantity and quality of sensory data from that environment.

SECTION B (5 X 5 = 25)

11. a. What is multimedia PC? Discuss its features. (OR)
b. Explain how multimedia techniques are used for cinematic special effects
12. a. Write down the steps involved in (i) Sizing text (ii) Aligning and centering text (OR)
b. Explain how the brightness and contrast of a picture can be adjusted.
13. a. Describe MIDI protocol (OR)
b. Explain the various predicting techniques
14. a. Discuss the various types of authoring systems. (OR)
b. Explain the teleconferencing systems.
15. a. Explain any 3 types of VR systems. (OR)
b. Write short notes on any 2 common virtual environments.

SECTION B (5 X 8 = 40)

16. a. Write short notes on (i) Web page creation tools (ii) Any 3 hardware components important for multimedia. (OR)
b. Describe the various multimedia accessories.
17. a. Explain the steps involved in (i) 3D effects (ii) Flip and Rotate (OR)
b. Describe the concept of hypertext and hyper pictures
18. a. Discuss the various video equipments available. (OR)
b. Explain the JPEG image compression standard
19. a. Explain the various multimedia conferencing architectures (OR)
b. Explain various HTML elements and design paradigms and user interfaces
20. a. Discuss the principles VR applications (OR)
b. You are required to create a web site highlighting your college's profile and record. Explain the various multimedia elements you can incorporate in the site. Sketch the step by step development of such a site.

I YEAR - II SEMESTER – PAPER VIII
NETWORK SECURITY AND MANAGEMENT

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A(10 X 1 = 10)

1. Mention the protocols used in the application layer of OSI model
2. List the characteristics of a well designed network.
3. Securing electronic documents is more challenging than securing paper documents-give one reason
4. Define unconditionally secure and computationally secure encryption schemes
5. Why should the use of network resources be tracked?
6. How can a router be used to prevent IP spoofing?.
7. What is Security Parameter Index
8. What are the different metrics used in routing protocol?
9. List some uses of UDP.
10. What is socket address?

SECTION B(5 X 5 = 25)

11. a. Compare conventional and public key encryption. OR
 b. What is integrity check value? Give its significance.
12. a. Give the strength of DES. OR
 b. List the limitations of SNMP
13. a. Summarize the types of security threats faced in using the web. OR
 b. Explain in detail with an example the play fair cipher encryption technique.
14. a. Explain in detail the simplified DES encryption algorithm. OR
 b. Describe about symmetric key Cryptography.
15. a. Write short notes on:
 (i) Authentication and data integrity (ii) Wireless LAN technologies.
 OR
 b. Write short notes on (i) Security in Ipv6. (ii) IP addressing scheme.

SECTION C(5 X 8 = 40)

16. a. What is Cryptanalysis? Briefly discuss about substitution cipher, transposition ciphers and one-time pads. OR
 b. Explain any one secrete key algorithm
17. a. How is network security achieved at various layers? OR
 b. What is the fundamental difference in key exchange for digital signatures and achieving confidentiality?
18. a. Explain in detail about the public key certificates OR
 b. Explain about secret key distribution with confidentiality and authentication.
19. a. Discuss in details about the usage of firewalls. OR
 b. Explain PGP & PEM in detail.
20. a. Write a note on (i) MIBS(ii)High speed network protocols OR
 b. Write a note on (i)RMON (ii)CMIP

- b. Explain the statistical concepts that are the basis of data mining techniques.
17. a. Explain about decision Tree-based algorithms. (or)
b. What are the advantages and disadvantages of neural networks?
18. a. Write about partitioning algorithm. (or)
b. Write about Hierarchical algorithms.
19. a. Write about OLAP tools and the Internet. (or)
b. Discuss about data mart and its characteristics.
20. a. What are the technical issues that are required to be considered for designing and implementing a warehouse?(or)
b. What are the various applications of data warehousing and data mining? Explain.

I YEAR - II SEMESTER – PAPER IX

Elective – E 1.2 **DIGITAL IMAGE PROCESSING**

Time: Three hours

Maximum: 75 marks

Answer all Questions

SECTION A – (10 X 1 = 10)

Fill in the blanks:

1. The most widely used standard of speed of a film of the _____ scale.
2. The _____ equalization method does not lend itself to interactive image enhancement
3. The use of spatial masks for image processing is called spatial _____.
4. The simplest scheme for gray-level interpolation is based on a nearest _____ approach.
5. DDC stands for _____.

Choose the correct answer

6. Logic operations apply only to
 - a. binary images
 - b. multivalued pixels
 - c. both a and b
 - d. None of these
7. Thresholding function creates a
 - a. binary image
 - b. input image
 - c. output image
 - d. none of these
8. A simple approach for reducing the effect of the interference is to use a _____
 - a. ripple
 - b. notch filter
 - c. spatial transformation
 - d. none of these
9. _____ is not an abstract concept but mathematically quantifiable entity
 - a. data compression
 - b. data redundancy
 - c. data coding
 - d. none of these
10. The first step in image analysis is to segment the _____
 - a. Data
 - b. size
 - c. image
 - d. None of these

SECTION B – (5 X 5 = 25 MARKS)

- 11.(a) Explain in detail about image acquisition? (or)
 (c) Write about connectivity
12. (a) What are frequency domain methods? Explain. (or)
 (b) Explain image averaging.
13. (a) Explain the property of additivity and homogeneity. (or)
 (b) Write short notes on 'least mean square filter.
14. (a) Define error free compression. Explain? (or)
 (b) Explain the lossy predictive coding model.
15. (a) Write a note on point detection? (or)
 (b) What are spatial techniques? Explain?
 (c)

SECTION B – (5 X 8 = 40 MARKS)

16. (a) What are the fundamental concepts in data mining? Explain. (or)
 (b) Explain the sampling concept in detail.
17. (a) Explain about color image processing. (or)
 (b) Explain the image enhancement methods on spatial domain methods?
18. (a) Explain in detail about inverse filtering. (or)
 (b) Write about constrained least square restoration.
19. (a) Write about image compression models. (or)
 (b) Discuss about lossy compression techniques.
20. (a) What are edge linking and boundary detection? Explain. (or)
 (b) Explain in detail about thresholding.

**I YEAR - II SEMESTER – PAPER IX
 ELECTIVE I-E 1.3 ARTIFICIAL INTELLIGENCE**

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS
 SECTION A(10 X 1 = 10)

Choose the correct answer

1. BFS means
- | | |
|------------------------|-------------------------|
| a. Best first search | b. breadth first search |
| c. breadth first state | d. none of these |
2. One or more states that describe the possible situation from which process may start are called.
- | | |
|--------------------|------------------|
| a. Initial state | b. Goal state |
| c. reachable state | d. none of these |

3. The technique that improves the efficiency of search process possibly by sacrificing claims of completeness is
- Heuristic search
 - random search
 - search mode
 - None of the above
4. A graph that is used in BFS is
- AND graph
 - OR graph
 - AND –OR graph
 - None of the above
5. Each predicate requires one or more
- states
 - graphs
 - arguments
 - none of these

Fill in the blanks:

6. _____ is one who has the expertise to build a expert system.
7. A computer program using expert knowledge to attain high levels of performance in a narrow problem area is called _____ .
8. The part of an inference engine that decides when and in what order to apply different pieces of domain knowledge is called _____
9. All possible inference chains that can be generated from the rules in a rule-based system is called _____
10. A standard method of exchanging information between people such as English is _____.

SECTION B (5 X 5 = 25)

11. a. What is AI technique? Discuss its features. (OR)
b. Explain some task domains of AI
12. a. Write down the advantages of BFS (OR)
b. Explain “Optimality of algorithms”.
13. a. Describe the features of problem reduction search method (OR)
b. Explain syntax in predicate calculus.
14. a. Discuss the concept of automatic program writing. (OR)
b. Explain the importance of proof finding methods
15. a. Explain Knowledge base. Give examples. (OR)
b. Write short notes on EMYCIN.

SECTION B (5 X 8 = 40)

16. a. Elaborate on the ‘Basics of AI’ (OR)
b. Describe the various AI characteristics.
17. a. Explain DFS (OR)
b. Describe the problem reduction technique
18. a. Discuss in detail about Alpha Beta cutoff. (OR)
b. Explain about theorem proving in predicate calculus.
19. a. Explain the term resolution in detail. (OR)
b. Explain various elements of predicate calculus.
20. a. State the importance of knowledge engineering. (OR)
b. Explain briefly about architecture of an expert system.

**II YEAR - III SEMESTER – PAPER X
EMBEDDED SYSTEMS**

Time: 3 hrs

Marks:75

**ANSWER ALL QUESTIONS
SECTION A (10 X 1 = 10)**

1. Give the purpose of timing diagrams.
2. Define critical section.
3. Differentiate between hard and soft real time systems.
4. What is called a cross compiler.
5. What is the function of an inverter?

Fill in the blanks:

6. Digital signals are always in one of the two states _____ and _____.
7. The most common semaphore variant that RTO's offer are _____.
8. The advantage of a short system tick is _____.
9. Logic analyzers report only two voltage levels _____ and _____.
10. Not – AND gate is called _____ and it possess _____ property.

SECTION B (5 X 5 = 25)

11. a. What is programmable array logic? Discuss. (OR)
b. Explain Read only memory and its variants.
12. a. What is interrupt latency? Explain the factors for having low interrupt latency (OR)
b. Explain the characteristics of Round-robin with interrupts- architecture.
13. a. Discuss about the following methods that most RTO's offer-message queues, mail boxes and pipes. (OR)
b.. Explain the RTO's memory management subsystem.
14. a. Discuss the assert macro. (OR)
b. Explain the features of oscilloscopes.
15. a. Explain the issues related to following embedded systems (OR)
(i) cordless bar-code scanner (ii) laser printer.
b. Explain the role of embedded systems in automobile industry.

SECTION C (5 X 8 = 40)

16. a. Elaborate on the important aspects associated with the bus in the embedded Systems (OR)
b. Describe the architecture of a system with DMA.
17. a. Explain the functions queue scheduling architecture and also give suggestions for selecting an architecture for embedded systems (OR)
b. Describe the tasks and task states in an RTO's. Explain the function of a scheduler.
18. a. Discuss the design considerations that have applications to a broad range of embedded systems. (OR)
b. Explain the ways of saving power and memory in embedded systems.
19. a. Explain the issues of getting embedded software into target system. (OR)
b. Explain the function of telegraph and the challenges it faces while developing software.
20. a. Discuss the issues related to the underground tank monitoring system. (OR)
b. How are the logic analyzers and monitors used in laboratory tools for an embedded system?

II YEAR - III SEMESTER – PAPER XI
COMPONENT BASED TECHNOLOGY

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A (10 X 1 = 10)

1. Mention any 2 requirements of components.
2. What is marshalling?
3. What is the need of using reference counting?
4. What is event driven programming?
5. Differentiate dynamic Invocation interface and dynamic Skeleton interface.
6. What is IDL programming model?
7. Why is object clustering difficult for implementation?
8. Define transaction with its properties.
9. What are the factory components?
10. What is an ActiveX control?

SECTION B(5 x 5= 25)

11. a. How will you develop a simple Bean application? Explain with an example OR
b. Describe the various alternatives to client/server architecture.
12. a. How concurrency is achieved in distributed objects? OR
b. Discuss the methods involved in class factories.
13. a. When do we use RMI programming model instead of IDL programming model?
Why? OR
b. Write a note on CORBA naming service.
14. a. Discuss the various cache consistency models. OR
b. Describe how transaction is managed in Object DBMS.
15. a. List the steps involved in creating a DLL server with ATL. OR
b. Write short notes on memory transparency.

SECTION C (5 x 8 = 40)

16. a. Explain the overview of CORBA architecture with its Implementation Issues. OR
b. Briefly explain how remote object can be invoked.
17. a. Discuss the methods to overcome the problems involved in unreferenced objects. OR
b. Explain the general architecture of a queuing system.
18. a. Explain the steps involved in the development of java ORB with an example. OR
b. Explain the models involved in initiating event communication.
19. a. Explain the fundamental issues of object management. OR
b. Briefly explain the issues involved in query processing.
20. a. Explain the basic architecture of DCOM. OR
b. How will you create a COM object? Explain with an Example.

II YEAR - III SEMESTER – PAPER XI -WEB SERVICES

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS**SECTION A (10 X 1 = 10)**

1. What is element in XML document?
2. Mention one advantages of using XML?
3. How is namespace useful in XML?
4. What is the need for XSLT for an XML document?
5. What is the purpose of SOAP?
6. Name any four design patterns?
7. What for UDDI is suitable?
8. What are the advantages in E-Commerce?
9. What is digital signature?
10. What is canonicalization?

SECTION B (5 x 5=25marks)

11. (a) Explain the applications that utilize web services. Or
(b) Write an note on remote web services. How are they useful?
12. (a) How is information exchanged between applications in a distributed environment?
Explain. Or
(b) What are the static and interactive aspects of system interface? How are they implemented?
13. (a) Explain the terms latency, reliability and QOS metric. Or
(b) Write a note on key issues in mobile and wireless web services.
14. (a) Explain application of web services in the context of distributed computing Or
(b) Explain the UDDI specifications.
15. (a) What are the common threats to the security in web services? Explain. Or
(b) Explain the terms: WSDL, AXB SOAP server, orchestration.

SECTION C (5 x 8 = 40marks)

16. (a) Explain the web service protocol stack. Or
(b) Write an XML document to illustrate the elements, attributes and CDATA section.
17. (a) Create a DTD for mark statement of a student. Write a program to retrieve the elements and attributes of the XML document and display the mark statement in proper format. Or
(b) Write an XML document to illustrate XSL, parameter entities, Reference entities, CDATA sections allowing different types of contents in the document.
18. (a) Explain the SOAP message structure and illustrate SOAP with attachment. Or
(b) Write a complete set of programs to illustrate XML RPC and SOAP message passing.
19. (a) Write a program to illustrate web service in .NET environment.
Write all the files required to implement web service. Or
(b) Compare J2EE and .NET framework in the context of web services.
20. (a) Explain XML security framework. Or
(b) Explain the signing of XML document using XML encryption.

II YEAR - III SEMESTER – PAPER XIII
ELECTIVE II - E 2.1 SOFTWARE PROJECT MANAGEMENT

Time: 3 hrs

Marks:75

ANSWER ALL QUESTIONS

SECTION A (10 X 1 = 10)

1. What are intangible benefits?
2. Define slack time in an activity network
3. Give the purpose of timeline chart
4. Define software reliability
5. What is quality assurance?

Fill in the blanks

6. _____ is the difference between the total costs and total income over the life of the project.
7. CPM stands for _____ .
8. In leadership styles, directive democrat makes decisions in a participative manner but _____ .
9. A configuration management database provides information concerning _____.
10. A rigorous mathematical demonstration that source code conforms to its specifications is called _____.

SECTION B (5 X 5 = 25)

11. a. List the contents of technical plan. (OR)
 b. Explain software development using waterfall method.
12. a. Describe the resources required for a project . (OR)
 b. Explain various factors that need to be considered in risk identification.
13. a. Describe the Oldham-Hackman job characteristics model. (OR)
 b.. Discuss the problems with students projects.
14. a. Discuss the concept of software repair and availability. (OR)
 b. Explain the activities involved in software maintenance.
15. a. Explain the aspects included in software quality assurance plan . (OR)
 b. Explain the implementation of software quality assurance plan according to IEEE standards.

SECTION B (5 X 8 = 40)

16. a. Elaborate on overview of project planning. (OR)
 Describe the role of cost-benefit analysis and cash flow forecasting in project evaluation.
17. a. What are the rules to be followed when constructing a cpm network. Explain (OR)
 b. Describe the COCOMO in detail.
18. a. Discuss the methods used for visualizing progress of project's progress (OR)
 b. Explain about the issues related to leadership .
19. a. Explain the many state Markov model. (OR)
 b. Explain any 2 source code metrics with an example.
20. a. State the need for software quality assurance tools. (OR)
 b. Explain the computer aided techniques for structured documentation and analysis of information processing systems.

II YEAR - III SEMESTER – PAPER XIII**E 2.2 E-COMMERCE**

Time: Three hours

Maximum:75 marks

Answer all Questions

SECTION A – (10 X 1 = 10)

Fill in the blanks:

1. Customer premises equipment is also called _____ equipment.
2. An interactive catalog is an extension of the _____ catalog.
3. Examples of postpaid mechanisms are _____ cards.
4. A _____ means a network of suppliers and consumers within which any business operates.
5. Information products will most likely be priced on _____ of availability.

Choose the correct answer

6. In switching technology, fiber optic-based integrated switching and transmission system came into existence during
 - a. 1960
 - b. 1970
 - c. 1990
 - d. none of these
7. Goals of business include
 - a. staying competitive
 - b. Improve productivity
 - c. Deliver quality service
 - d. All the above
8. _____ was developed to improve transportation and trade
 - a. CAD
 - b. CAM
 - c. EFT
 - d. EDI
9. Types of digital documents are _____
 - a. active , compound
 - b. distributed , hypertext
 - c. structured documents
 - d. all of the above.
10. Two important information-based marketing related issues are pricing and _____
 - a. bundles
 - b. priority
 - c. products
 - d. None of these

SECTION B – (5 X 5 = 25 MARKS)

11. (a) Explain cross-media convergence. (or)
(b) Explain the difference between accessing the i-way via a set-top box and apc.
12. (a) What are the different types of e-commerce applications? Explain. (or)
(b) Explain the client –server architecture in detail.
13. (a) What are electronic checks? What are its advantages? (or)
(b) Write a notes on risks in electronic payment system.
14. (a) List the characteristics of supply chain management (or)
(b) What are the challenges in building the digital library?
15. (a) Explain active advertising. (or)
(b) Explain how WIAS works.

SECTION C – (5 X 8 = 40)

16. (a) Explain the general framework of electronic commerce (or)
(b) What are the functions of supply chain management?
17. (a) Explain consumer oriented services. (or)
(b) Explain the characteristics of an electronic marketplace.
18. (a) Explain the various electronic payment systems. (or)
(b) Explain about on-line third party processors.
19. (a) Explain the various types of digital documents. (or)
(b) Discuss the advantages of data warehousing.
20. (a) Explain advertising on the internet. (or)
(b) Explain the steps involved in interactive market process.

II YEAR - III SEMESTER – PAPER XIII
E 2.3 WIRELESS APPLICATION PROTOCOL

Time: Three hours

Maximum:75 marks

Answer all Questions
SECTION A – (10 X 1 = 10)

1. Define WAP.
2. WHAT DO YOU MEAN by proxy?.
3. Name the functionality of a WAP gateway.
4. What is the necessity for Own Gateway?
5. Give the purpose of XML parser.
6. Name any two events with their description.
7. Define invalid operator
8. Define ADO.
9. What is meant by XML Transformation language?
10. What is a JSP?

SECTION B – (5 X 5 = 25 MARKS)

11. (a) Write short notes on wireless markup language. (or)
(b) Explain the WDP protocol.
12. (a) Discuss about downloading and installing UP simulator. (or)
(b) Explain the conversion from HTML to WML.
13. (a) What is XML? Explain its structure. (or)
(b) Write notes on automatic data type conversion.
14. (a) How is a dynamic page created using ASP? (or)
(b) Write a note on connecting pooling?
15. (a) Define (i) X path (ii) XSLT processing (or)
(b) Explain JSP application and Bean.

SECTION C – (5 X 8 = 40)

16. (a) Describe the WAP architecture in detail (or)
(b) Explain the connection oriented and connectionless session services.
17. (a) Explain the WAP gateway provided by the network operator. (or)
(b) Describe the method to install and configure WAP gateways in detail.
18. (a) Write short notes on (i) WML and non-XML elements of JSP. (ii) XSLT. (or)
(b) Write short notes on
(i) Basic principles of encryption. (ii) Basic principles of symmetric ciphers
19. (a) Explain array handling with string library. (or)
(b) Discuss (i) Error checking (ii) Error handling WML scripts.
20. (a) Explain the ADO 2.5 object model. (or)
(b) Explain database centric web application.