COMPUTER PROGRAMMING (CP)

I Semester : Common for all Branches					Scheme : 2017		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
CS101	Foundation	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		3	0	-	3	40	60	100
Sessional Exam Duration : 2 Hrs					End Exam Duration: 3 Hrs		

Course Outcomes : At the end of the course students will be able to

CO1: Design an algorithm and flow chart for a given problem.

CO2: Summarize the structure and tokens of C program.

CO3: Explain the use of Arrays in C program.

CO4: Illustrate the applications of functions and pointers.

CO5: Understand the purpose of structures and files in C.

UNIT – I

Fundamentals of Computers

Block diagram of a Computer, Types of Programming languages, Algorithm- Characteristics of an algorithm, Flow charts and Examples.

C Fundamentals

Identifiers and Key words, Data Types, Constants and Variable declarations, Operators, Expressions, Header files.

UNIT – II

Data input/output

printf(), scanf(), getchar(), putchar(), gets(), puts(); Type conversion- implicit, explicit.

Flow Control

Selection- if statements, switch statement, goto statement. Loops- While, do-while, for; break, continue, nested loops.

UNIT – III

Arrays

Declaring and Initializing One dimensional and Two dimensional arrays, Processing an array, Character arrays, String handling functions: strlen(), strcpy(), strcmp(), strcat(). Examples – Matrix operations.

Functions

Definition, Accessing a function, passing arguments to a function, storage classes: automatic, external, static, register; Recursion, Passing arrays to a function.

UNIT – IV

Pointers

Introduction to pointers, Pointer declarations, Operations on pointers, Pointers and arrays; Passing address to a function; Function returning Pointer; Pointer to a function, Dynamic Memory Allocation.

UNIT – V

Structures and Unions

Defining a structure, Processing a structure, Structures and pointers, Passing structures to a function, Self-referential structures, Unions, User-defined data types- typedef, enum.

Files

Introduction, Opening a file, Reading data from a file, Writing data to a file and Appending data to a file, Closing a File, Error handling functions in files.

Text Books :

1. Ron S.Gottfried, Programming with C, (TMH – Schuam Outline Series) 3rd Edition -2011.
2. B.W. Kernignan and Dennis M.Ritchie, The C Programming Language, (PHI), 2nd Edition 2003.

Reference Books :

1. E.Balaguruswamy, Programming in ANSI C, TMH, 2003.
2. Yashavanth P.Kanetkar , Let US C , BPB Publications, 7ᵗʰ Edition,2007.
3. Ajay Mittal, Programming in C, Pearson Education, 2010.

Web References:

1. https://www.tutorialspoint.com/cprogramming/c_program_structure.htm
2. http://fresh2refresh.com/c-programming/c-basic-program/

Question Paper Pattern:

Sessional Exam

The question paper for sessional examination is for 30 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam. Question No 1 which carries 6 marks contains three short answer questions of two marks each. The remaining three questions shall be EITHER/OR type questions carrying 8 marks each

End Exam

Question Paper Contains Six Questions. Question 1 contains 5 short Answer questions each of 2 marks. (Total 10 marks) covering one question from each unit. The remaining five questions shall be EITHER/OR type questions carrying 10 marks each. Each of these questions is from one unit and may contain sub-questions. i.e there will be two questions from each unit and the student should answer any one question

DATA STRUCTURES (DS)

II Semester : Common for all Branches					Scheme : 2017		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**	
CS103	Foundation	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		3	**-**	**-**	**3**	**40**	**60**	**100**
Sessional Exam Duration : 2 Hrs					**End Exam Duration: 3 Hrs**		

Course Outcomes : At the end of the course students will be able to

CO1: Understand the purpose of array data structure and its operations.

CO2: Understand the linked list data structure and its operations.

CO3: Explain the operations performed on stack data structure.

CO4: Explain the operations performed on queue data structure.

CO5: Understand the purpose of structures and files in C.

UNIT - I

Introduction to Data Structures

Definition,Classification of Datastructures, Linear and Non Linear

Sequential Storage Representation

Arrays, Operations on Arrays- Insertion, Deletion, Traversing; Applications of arrays–Linear Search, Binary Search, Bubble Sort, Selection Sort, Insertion Sort, Merging of arrays.

UNIT - II

Linked Storage Representation –Linked Lists

Linked storage representation using pointers, Types of Linked Lists–Single linked list, Doublelinked list, Operations on linked lists-Traversing, Searching, Insertion and Deletion.

UNIT - III

Linear DataStructures - Stacks

Representation of Stack using sequential storage and linked allocation methods, Operations on Stacks- Push, Pop, and Display.

UNIT - IV

Linear DataStructures - Queues

Representation of Queue using sequential and linked allocation, Operations on Queues- Insertion, Deletion and Traversing, Circular queue.

UNIT - V

Non Linear Data Structures-Trees

Basic terminology, Binary trees, Representation of Binary tree in memory using arrays and linked lists, Binary Search Trees, Operations on binary search trees-Insertion,Deletion and Recursive Traversals-Preorder, Inorder and Postorder.

Text Books :

1. Jean Paul Tremblay and Paul G.Sorenson[2007], An Introduction to DataStructures With Applications, TMH.

2. Debasis Samantha, Classic Data Structures Second Edition (2009), PHI.

Reference Books :
1. Pradip Dey, Manas Ghosh and Reema Tereja, Computer Programming and DataStructures, Oxford University Press.
2. S.K.Srivatsava and Deepali Srivatsava, Data Structures through 'C' in depth, BPB Publications.
Web References :
1. https://www.tutorialspoint.com/data_structures_algorithms
2. http://www.geeksforgeeks.org/data-structures
Question Paper Pattern:
Sessional Exam
The question paper for sessional examination is for 30 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam. Question No 1 which carries 6 marks contains three short answer questions of two marks each. The remaining three questions shall be EITHER/OR type questions carrying 8 marks each
End Exam
Question Paper Contains Six Questions. Question 1 contains 5 short Answer questions each of 2 marks. (Total 10 marks) covering one question from each unit. The remaining five questions shall be EITHER/OR type questions carrying 10 marks each. Each of these questions is from one unit and may contain sub-questions. i.e there will be two questions from each unit and the student should answer any one question

PROFESSIONAL COMMUNICATION AND ENGLISH – I (PCE – I)

I Semester : Common for all Branches					Scheme : 2017		
Course Code	Category	Hours/Week			Credits	Maximum Marks	
		L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
HU101	Foundation	3	-	-	3	40	60	100
Sessional Exam Duration : 2 Hrs					End Exam Duration: 3 Hrs		

Course Outcomes: At the end of the course students will be able to

CO 1: Use Grammatically acceptable English in Oral and Written communication.

CO 2: Use appropriate Vocabulary in Technical and General Contexts.

CO 3: Comprehend General and Technical Content using various Reading Skills like Skimming and Scanning.

CO 4: Write Functional Letters, Summaries and Essays of topical, Narrative, Descriptive, Analytical and Persuasive nature.

UNIT – I

Nobel Lecture - Kailash Satyarthi

Vocabulary: Synonyms and antonyms

Grammar: Parts of Speech, Types of Nouns, Pronouns and Adjectives

Reading: Reading with a purpose: reading for understanding

Writing: Writing notes and paragraphs

UNIT – II

The Doctor's Word - R K Narayan

Vocabulary: One-word substitutes, Idioms and Idiomatic Phrases

Grammar: Adverbs, Verbs –Verb forms, Types of Verbs, Prepositions, Conjunctions and Articles, Word Order

Reading: Skimming and Scanning

Writing: Functional Letters – Request Letters, Complaint Letters

UNIT – III

Stay Hungry, Stay Foolish - Steve Jobs

Vocabulary: Prefixes and Suffixes, Homophones and Homonyms

Grammar: Tenses, Concord, Voices and Reported Speech

Reading: Use of Dictionary, Thesaurus, Library and Internet for Information

Writing: Note–Taking and Note–Making, Completion of Stories

UNIT – IV

The Open Window – Saki(H H Munro)

Vocabulary: Words often Confused and Collocations

Grammar: Question Tags, Degrees of Comparison, Transformation of Sentences and Correction of Sentences

Reading: Reading Comprehension

Writing: Précis writing, Description of Objects, Story making from Pictures.

Detailed Study Text:	
1. The Enriched Reading by D. Sudha Rani, Pearson India Education Services Pvt. Ltd, Second Impression, 2017.	

Reference Books:

1. Michael Swan, Practical English Usage, Third Edition, OUP, 2006.

2. David Green, Contemporary English Grammar, Structure and Composition, , Second Edition, Lakshmi Publications, 2015.

3. Oxford Advanced Learners Dictionary of Current English, OUP, 2015.

4. Meenakshi Raman and Sangeetha Sarma, Technical Communication Principles and Practice, 3rd Edition, OUP, 2015.

5. Raj N Bakshi, English Grammar Practice, Orient Blackswan, 2005.

Question Paper Pattern:

Sessional Exam

I Sessional Examination : 30 Marks

1. Essay Type Question – 8 Marks
2. Short Answer Questions – 8 Marks
3. Vocabulary – 4 Marks
4. Grammar – 5 Marks
5. Letter Writing – 5 Marks

II Sessional Examination : 30 Marks

1. Essay Type Question – 8 Marks
2. Short Answer Questions – 8 Marks
3. Vocabulary – 4 Marks
4. Grammar – 6 Marks
5. Reading Comprehension – 4 Marks

End Exam

1. Essay Type Question – 10 Marks
2. Short Answer Questions – 8 Marks
3. Vocabulary – 12 Marks
4. Grammar – 10 Marks
5. Reading Comprehension – 10 Marks
6. Letter Writing – 10 Marks

PROFESSIONAL COMMUNICATION AND ENGLISH –II (PCE – II)

II Semester : **Common for all Branches**						**Scheme : 2017**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
HU102	Foundation	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		3	**-**	**-**	**3**	**40**	**60**	**100**
Sessional Exam Duration : 2 Hrs					**End Exam Duration: 3 Hrs**			

Course Outcomes: At the end of the course students will be able to

CO 1: Write Job Applications, Resumes and Statements of Purpose.

CO 2: Write Technical Reports, Proposals, Journal Papers and Project Reports.

CO 3: Write Business letters, Block letters, Memos and Emails.

CO 4: Comprehend General and Technical Content.

Course Content

1. Reading Comprehension/ Précis writing.
2. Writing Cover Letters for Job Applications, Resume Preparation
3. Profiling Companies
4. Statement of Purpose for Internships, Apprenticeships, Admissions in Universities
5. Writing Technical Reports and Proposals, Formats of Research Articles, Journal Papers, Project Reports
6. Email Writing
7. Writing Business Letters, Formats of Letters, Block Letters, Memos

Reference Books:

1. Sangeeta Sharma & Binod Mishra, Communication Skills for Engineers and Scientists, PHI Learning Private Limited.

2. Marilyn Anderson, Pramod K. Naya and Madhucchanda Sen, Critical Reasoning, Academic Writing and Presentation Skills, , Pearson Publishers.

3. M. Ashraf Rizvi, Effective Technical Communication, Tata McGraw-Hill Publishing Company Ltd., 2005.

4. Raymond V. Lesikar, Marie E. Flatley, "Basic Business Communication: Skills for Empowering the Internet Generation", 11th Edition, Tata McGraw-Hill. 2006.

5. Dr A. Ramakrishna Rao, Dr G. Natanam & Prof S.A. Sankaranarayanan, "English Language Communication : A Reader cum Lab Manual", Anuradha Publications, Chennai, 2006.

Question Paper Pattern:

Sessional Exam

I Sessional Examination – 30 Marks

1. Reading Comprehension – 5M
2. Profiling a Company – 5M
3. Statement of Purpose – 7M
4. Job Application – 8M
5. Technical Report / Project Report – 5M

II Sessional Examination - 30 Marks

1. Email Writing – 5M
2. Memo Writing – 5M
3. Précis Writing – 7M
4. Business Letter – 8M
5. Formats of Research Articles/ Journal Papers – 5 M

End Exam

1. Technical Report – 10M
2. Reading Comprehension – 5 Marks
3. Précis Writing– 5M
4. Job Application Letter – 10M
5. Profiling a Company/ Business Letter – 10 Marks
6. Statement of Purpose – 10 Marks
7. Email/Memo Writing – 10 Marks

COMPUTER PROGRAMING LAB (CPL)

I Semester : Common for all Branches						Scheme : 2017
Course Code	Hours/Week			Credits	Maximum Marks	
CS102	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
	0	0	2	1	50	50	100

End Exam Duration: 3 Hrs

Course Outcomes : At the end of the course students will be able to

CO1: Execute programs using conditional and loop statements in C.

CO2: Develop programs using 1-Dimensional and 2-Dimensional arrays.

CO3: Perform Call by value, Call by reference and Recursion using functions

CO4: Implement programs using pointers, structures and files in C.

List of Experiments

1. Conditional Statements : Quadratic equations, usage of switch statement.
2. Loop Statements : Adam Number, Cosine series
3. Arrays : Max Min problem, standard deviation and variance.
4. Character Arrays : Palindrome, implementation of string handling functions.
5. Functions and Recursion : Matrix operations, Towers of Hanoi, GCD
6. Pointers : Interchanging problem, implementation of dynamic memory allocation.
7. Structures : Usage of structures in various applications.
8. Files : File operations and usage of files in various applications.
9 Assembling the hardware components and installation of OS

Reference Books :

1. Yashavanth P.Kanetkar , Let US C , BPB Publications, 7th Edition,2007.
2. B.W. Kernignan and Dennis M.Ritchie, The C Programming Language , (PHI), 2nd Edition 2003.

DATA STRUCTURES LAB (DSP)

II Semester : **Common for all Branches**						Scheme : 2017	
Course Code	**Hours/Week**			**Credits**	**Maximum Marks**		
CS104	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
	0	**0**	**2**	**1**	**50**	**50**	**100**

End Exam Duration: 3 Hrs

Course Outcomes : At the end of the course students will be able to

CO1: Use Arrays to store similar data and perform searching and sorting operations.

CO2: Understand the operations performed on Linked List.

CO3: Implementation of Stack and queues using static and dynamic allocation.

List of Experiments

1. Array Data Structures: Array Operations and merging.

2. Applications of Array Data Structures : 1. Searching – Linear and Binary
                                          2.Sorting –Bubble, Insertion, Selection

3. Linked List: Implementation of various operations for Single and Double Linked List.

4. Stack Data Structure: Implementation of stack operations using static and dynamic allocation.

5 Queue Data Structure: 1. Implementation of Circular Queue using static allocation.
                         2. Implementation of Queue operations using dynamic allocation

Reference Books :

1. Yashavanth P.Kanetkar , Let US C , BPB Publications, 7th Edition,2007.

2. B.W. Kernignan and Dennis M.Ritchie, The C Programming Language , (PHI), 2nd Edition 2003.

PHONETICS AND COMMUNICATION SKILLS LAB (PCP)

I/II Semester : **Common for all Branches**					Scheme : 2017		
Course Code	**Hours/Week**			**Credits**	**Maximum Marks**		
HU103	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
	0	**0**	**2**	**1**	**50**	**50**	**100**

End Exam Duration: 2 Hrs

Course Outcomes : At the end of the course students will be able to

CO1: Speak internationally intelligible English without mother tongue accent.

CO2: Adopt appropriate intonation patterns for effective oral communication.

CO3: Identify International Phonetic Symbols to find the pronunciation of new words.

CO4: Speak in English confidently, fluently and effectively.

CO5: Exhibit team playing and leadership skills.

List of Experiments

Phonetics Laboratory

Focus in the lab is on accent neutralization for international intelligibility

1. Introduction to English Phonetic Symbols and associated sounds.

2. Practice in Consonant sounds

3. Practice in Vowels and Diphthongs

4. Practice in Accent, Rhythm and Intonation

Communication Skills Laboratory

Focus in the lab is more on fluency than on accuracy

1. Inter-personal Communication

a) Self Introduction

b) Introducing Others

c) Non-Verbal Communication

d) Posture, gait and body language.

2. Communication in Formal Situations

a) Public speaking – Extempore, Prepared Speech

b) Role-play

c) Situational Dialogues

d) Sell-out

e) JAM

f) Telephone etiquette

Reference Books :

1. Exercises in Spoken English Part – I, Part – II & Part – III Published by Central Institute of English and Foreign Languages, Hyderabad.

2. A Course in Phonetics and Spoken English, Dhamija Sethi, Prentice Hall of India, Pvt Ltd.

3. T. Balasubramanyam , A.Text Book of English Phonetics for Indian Students, Macmillan India Ltd.,

4. Krishna Mohan and Meera Benerjee , Developing Communication Skills , Macmillan India Ltd.,

5. D.Souza Eunice and Shahani. G , "Communication Skills in English" , Noble Publishing House

CS201: OBJECT ORIENTED PROGRAMMING (OOP)
(For B.Tech III Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the fundamentals of C++
2. Explain the concept of class, object, constructors and destructors.
3. Illustrate the concept of function and operator overloading.
4. Classify different types of inheritance and polymorphism.
5. Demonstrate the concept of templates and files.
6. Understand the concept of exceptions.

Unit: 1

Introduction to C++: Origins of C++, Differences between C and C++, OOP Concepts, C++ fundamentals, basic data types, C++ tokens, Structure of C++ program, Operators, type casting, Functions and Pointers in C++.

Unit: 2

Classes, Objects, Constructors & Destructors: Class, Objects, scope resolution operator, defining member functions, Structures and Classes are related, Unions and Classes are related, anonymous unions, friend functions, friend classes, inline functions, nested classes, local classes.
Constructor, Types of constructors, Static class members, destructors, execution of constructors and destructors, passing objects to functions, returning objects, object assignment.

Unit: 3

Function & Operator Overloading: Function overloading, overloading constructors, finding address of an overloaded function, function overloading and ambiguity.Operator Overloading, creating a member operator function, operator overloading using a friend function, Overloading new and delete, overloading special operators.

Unit: 4

Inheritance, Virtual functions & Polymorphism: Inheritance, types of inheritance, Inheritance and protected members, inheriting multiple base classes, Constructors, Destructors and inheritance, virtual base class.
Virtual Functions and Polymorphism: Virtual functions, Virtual functions are hierarchical, Pure Virtual functions, Early vs. Late binding.

Unit: 5

Templates & C++ Files : Templates, various types of templates, class templates, class templates with multiple parameters, function templates, function templates with multiple parameters, overloading of template functions, member function templates.
C++ Files: Opening and closing a file, reading and writing text files.

Unit: 6

Exception Handling: Exception, exception handling fundamentals, multiple catch statements, catching multiple exceptions, re-throwing exception, exceptions in constructors and destructors, exceptions and operator overloading, exceptions and inheritance, class templates with exception handling.

TEXT BOOKS:
1. Herbert Scheldt, [4th edition], The Complete Reference C++, Tata McGraw-Hill.(2,3 units).
2. Ashok N. Kamthane [2013], [2nd edition], Programming in C++, Pearson.(1,6units)
3. E. Balaguruswamy, [2008], Object oriented programming with C++(4,5units).

REFERENCE BOOKS:
1. A. K. Sharma, [2014], Object-Oriented Programming with C++, Pearson.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS201: OBJECT ORIENTED PROGRAMMING (OOP)
(For B.Tech III Semester CSE)

Scheme : 2013

Internal Assessment : 30
End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the fundamentals of C++
2. Explain the concept of class, object, constructors and destructors.
3. Illustrate the concept of function and operator overloading.
4. Classify different types of inheritance and polymorphism.
5. Demonstrate the concept of templates and files.
6. Understand the concept of exceptions.

Unit: 1

Introduction to C++: Origins of C++, Differences between C and C++, OOP Concepts, C++ fundamentals, basic data types, C++ tokens, Structure of C++ program, Operators, type casting, Functions and Pointers in C++.

Unit: 2

Classes, Objects, Constructors & Destructors: Class, Objects, scope resolution operator, defining member functions, Structures and Classes are related, Unions and Classes are related, anonymous unions, friend functions, friend classes, inline functions, nested classes, local classes.
Constructor, Types of constructors, Static class members, destructors, execution of constructors and destructors, passing objects to functions, returning objects, object assignment.

Unit: 3

Function & Operator Overloading: Function overloading, overloading constructors, finding address of an overloaded function, function overloading and ambiguity.Operator Overloading, creating a member operator function, operator overloading using a friend function, Overloading new and delete, overloading special operators.

Unit: 4

Inheritance, Virtual functions & Polymorphism: Inheritance, types of inheritance, Inheritance and protected members, inheriting multiple base classes, Constructors, Destructors and inheritance, virtual base class.
Virtual Functions and Polymorphism: Virtual functions, Virtual functions are hierarchical, Pure Virtual functions, Early vs. Late binding.

Unit: 5

Templates & C++ Files : Templates, various types of templates, class templates, class templates with multiple parameters, function templates, function templates with multiple parameters, overloading of template functions, member function templates.
C++ Files: Opening and closing a file, reading and writing text files.

Unit: 6

Exception Handling: Exception, exception handling fundamentals, multiple catch statements, catching multiple exceptions, re-throwing exception, exceptions in constructors and destructors, exceptions and operator overloading, exceptions and inheritance, class templates with exception handling.

TEXT BOOKS:
1. Herbert Scheldt, [4th edition], The Complete Reference C++, Tata McGraw-Hill.(2,3 units).
2. Ashok N. Kamthane [2013], [2nd edition], Programming in C++, Pearson.(1,6units)
3. E. Balaguruswamy, [2008], Object oriented programming with C++(4,5units).

REFERENCE BOOKS:
1. A. K. Sharma, [2014], Object-Oriented Programming with C++, Pearson.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS203: SWITCHING THEORY AND LOGIC DESIGN (STLD)
(For B.Tech III Semester CSE)

Scheme   : 2013
Internal Assessment : 30
End Exam   : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	1	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understanding number conversions, Error detection and correction mechanisms : parity, checksum, hamming codes.
2. Apply the Axioms and theorems of Boolean Algebra for minimization of Boolean functions, canonical forms.
3. Apply the minimization procedures using Karnaugh map ,Tabulation method, prime implication chart to obtain minimal SOP and POS.
4. Designing combinational circuits: Encoders, Decoders, Multiplexers, ROM, PLA.
5. Designing Sequential circuits using Flip-flops and sequential logic.
6. Design Registers: Shift Register, Bi directional Shift Register and counters: Ring Counter, Johnson Counter.

Unit: 1

Number System & Binary Codes: The Decimal, Binary, Octal, Hexadecimal Number System, Number Base Conversions, Complements, Binary Arithmetic in Computers, Weighted Binary codes, Non Weighted Binary codes, Error Detecting Codes, Error Correcting Codes, Parity Checking.

Unit: 2

Boolean Algebra & Minimization of Boolean Functions: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic gates.

Unit: 3

Simplification of Boolean Functions: The Map Method, Two, Three, Four, Five and Six variable maps, Product of Sums Simplification, NAND and NOR Implementations, Other two Level Implementations, Don't Care Conditions, The Tabulation Method, Determination of Prime Implicants, Selection of Prime Implicants.

Unit: 4

Combinational Logic: Introduction, Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits, Exclusive-or and Equivalence Functions.

Combinational Logic with MSI & LSI: Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers, Read Only Memory (ROM), Programmable Logic Array (PLA).

Unit: 5

Sequential Logic: Introduction, Flip Flops, Triggering of Flip Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip Flop Excitation Tables, Design Procedure, Design of Counters, Design with State Equations.

Unit: 6

Registers: Introduction, Registers - Registers with parallel load, Sequential Logic Implementation, Shift Registers - Serial Transfer, Bi-directional Shift Register with parallel load, Serial Addition.
Counters : Ripple Counters - Binary Ripple Counter, BCD Ripple Counter, Synchronous Counters - Binary Counter, Binary Up-Down Counter, Johnson Counter.

TEXT BOOKS:

1. M.Morris Mano [2011], Digital Logic and Computer Design, Pearson Education, III Edition (1,2,3,4,5,6 units).

REFERENCE BOOKS:

1. Zvi Kohavi [2008], Switching and Finite Automata Theory, TMH.
2. F.J.Hill and G.R.Peterson [1981], [3rd Edition], Introduction to switching theory and logic Design.
3. Donald D. Givone [2006], [4rd Edition], Digital Principles and Applications, Tata Mc Graw Hill.
4. Thomson [1999], Fundamentals of Logic Design.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS204: DISCRETE STRUCTURES & GRAPH THEORY (DSGT)
(For B.Tech III Semester CSE)

Scheme : 2013

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
3	1	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the validity of statements using connectives, tautologies, equivalence and implications.
2. Solve the problems using normal forms, statement calculus and predicate calculus
3. Apply permutations and combinations in solving real life problems.
4. Solve recurrence relations using substitution, generating functions and characteristic roots methods.
5. Summarize the properties of graphs, planar graphs, Hamiltonian graphs, Euler graphs, spanning trees and binary trees.
6. Understand the association between the elements of sets using digraphs and Warshall algorithm.

Unit: 1

Mathematical Logic: Statements & Notation, Connectives, Well Formed Formulas, tautologies, Equivalence & implications, Duality law, other connectives.

Unit: 2

Normal forms: Normal forms, Theory of inference for statement calculus, Predicate Calculus, Inference Theory of predicate calculus.

Unit: 3

Elementary Combinatorics: Combinatorics – Permutations & Combinations, Enumeration of Combinations and Permutations without repetition

Unit: 4

Recurrence Relations: Generating Functions of Sequences, Calculating Coefficients of Generating Functions, Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, the Method of Characteristic Roots, Solutions of Inhomogeneous Recurrence Relations.

Unit: 5

Graphs: Basic Concepts, Isomorphism and Sub graphs, Trees and Their Properties, Spanning Trees, Directed Trees, Binary Trees, Planar Graphs, Euler's Formula, Multigraphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, The Four-Color Problem.

Unit: 6

Relations and Digraphs: Relations and Directed Graphs, Special Properties of Binary Relations, Equivalence Relations. Digraphs: Operations on Relations, Paths and Closures, Directed Graphs and Adjacency Matrices, Warshalls algorithm.

TEXT BOOKS:

1. Trembly.J.P and manohar.R [2011], Discrete mathematical structures with applications to computer science, Mc-Graw-Hill International Editions. (1,2 Units).
2. Joe L.Mott, Abraham Kandel and Theodore P.Baker [2008], [2nd Edition], Discrete Mathematics for Computer Scientists and Mathematicians, PHI.(3,4,5,6 Units).

REFERENCE BOOKS:

1. Dr S.Chandrasekharaiah, Mathematical foundations of computer science, -Prism books Pvt.Ltd.
2. Graph Theory, Narsingh Deo,PHI Publications.2003
3. Ralph P.Grimaldi [2006], [5th Edition], Discrete and Combinational Mathematics-An Applied Introduction, Pearson Education.
4. Liu [2004], Elements of discrete mathematics, McGraw-Hill.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS205: COMPUTER ORGANIZATION AND ARCHITECTURE (COA)
(For B.Tech III Semester CSE)

Scheme : 2013

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the organization of basic computer, instructions and programming basic computer.
2. Understand the working of central processing unit, RISC and CISC Architecture.
3. Understand the operation of the arithmetic unit, addition, subtraction, multiplication & division algorithms.
4. Understand the design of micro programmed control unit.
5. Understand the Parallel Processing and pipelining.
6. Understand input/output organization and mechanisms.
7. Understand memory hierarchy, the organization of memory, memory management, cache memories and virtual memory.

Unit: 1
Basic Computer Organization and Design
Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input/output and Interrupt, Complete Computer Description, Design of Basic Computer.

Unit: 2
Programming The Basic Computer
Introduction, Machine Language, Assembly Language, The Assembler, Programming Arithmetic and Logic Operations.

Micro Programmed Control: Control Memory, Address Sequencing, Micro program
Example, Design of Control Unit.

Unit: 3
Central Processing Unit
Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, RISC and CISC.

Unit: 4
Pipeline and Vector Processing
Parallel Processing, Pipelining, Arithmetic and Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

Computer Arithmetic: Introduction, Addition and Subtraction, Multiplication, Division algorithms.

Unit: 5

Input/output Organization

Peripheral Devices, Input/output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA.

Unit: 6

The Memory System: Basic Concepts, Semiconductor RAM memories, Read-Only memories, Speed, Size and Cost, Cache Memories -Mapping Functions, Virtual Memories, Secondary Storage.

TEXT BOOKS:

1. M. Morris Mano [2011], [3rd Edition], Computer system architecture, Pearson Education.(1,2,3,4,5 Units).
2. Carl Hamacher, Zvonko Vranesie, Safwat Zaky [2002], [5th Edition], Computer Organization, McGraw-Hill.(6th Unit)

REFERENCE BOOKS:

1. Hayes John .P [1998], Computer architecture & organization, MGH.
2. Willam Stallings [2003], [6th Edition], Computer Organization and Architecture Desinigning for performance, Pearson [PHI].

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

<p style="text-align:center;">CS206: DATA STRUCTURES (DS)
(For B.Tech III Semester CSE)</p>

Scheme : 2013

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the importance of a data structure and demonstrate the use of an Array Data Structure.
2. Demonstrate the use of a Linked List Data structure by performing Insertion, Deletion, and Traversing operations.
3. Understand the basic principles of Stack and Queue Data Structures and their applications.
4. Understand the operations performed on Binary search Trees and AVL Trees.
5. Apply different sorting techniques such as Insertion Sort, Quick Sort, Merge Sort to sort the given data.
6. Organize the data using various Hashing techniques for efficient searching.

Unit: 1
Introduction to Data Structures: Definition, Classification of Data structures, Sequential storage representation – Arrays, Applications of arrays – Linear Search, Binary Search, Bubble Sort, Merging of arrays.

Unit: 2
Linked Lists: Pointer and Linked storage representation, Types of Linked Lists – Single linked list, Double linked list, Circular linked list, Operations on linked lists- Traversing, Searching, Insertion and Deletion, Applications of linked lists – Polynomial manipulation.

Unit: 3
Linear Data Structures- Stacks: Representation of Stacks using sequential storage and linked allocation methods, Operations on Stacks, Applications of Stacks- Recursion, Polish notations, Conversion of infix to post fix notation, Evaluation of postfix expression.
Linear Data Structures- Queues: Representation of Queues using sequential and linked allocation, Operations on Queues, Circular queue.

Unit: 4
Nonlinear Data Structures- Trees: Basic terminology, Binary trees, Representation of Binary trees in memory using arrays and linked lists, Operations on binary trees- Insertion, Deletion and Traversing-Preorder, Inorder and Postorder, Applications of binary trees, Threaded binary trees, AVL trees and their operations.

Unit: 5

Special Trees : Splay trees, B-Trees and their operations.
Sorting: Insertion sort, Selection sort, Merge Sort, Quick sort.

Unit: 6

Priority Queues (Heaps): Model, simple implementations, Binary heap, Applications of priority queues- Heap sort, d-heaps, Leftist heaps, Skew heaps, Binomial queues.

Hashing Techniques: Definition, Hash function, Open hashing (separate chaining), Closed hashing(open addressing)– Linear probing, Quadratic probing, Double hashing, Rehashing, Extendible hashing.

TEXT BOOKS:
1. Jean Paul Tremblay and Paul G.Sorenson [2007], An Introduction to Data Structures With Applications, TMH.(1,2,3,4units).
2. Mark Allenweiss [2008], Data Structures and Algorithm Analysis, Pearson Education.(5,6units).

REFERENCE BOOKS:
1. Data Structures and Algorithms by G. A. V. Pai.
2. N.Kasiviswanath [2008], Data Structures Using C++, Laxmi Publications (P)LTD. 3. E.Balaguruswamy [2008], Object Oriented programming with C++.

 NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

ML201:QUANTITATIVE APTITUDE (QA)
(Common for all branches of B.Tech - III Semester)

Scheme : 2013
Internal Assessment : 100

L	T/D	P	C
1	1	0	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Solve quantitative aptitude problems on number systems, Coordinate Geometry, Stocks, shares, Bankers discounts.
2. Interpret data using bar graphs, pie charts, line graphs.
3. Apply reasoning and logic to solve various puzzles and brain teasers.

Numerical Ability: Number Systems, HCF and LCM, Decimal Fractions, Square Roots and Cube Roots, Linear and Quadratic Equations. Averages, Mixtures & Allegations, Ages, Ratios, Proportions and Variations, Percentages, Profit and Loss. Time, Speed and Distance, Time and Work. Permutations and Combinations, Probability, Clocks and Calendars

Introduction to concepts of Reasoning: Cubes, Series and sequences, Odd man out, Coding and decoding

General Mental Ability: Puzzles and Teasers

References Books:

1. Arun Sharma, *How to Prepare for Quantitative Aptitude*, TMH Publishers, New Delhi.
2. R.S. Aggarwal, *Quantitative Aptitude,* S.Chand Publishers, New Delhi.
3. Sharon Weiner-Green, *Ira K.Wolf, Barron's GRE,* Galgotia Publications, New Delhi.
    4. Ethnus, *Aptimithra,* McGraw Hill Publishers
4. R.S Aggarwal , *Verbal and Non-Verbal Reasoning,* 5.
    Chand Publishers, New Delhi.
6. Shakuntala Devi, *Puzzles to Puzzle You,* Orient Paper Backs Publishers, New Delhi.
    7. Shakuntala Devi , *More Puzzles,* Orient Paper Backs Publishers, New Delhi.
8. Ravi Narula , *Brain Teasers,* Jaico Publishing House, New Delhi.
9. George J Summers, *Puzzles and Teasers,* Jaico Publishing House, Mumbai.

DISTRIBUTION AND WEIGHTAGE OF MARKS
There shall be four objective type (Paper / PC based) tests, carrying 25 marks each, during the semester. The sum of the marks scored in all these four tests shall be the final score.

CS202: OBJECT ORIENTED PROGRAMMING LAB (OOP(P))
(For B.Tech III Semester CSE)

Scheme : 2013

Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Execute C++ programs using classes and objects.
2. Develop programs using constructors and destructors.
3. Implement operator overloading and function overloading.
4. Implement hierarchical, hybrid inheritance and polymorphism.
5. Execute templates and files.
6. Implement exception handling in C++.

List of Experiments:

1. Programs using Classes and Objects.

2. Program to design Constructors and Destructors.

3. Program to design Operator Overloading.

4. Program for Function Overloading.

5. Programs to implement the concept of Friend Functions.

6. Program for hierarchical inheritance.

7. Program to design hybrid inheritance.

8. Program to demonstrate Polymorphism.

9. Programs to read and write Files.

10. Programs to perform various operations on Files.

11. Programs to implement Templates.

12. Programs to implement Exception Handling.

13. Program to handle exceptions in constructors and destructors.

CS207: DATA STRUCTURES LAB (DS(P))
(For B.Tech III Semester CSE)

Scheme : 2013

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Implement a Linked List(single & double) and perform Insertion, Deletion and Traversing operations on it.
2. Implement Stack and Queue Data Structures using Arrays and Linked Lists
3. Implement a program to convert an Infix expression into a Postfix expression and Evaluate the Postfix expression.
4. Sort the elements of an array using Quick sort, Merge Sort, Insertion sort and Heap Sort techniques.
5. Perform Insertion, Deletion and Traversing operations on a Binary Search Tree.
6. Organize the data using various Hashing techniques for efficient searching.

List of experiments:

1. Searching

   (a) Linear Search.

   (b) Binary Search.

2. Bubble Sort and Merging of Arrays.

3. Linked lists

   (a) Implementation of Single Linked Lists.

   (b) Implementation of Double Linked Lists.

4. Stacks

   (a) General Stack.

   (b) Stack using Linked Lists.

5. Applications of Stacks

   (a) Infix to Postfix conversion.

   (b) Evaluation of Postfix Expression.

6. Queues

   (a) Circular Queue using Arrays.

   (b) Queue using Linked lists.

7. Trees- Operations on Binary Search Trees

    (a)   Insertion.

    (b)   Deletion.

    (c) Traversing.

8. Quick Sort.

9. Insertion Sort.

10. Merge Sort.

11. Heap Sort

12. Implementation of Hashing techniques.

CS208: OPERATING SYSTEM   (OS)
(For B.Tech IV Semester CSE)

Scheme   : 2013
Internal Assessment : 30
End Exam   : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	1	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the OS design structures and its services
2. Understand the concepts of process scheduling, synchronization and its implementation
3. Exemplify the contiguous, linked, indexed memory management techniques and virtual memory
4. Understand the structure and organization of file system and secondary storage structure
5. Determine the prevention, avoidance, detection, recovery mechanism of deadlock
6. Understand system security, network security, protection, security mechanisms.
7. Appreciate kernel design principles, process management in Linux environment

Unit: 1
Introduction: What Operating Systems Do, Operating System Structure, Operating System Operations, Overview of Process Management, Memory Management, Storage Management, Protection and Security, **System Structures-** Operating System Services, User Operating System Interface, System Calls, Operating System Structure, Virtual machines.

Unit: 2
Process Management: Process Concepts, Process Scheduling, Operations on Processes, Interprocess Communication, Examples of IPC Systems, Multithreading Models.
 Process Scheduling: Basic concepts, Scheduling Criteria, Scheduling Algorithms, **Synchronization-** Background, The Critical-Section Problem, Peterson's Solution, Semaphores, Monitors.

Unit: 3
Memory Management: Background, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page table, Segmentation.
Virtual Memory Management-:Background, Demand paging, Page Replacement, Allocation of Frames, Thrashing.

Unit: 4
Storage Management
File System: File Concepts, Access Methods, Directory and Disk Structure, Implementation of file System Structure- file system Structure, file-system Implementation,
Directory Implementation, Allocation Methods, Free-Space Management.
Secondary Storage Structure: Overview of Mass-Storage Structure, Disk Structure, Disk Scheduling.

Unit: 5

Deadlocks: System Models, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance –Bankers Algorithm, Deadlock Detection, Recovery from Deadlock.

Unit: 6

Protection and Security: Goals of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of access rights, System Security-The Security problem, System and Network Threats.

CASE STUDY: The Linux Operating System: History, Design Principles, Kernel Modules, Process Management.

TEXT BOOKS:

1. Silberschatz and Galvin [2008], Operating System Concepts, 8th edition, WILEY INDIA

Edition. (1, 2, 3, 4, 5,6 units).

REFERENCE BOOKS**:**

1. Gagne [2003], [6th Edition], Operating System Concepts, John Wiley & Sons, Inc publishers.

2. Tanenbaum [2000], Modern Operating System, Pearson Education.

 NOTE:

Internal Assessment: The question paper for Sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS209: COMPUTER GRAPHICS (CG)
(For B.Tech IV Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand DDA, Bresenhams line drawing algorithms and Midpoint circle generating algorithms.
2. Classify CRT, Color CRT, DVST, Flat Panel display devices and Graphical Input Devices.
3. Interpret scan line polygon fill, Boundary fill and Flood Fill Algorithms
4. Exemplify 2D translation, rotation, reflection, scaling and shearing
5. Use cohen sutherland line clipping and sutherland hodegeman polygon clipping algorithms to find intersection points with the clipping window.
6. Understand 3D translation, rotation, reflection, scaling and shearing
7. Summarize types of animation, Animation sequence and morphing technique
8. Compare RGB, CMY,YIQ, CMYK Color models

Unit: 1

Introduction: Applications of computer graphics, Points, Lines, Pixels and Frame buffer, Primitive operations, Screen grid coordinates, Normalized device coordinates, Line drawing algorithms-DDA, Bresenham's line, Bresenham's circle, Mid-point circle algorithms, Character generation, Line and Text attributes, Antialiasing techniques.

Unit: 2

Display Devices: CRTs, Raster scan systems, Random scan systems, Refresh CRT, Color CRT monitor, DVST (Direct View Storage Tube), Flat panel displays, Graphics input devices: Joystick, Light pen, Tablet and Digitizer.

Polygon Generation and Filling algorithms: Types of polygons, Representation of polygons, Entering polygons, Inside-Outside test (odd-even, winding number methods), Scan-line polygon fill, Boundary fill, Flood fill algorithms.

Unit: 3

Segments: Segmentation and Segment tables, Operations on Display file segments, Image ansformation.

2D Transformations: Types of transformations- Coordinate transformations, Geometric transformations, Basic transformations- Translation, Scaling, Rotation, Homogeneous coordinates, Compound transformations- Reflection, Shearing, Transformations about arbitrary points & lines.

Unit: 4

Windowing and Clipping: Window, Viewport, Viewing transformation, Clipping-Cohen Sutherland line clipping, Sutherland Hodgeman polygon clipping algorithms.

Unit: 5

3D Graphics: 3D transformations, 3D object representations, Projections- Parallel, Isometric, Perspective viewing, 3D viewing transformation, Hidden surfaces & lines, Back face detection & removal- Z-buffer, Painter's algorithms.

Unit: 6

Curves: Introduction, Curve generation, Interpolation, B-spline, B-splines & corners, Bezier curve Algorithm.

Color models: RGB, YIQ, CMY, HSV, HLS, Introduction to animation, Morphing, Introduction to Open GL.

TEXT BOOKS:

1. Donald Hearn and M. Pauline Baker [2007], Computer Graphics C Version II edition, Eastern Economy Edition.(1,2,3,4,5,6units)
2. Steven Harrington [2006], Computer Graphics, A programming approach, MGH.(1,2,3 units).

REFERENCE BOOKS

1. David F. Rogers [2008], [II Edition], Procedural elements of Computer Graphics, Tata McGraw Hill Co.
2. Xiang Zhigang and Plastock Roy A [2003], [Schaum's outline of Theory and problems of Computer Graphics, [II Edition], Computer Graphics.
3. W. M. Newman & R. F. Sproull [1997], [II Edition], Principles of Interactive Computer Graphics, Tata McGraw Hill Co.
4. F.S. Hill, Stephen M kelley, Computer Graphics using OPENGL, Third edition, Prentice Hall ,2006.

NOTE:

Internal Assessment: The question paper for Sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

<center>**CS210: DATABASE MANAGEMENT SYSTEMS (DBMS)**
(For B.Tech IV Semester CSE)</center>

Scheme	**:2013**			**L**	**T**	**P**	**C**

Scheme   :2013   **L   T   P   C**
Internal Assessment : 30
End Exam   : 70   **3   1   0   3**

End Exam Duration : 3 Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Design ER model for a practical Real life system
2. Use SQL commands to create, update, modify and retrieve data from the data bases
3. Understand the importance of good database design and indexing
4. Understand the properties of transactions in a database system
5. Analyze concurrency control techniques for handling concurrent transactions
6. Understand recovery of data from failures

Unit: 1

Introduction: Purpose of Database Systems, View of Data, Database System Applications, Database Language, Relational Databases, Database Design, object Based and Semi Structured Databases, Data Storage and Querying Transaction Management, Database Architecture, Database users.

Entity-Relationship Model: Basic Concepts, Design Issues, Mapping Constraints, Keys, Entity-Relationship Diagrams, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

Unit: 2

Relational Model: Structure, Fundamental Relational Algebra Operations, Additional Relational Algebra Operations, Extended Relational Algebraic Operations, Null Values, Modification of Database, Views.

Structured Query Language (SQL): Form of Basic SQL Query, Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries Set, Comparison Operators, Aggregate Operators, Null Values, Comparison, Control Structures, Procedures, functions, Triggers and Cursors in PL/SQL. Using Null values, Logical Connectivity's – AND, OR, and NOT, Impact on SQL Constructs. Outer Joins, Disallowing Null Values.

Unit: 3

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, decomposition using Functional Dependencies, Decomposition using Multivalued Dependencies, Join Dependencies, Domain-Key Normalization Form

Indexing: Basic Concepts, Ordered Indices, B Plus Tree Index Files, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing.

Unit: 4

Transactions: Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for Serializability.

Unit: 5

Concurrency control: Lock-Based Protocols, Timestamp-Based Protocols, Validation Based Protocols, Multiple Granularity, Multi version Schemes, Deadlock handling, Insert and Delete Operations.

Unit: 6

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-Based Recovery, Recovery with Concurrent Transactions, Buffer Management, Failure with Loss of Non-Volatile Storage, Advanced Recovery Techniques.

TEXT BOOKS:

1. Henry F. Korth & Abraham Silberschatz [1997], [5 Edition], Data Base System Concepts, MC Graw Hill.(1,2,3,4,5,6units).

REFERENCE BOOKS**:**

1. C J Date [2008], An Introduction to Data Base Systems, Pearson Education.
2. Raghu Ramakrishna and Johnannes Gehrke [2003], [3rd Edition], Data Base Management Systems, TATA Mc GrawHill.
3. Elmarsi Ramez and Navrate Shamkant B [2009], Fundamentals of Data Base Systems, Pearson Education.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS212: JAVA PROGRAMMING (JP)
(For B.Tech IV Semester CSE)

Scheme : 2013

Internal Assessment : 30
End Exam : 70

End Exam Duration : 3 Hrs

L	T	P	C
3	1	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand fundamentals of programming - variables, conditional, iterative execution, Arrays, Text File Operations and String operations.
2. Implement the basic principles of Object Oriented Programming which includes classes, objects, methods, instance variables, inheritance, polymorphism, encapsulation, abstraction.
3. Understand fundamentals of Exception Handling, Packages and Interfaces.
4. Understand fundamentals of Multithreading programming, JDBC.
5. Develop Graphical User Interface applications in Java by importing applet, AWT, SWING packages, Java's Event Handling Model.

Unit: 1
Introduction: Over view of java, the Java Buzzwords, Data types, Variables and arrays, operators, Control statements, Classes and objects. **I/O**: I/O Basics, Reading Console input, writing Console output, Reading and Writing Files.
Inheritance: Basic concepts, uses super, method overriding, dynamic method dispatch, Abstract class, using final, the object class.

Unit: 2
String Handling: String Constructors, Special String Operations-String Literals, String Concatenation, Character Extraction, String Comparisons. Searching Strings, Modifying a string.
String Buffer: String Buffer Constructors, length(), capacity(), set Length(),Character Extraction methods, append(),insert(),reverse(),delete(),replace(),substring().

Unit: 3
Packages and Interfaces: Packages, Access protection, Importing packages, Interfaces.
Exception Handling: Fundamentals, Types of Exception, Usage of try, catch, throw throws and finally keywords, built in Exceptions.

Unit: 4
Multithreading: Concepts of multithreading, Main thread, creating thread and multiple threads, Using isAlive() and join( ), Thread Priorities, synchronization, Interthread communication.

Unit: 5

Applets: Applet basics and Applet class.

Event Handling: Basic concepts, Event classes, Sources of events, Event listener Interfaces, Handling mouse and keyboard events, Adapter classes.

Abstract Window Toolkit (AWT) - AWT classes, AWT Controls.

Unit: 6

Java Swings & JDBC: Introduction to Swing: JApplet, TextFields, Buttons, Combo Boxes, Tabbed Panes.

JDBC: Introduction to JDBC

TEXT BOOKS:

1) Herbert Schildt [2008], [5th Edition], The Complete Reference Java2, TATA McGraw-Hill.(1,2,3,4,5,6 Units).

REFERENCE BOOKS:

1) Bruce Eckel [2008], [2nd Edition], Thinking in Java, Pearson Education.
2) H.M Dietel and P.J Dietel [2008], [6th Edition], Java How to Program, Pearson Ed.
3) E. Balagurusamy, Programming with Java: A primer, III Edition, Tata McGraw-Hill, 2007.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

Scheme : 2013

Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course outcomes: Upon successful completion of this course, the student shall be able to
1. Understand Data Communication Systems, Network models and its Protocols.
2. Understand the analog and digital transmission over guided and unguided media.
3. Describe Unipolar, Polar, Bipolar line coding schemes and Transmission modes.
4. Summarize multiplexing techniques and switching networks.
5. Interpret the services of Data link layer.
6. Understand ALOHA, CSMA/CA/CD techniques and the Architecture of IEEE 802.11 Architecture.

Unit: 1
Introduction: Data communications, Networks, Protocols and standards, The OSI Model – Layeredarchitecture, Layers in OSI Model, TCP/IP Protocol Suite, Addressing – Physical addresses, Logical addresses, Port Addresses.

Unit: 2
Physical layer and Transmission Media: Analog and digital – Analog and digital data, Analog and digital signals, Digital signals – Bit rate, Bit length, Transmission of digital signals, Transmission Impairments – Attenuation, Distortion and Noise, Performance – Bandwidth, Throughput, Latency, Jitter.Guided Media and Unguided media.

Unit: 3
Digital and Analog Transmission: Digital-to-digital conversion – Line coding schemes, block coding and scrambling, Analog- to-digital conversion – Pulse Code Modulation, Delta Modulation, Transmission modes –Parallel, serial transmissions. Analog-to-analog conversion – Amplitude modulation, Frequency modulation, phase modulation.

Unit: 4
Multiplexing and Switching: Multiplexing – Frequency-division multiplexing, wavelength-division multiplexing, synchronous time-division multiplexing and statistical time-division multiplexing.Switching- Circuit-switched networks, Datagram networks, Virtual circuit networks, Structure of a switch

Unit: 5

Data Link Layer: Error detection – Introduction, Block coding – error detection, error correction, hamming distance and minimum hamming distance, Cyclic codes, Checksum. Framing, Flow and error control, HDLC, PPP.

Unit: 6

Multiple Access and Wired and Wireless LANs: Random Access – Aloha, CSMA, CSMA/CD, CSMA/CA, IEEE standards, IEEE 802.11 – Architecture, MAC sub layer, Addressing mechanism, physical layer.

TEXT BOOKS:

1.Behrouz A. Forouzan [2006][4th Edition], Data communications and Networking, MGH.(1,2,3,4,5,6units).

REFERENCE BOOKS:

1.Andrew S. Tenenbaum [2007], [4th Edition], Computer Networks, Pearson Education.
2.William Stallings ,Data and Computer Communications, Seventh Edition or Eighth Edition

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

ML202: SOFT SKILLS (SS)
(Common to B.Tech IV Semester ECE & CSE and
V Semester CE, EEE & ME Branches)

Scheme : 2013   **Internal Assessment : 100**

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Demonstrate the competence to use grammar with an understanding of its basic rules
2. Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence
3. Work together in teams and accomplish objectives in a cordial atmosphere
4. Face interviews, GDs and give presentations
5. Understand and develop the etiquette necessary to present themselves in a professional setting

Course Work

To achieve the objectives, the following course content is prescribed.

Contents

Revision and reinforcement of language skills – grammar – vocabulary

Communication Skills – Barriers to Communication – Strategies to overcome the barriers

Non Verbal Communication – Body Language – Proxemics – Kinesics

Emotional Quotient – self analysis of emotional responses

Group Discussions – understanding the objective and skills tested in a GD – types of GDs – roles in a GD – dos and don'ts in a GD

Team Work – importance of team work – team vs group – attributes of a successful team – working with groups – dealing with people – group decision making

Goal Setting – importance of goal setting – difference between goals and dreams – importance of writing goals – SMART goals – short term goals – long term goals

Time Management – scheduling – how to delegate effectively – plugging time leaks – learning to say "No"

Presentation Skills – Oral Presentations – PPTs – Prepared Speeches – Extempore

General Awareness & Current affairs

Business Etiquette – telephone and email etiquette – dining etiquette – dos and don'ts in a formal setting.

References

1. Stephen R. Covey, "The Seven Habits of Highly Effective People", Pocket Books Publishers, London
2. Infosys Campus Connect Portal –//http::campusconnect.infosys.com//
3. Shiv Khera, "You Can Win", MacMillan India Publishers, New Delhi
4. Stephen R. Covey, A. Roger Merrill and Rebecca R. Merril, "First Things First", Pocket Books Publishers, London
5. Gloria J.Galanes, Katherine Adams, John K Brillhart, "Effective Group Discussion: Theory and Practice".
6. Priyadarshani Patnaik, "Group Discussion and Interview Skills with VCD", Foundation Books.
7. Sangeeta Sharma & Binod Mishra, "Communication Skills for Engineers and Scientists", PHI Learning Private Limited.
8. Dr. Shalini Verma, "Body Language- Your Success Mantra", S.Chand, 2006.
9. Andrea J. Rutherford, "Basic Communication Skills for Technology", 2nd Edition, Pearson Education, 2007.
10. Krishna Mohan and Meera Bajerji, "Developing Communication Skills", MacMillan India Ltd.

DISTRIBUTION AND WEIGHTAGE OF MARKS

For the Soft Skills subject there shall be continuous tests for 50 marks and viva-voce for 50 marks.

CS211: DATABASE MANAGEMENT SYSTEMS LAB (DBMS(P))
(For B.Tech IV Semester CSE)

Scheme   **: 2013**
Internal Assessment : 30
End Exam   **: 70**
End Exam Duration : 3 Hrs

L	T/D	P	C
0	0	2	2

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Working with the concepts of DDL, DML, DCL Commands
2. Design of databases for real life systems using Oracle
3. Learning of SQL queries on the real life systems
4. Execution of PL/SQL programs for different problems
5. Implementation of procedure, function, trigger and cursor concepts in PL/SQL

List of Experiments:

1. Perform DDL, DML and DCL commands.

2. Create various tables like Branch, Account, Depositor, Customer, Loan and Borrower for a banking system with constraints using a Schema diagram.

3. Design and create a university database consisting of the following tables Department, Course, Instructor and Student, with the help of ER Modeling.

4. Design and create a University Library Data base using ER diagram and Schema Diagram.

5. Perform various SQL queries on select clause, where clause, pattern matching, Order by, and Group by.

6. SQL Queries on Set operations, Aggregate functions and Nested queries. .
7. SQL * plus reports.

8. PL/SQL program using control Structures

9. Program to implement Procedures

10. Program to implement Functions

11. Program to implement Cursors

12. Program for Triggers

CS213: JAVA PROGRAMMING LAB (JP(P))
(For B.Tech IV Semester CSE)

Scheme   **: 2013**
Internal Assessment : 30   **L**   **T/**   **P**
End Exam   **: 70**
End Exam Duration : 2 Hrs   **0**   **0**   **3**   **2**

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand fundamentals of programming - variables, conditional, iterative execution, Arrays, Text File Operations and String operations.
2. Implement the basic principles of Object Oriented Programming which includes classes, objects, methods, instance variables, inheritance, polymorphism, encapsulation, abstraction.
3. Understand fundamentals of Exception Handling, Packages and Interfaces.
4. Understand fundamentals of Multithreading programming, JDBC.
5. Develop Graphical User Interface applications in Java by importing applet, AWT, SWING packages, Java's Event Handling Model.

List of experiments:

1. Implementing classes and Constructors concepts.

2. Program to implement Inheritance.

3. Program for Operations on Strings.

4. Program to design Packages.

5. Program to implement Interfaces.

6. Program to handle various types of exceptions.

7. Program to create Multithreading by extending Thread class.

8. Program to create Multithreading by implementing Runnable interface.

9. Program for Applets.

10. Program for Mouse Event Handling.

11. Program to implement Key Event Handling

12. Program to implement AWT Controls.

CS301: COMPUTER NETWORKS (CN)

(For B.Tech V Semester CSE)

Scheme : 2013		**Internal Assessment : 30**
End Exam : 70		**End Exam Duration : 3 Hrs**

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the terminology and concepts of the OSI reference model and the TCP-IP.
2. Understand the topological and routing strategies for an IP based networking infrastructure.
3. Understand the congestion prevention and avoidance policies.
4. Understand the concepts of Internetworking and determine proper usage of the IP address, subnet mask and default gateway in a routed network.
5. Understand connection establishment and services provided by TCP and UDP.
6. Understand the working of DNS, SMTP in the global internet.

Unit: 1
Review of ISO OSI Reference Models, TCP/IP Reference Model.
Network layer: Design Issues: store-and-forward, services to transport layer, connection less and connection oriented services, comparison of virtual circuits and datagram subnets.
Routing Algorithms: The optimality principle, shortest path routing, Flooding, Distance vector and Link state, Hierarchical, Broadcast and Multicast Routings.

Unit: 2
Congestion Control and Quality of Service: Principles, congestion prevention policies, congestion control in virtual circuits and datagram subnets, load shedding, jitter control. Techniques for achieving good quality of Services.

Unit: 3
Internetworking and Network Layer of the Internet : How Networks differ, How networks connected, concatenated virtual circuits, connection less internetworking, tunneling, Internet work routing, Fragmentation. The IP protocol, IP address, Internet Control protocols, Gateway routing protocols: OSPF, BGP.

Unit: 4
Transport Layer : Services provided to upper layers, service primitives, addressing, establishing a connection, Releasing a connection, flow control, buffering, multiplexing and crash recovery.
UDP: Introduction, remote procedure call, real time transport protocol.

Unit: 5

Internet Transport Protocols : TCP- service model, protocol, segment header, connection management, transmission Policy, congestion control and timer management.

Unit: 6

Application Layer : The DNS Name Space, Resource Records, Name Servers.
Electronic Mail: Architecture and Services, User Agent, Message Format, Message Transfer.

TEXT BOOKS:

1. Computer Networks, Andrew S.Tanenbaum [4th Edition], Pearson Education
2. Data communications and Networking, Behrouz A. Forouzan [5th Edition] Mc Graw Hill.

REFERENCE BOOKS:

1. An Engineering Approach to Computer Networks, S.Keshar, [II Edition],
   Pearson Education.
2. Computer Networking: A Top-Down Approach Featuring the Internet, James F,
   Keith W.Ross,[V Edition], Pearson Education.
3. Computer networks and internets, Douglas E Comer [6th Edition], Pearson Education.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS302: OPEN SOURCE TECHNOLOGIES (OST)
(For B.Tech V Semester CSE)

				L	T/D	P	C
Scheme	: 2013						
Internal	:30						
Assessment	:70			3	0	0	3
End ExamDuration	: 3 Hrs						

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand distribution terms of OSS, its importance, FOSS, LAMP bundle server and its benefits
2. Illustrate installation of binary packages, basic UNIX commands, backup commands and Redirection operators.
3. Describe types of shells, shell variables and keywords, Operations on shell, Decision making and looping statements.
4. Exemplify installation of Apache, PHP, Basics of PHP, Flow control statements, Arrays, Strings, Date and Time functions, Forms
5. Demonstrate configuration of MYSQL server, MYSQL Tables, MYSQL commands, MYSQL Date and Time functions
6. Build a simple android application using Android SDK components

Unit: 1
Open Source and Linux: Open Source Definition, The distribution terms of open source software, open source technology importance, Free and Open Source Software (FOSS), LAMP (Linux, Apache, MySQL, PHP, Python, and perl.), Benefits, Perspectives of Open Source Software.

Unit: 2
Introduction to Linux OS: OS Basics, Linux GUI: Exploring folders, Installation of binary packages, Built in package managers, Introduction to Linux file system, man pages, The first command cat, Command History, Basic Unix commands: vi editior, Redirection operators, basic understanding about uniq, grep, cut, paste, join, tr, df, du, who, rm, unlink, ulimit, chmode, umask, chown, chgrp, id, diff, sed, cmp, comm, Introduction to pipes, backup commands: tar, cpio, zip, and unzip commands, mount and unmount.

Unit: 3
Shell Programming: Types of Shells, Shell script, Shell variables, Shell Keywords, System variables, User defined variables, command line arguments, Arithmetic in shell script, Decision making statements, and the loop control structure.

Unit: 4
APACHE AND PHP: Introduction to Web Server. Installation Apache on Linux: httpd service.

PHP: Testing Installation, Basics of PHP Scripts, Variables, Data types, Opeators and Expressions, Constants, Flow Control functions, If statement, Loops, Arrays, Strings, Dates and Times, Forms.

Unit: 5

MySQL SERVER AND APPLICATION MySQL: Configuring MySQL Server, working with MySQL Databases, MySQL Tables, SQL Commands – INSERT, SELECT, UPDATE, REPLACE, DELETE, Date and time functions in MySQL.

Unit: 6

Android Tools and Basics: Installing the Android SDK and prerequisites, Test Drive, Components of the SDK, Keeping Up-to-date, Example Code, Building a simple Android Application.

TEXT BOOKS:

1. Yashvant kanetkar[2009], [Second Edition], UNIX Shell Programming , BPB Publications
2. PHP, MySQL and Apache, Julie C Meloni Pearson Eduction, 2012, [Fifth Edition].
3. Programming Android, Orielly Publications, Zigurd Mednieks, Laird Dornin, G. Blake Meike & Masumi Nakamura [2011] [First Edition]

REFERENCE BOOKS:

1. N.B. Venkateshwarlu, "Introduction to Linux: Installation and Programming", B S Publishers, 2008, (An NRCFOSS Publication)
2. Red Hat Linux Bible Christopher Negus Wiley Publication [2012] [Eighth Edition]

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS304: FORMAL LANGUAGES AND AUTOMATA THEORY (FLAT)

(For B.Tech V Semester CSE)

Scheme : 2013

Internal Assessment : 30

L	T/D	P	C
3	1	0	4

End Exam : 70

End Exam Duration : 3 Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Design of deterministic automata, nondeterministic automata, Moore machine and mealy machine for a given regular language
2. Describe the regular expressions and properties of regular languages
3. Identify equivalence among regular expression, regular grammar and finite automata
4. Design push down automata and context free grammar for any given context free languages
5. Understand Turing machines and recursively enumerable languages
6. Describe the model of linear bounded automata, properties of recursive languages, primitive, partial recursive functions including halting problem of Turing machine

Unit: 1
Finite Automata preliminaries: Strings, Alphabet, Language Operations, Finite State Machine definitions, Finite Automation Model, Acceptance of strings and languages, Non-deterministic Finite Automation, Equivalence between NFA and DFA, conversion of NFA into DFA, Equivalence between two FSM's, Minimization of FSM, , Moore and Mealy machines, Applications of FA's.

Unit: 2
Regular Expressions and Regular Sets: Regular sets, Regular expressions, Identity rules, Manipulation of regular expression, Equivalence between RE and FA, Inter conversion, Pumping lemma, Closure properties of regular sets.

Unit: 3
Grammar Formalism: Regular grammar-Right linear grammar and left linear grammar, Equivalence between regular linear grammar and FA, Inter conversion between RE and RG , Derivation trees, Right most and left most derivation of strings.

Context Free Grammar: Context Free Grammar ,Ambiguity in CFG, minimization of CFG, Chomsky Normal Form, Griebach Normal Form, pumping lemma of CFL, LR(K) grammer, properties of LR(K) grammers.

Unit: 4
Push Down Automata: Definition, model acceptance of CFL, Equivalence of CFG and PDA, and interconversion, Properties of CFL.

Unit: 5

Turing Machines: Turing machine definition, model, design of TM, Computable functions, Recursively enumerable language, Church's hypothesis, Universal Turing machine.

Unit: 6

Computability Theory: Model of Linear Bounded Automation, TM and type0 grammers, LBA and Languages, Halting problem of TM, Primitive recursive functions, Partial recursive functions and TMs.

TEXT BOOKS:

1. Hopcroft H.E. and Ullman J.D, [2007], [Third Edition], *Introduction to Automata Theory Languagesand Computation*, Pearson Education.
2. Mishra and Chandrashakaran [2008], [Third Edition], *Theory of computer sciences: Automata languages and computation*. PHI.

REFERENCE BOOKS:

1. .John C Martin [2008], *Introduction to languages and the theory of computation*, TMH.
2. Peter Linz [2010], [Fourth Edition], *An Introduction To Formal Languages And Automata,* Narosa Book Distributors Pvt. Ltd.

 NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS305: WEB PROGRAMMING (WP)

(For B.Tech V Semester CSE)

Scheme : 2013

Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

	L	T/D	P	C
	3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Create a Web Page Using Physical & Logical Styles of HTML & Text Formatting tags.
2. Design a Webpage with hyper links, Images, tables.
3. Create Static WebPages Using Frames & Dynamic WebPages using JavaScript
4. Design a Form using HTML Forms & Controls.
5. Understand the Lifecycle of Servlet & XML Schema.
6. Understand the Basic Architecture of JSP & JSP Objects.

Unit: 1
Essential HTML: Introduction, Creating and viewing a web page, immediate solutions. Working with Text: Physical and Logical HTML Styles. Immediate Solutions. Presenting and Arranging Text, Immediate Solutions.

Unit: 2
Working with images: Images in Web pages, Graphic formats, Creating images, Immediate Solutions. Links and Lists: Creating hyperlinks, Creating Image maps, Creating Lists. Creating Tables, Immediate solutions.

Unit: 3
Working with Frames: Creating vertical and horizontal frames, named frames, immediate solutions. Essential JavaScript, Immediate solutions, Putting JavaScript to work, Immediate Solutions.

Unit: 4
HTML Forms and HTML Controls: What's a Form? What Controls are available? Creating a Form and adding HTML Controls, Submitting Data from forms, Immediate Solutions. Dynamic HTML: Dynamic Styles, Dynamic content and Data Binding.

Unit: 5
Essential XML: valid and well-formed XML documents, XML Document Type Definitions, XML Schemas. Immediate solutions. Java Beans Components: Why Beans, The Bean Writing Process, Using Beans to build an application. Introduction to Servlet- Servlet Life Cycle, Example, Servlet Classes.

Unit: 6

JSP Overview: How JSP works, Basic Example, JSP syntax and semantics: The JSP development model Components of a JSP Page, a Complete Example, Scriptlets Handling by the JSP Container, Implicit Objects and the JSP Environment, Initialization parameters. Declarations. Request Dispatching: Anatomy Of Request Processing, including other resources, the <jsp: include> action, the request dispatcher Object.

TEXT BOOKS:

1. Steven Holzner [2008], HTML Black Book. Dream Tech Press Unit – I, II, III, IV,V.
2. Cay S.Horstman, Gary cornell [2008], [8th Edition] Core Java TM 2 Volume II –
   Advanced Features , Pearson Education, Unit V.
3. Phil Hanna [2003], JSP 2.0 Complete Reference, Tata McGraw Hill (Unit –VI)

REFERENCE BOOKS:

1. Patrick Naughton, Herbert Schildt [2008], [Fifth Edition], The Complete Reference Java2, Tata McGraw Hill
2. Kim Keogh [2005], J2EE Complete Reference, Tata McGraw Hill

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS307: SOFTWARE ENGINEERING (SE)
(For B.Tech V Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the phases of software development life cycle and Process models
2. Demonstrate Requirement Engineering process and Change management
3. Understand the design concepts, design classes and design model
4. Exemplify architectural styles and patterns in architectural design
5. Explain White box testing and Black box testing techniques
6. Use Risk Mitigation Monitoring Management plan to avoid Risks
7. Understand Software Quality Assurance activities and Quality standards

Unit: 1
Introduction To Software Engineering And Process Models: The Evolving role of software, Changing nature of software, Software myths.
Software Engineering: A Layered Technology, A Process Framework.
Process Models: The Waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Unit : 2
Software Requirement and Requirement Engineering Process: Functional and Nonfunctional requirements, User requirements, System requirements, The Software requirements document. **Requirement Engineering Process:** Feasibility studies, Requirements elicitation and Analysis, Requirement validation , Requirement Management.

Unit: 3
Design -Design process and Design quality, Design concepts: Abstraction , Information Hiding , Functional Independence, Refactoring, Modularity , Refinement, Design Classes, Design Model.

Unit: 4
Creating an Architectural Design : Software Architecture, Data Design- Data Design at architecture level, Data Design at component level, Architectural Styles & Patterns. Architectural design.

Unit: 5
Testing & Metrics: Testing Strategies-A Strategic approach to Software testing, Test strategies for Conventional software, White Box Testing- Basis Path Testing, Control Structure Testing, Black Box Testing, Validation Testing, System Testing, The art of Debugging.
Metrics for Process & Products - Software Measurement, Metrics for software quality.

Unit: 6
Risk Management: Risk Management- Reactive vs. Proactive risk strategies, Software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM plan.
Quality Management: Quality Management- Quality Concepts, Software quality assurance, Software reviews, Formal technical reviews, Statistical software quality assurance, Software reliability, The ISO 900 quality standards.

TEXT BOOKS:
1. Sommerville [2008], [7th Edition], *Software Engineering*, Pearson education.
2. Roger S.Pressman [2005], [7th Edition], *Software Engineering, A Practitioner's Approach*, Mc Graw Hill International Edition.

REFERENCE BOOKS:
1. K.K.Agarwal&Yogesh Singh [2008], *Software Engineering*, New Age International Publishers.
2. James F.Peters,Witoldpedecz,JohnWiely [2008], *Software Engineering-an Engineering approach*.
3. Shely Cashman Rosenblatt [2006], *System Analysis and Design*, Thomson Publications.

NOTE:
Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

ML203: BUSINESS ENGLISH AND TECHNICAL WRITING (BETW)

(Common to B.Tech IV Semester CIVIL, EEE & ME and   V Semester ECE & CSE Branches)

Scheme   : 2013 Internal Assessment : 100

Duration of Exam   : 3 Hrs

L	T/D	P	C
1	2	0	2

The purpose of this course is to help the students enhance their proficiency in oral and written communication in English to enable them to use English effectively at the corporate workplaces with global presence.

Course Outcomes:

The Student will be able to:

1. Use grammatically acceptable English
2. Demonstrate all aspects of language skills for a successful professional career
3. English effectively in interpersonal and professional contexts
4. Write technical content effectively
5. Handle business correspondence effectively

Course Work

To achieve the objectives, the following course content is prescribed for the Business English and Technical Writing Laboratory Sessions.

Contens

   Revision of grammar and vocabulary:

-   articles, prepositions, tenses, concord

-   voices, reported speech, sentence types

-    synonyms, antonyms, one word substitutes, idioms, collocations

-   word making, affixes, commonly used foreign words, words often confused

-    jumbled sentences and jumbled paragraphs

-    common errors in English pertaining to both grammar and vocabulary
     (TOEFL type) Reading Comprehension – practice tests

Listening Comprehension – practice tests

Speaking skills with focus on correct pronunciation

Writing Cover Letters for Job Applications/ Resume Preparation/ Statement of Purpose for Internships, Apprenticeships, Admissions in Universities, etc.

Writing Technical Reports/ Proposals/Formats of Research Articles, Journal Papers, Project Reports

Email writing

Writing Business Letters/ Formats of Letters, Block Letters/Memos

References

1. Raj N Bakshi, "English Grammar Practice", Orient Longman.
2. Sangeeta Sharma & Binod Mishra,"Communication Skills for Engineers and Scientists", PHI Learning Private Limited.
3. Marilyn Anderson, Pramod K.Naya and Madhucchanda Sen, "Critical Reasoning, Academic Writing and Presentation Skills", Pearson Publishers.
4. M. Ashraf Rizvi, "Effective Technical Communication", Tata McGraw-Hill Publishing Company Ltd., 2005.
5. Raymond V. Lesikar, Marie E. Flatley, "Basic Business Communication: Skills for Empowering the Internet Generation", 11th Edition, Tata McGraw-Hill. 2006.
6. Dr A. Ramakrishna Rao, Dr G.Natanam & Prof S.A.Sankaranarayanan, "English Language Communication: A Reader cum Lab Manual", Anuradha Publications, Chennai, 2006.

7. Dr. Shalini Verma, "Body Language- Your Success Mantra", S.Chand, 2006.
8. Andrea J. Rutherford, "Basic Communication Skills for Technology", 2nd Edition, Pearson Education, 2007.

DISTRIBUTION AND WEIGHTAGE OF MARKS :
Business English and Technical Writing Examination:

For Business English and Technical Writing subject, there shall be continuous PC based evaluation during the semester for 80 marks and viva voce to be conducted by an external examiner for 20 marks.

CS303: OPEN SOURCE TECHNOLOGIES LAB (OST(P))
(For B.Tech V Semester CSE)

Scheme	**: 2013**		
Internal Assessment	**:30**		
End Exam	**:70**		
End Exam Duration	**: 3 Hrs**		

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Illustrate installation of binary packages, basic UNIX commands, backup commands and Redirection operators.
2. Describe Shell Programming, Decision making and looping statements.
3. Exemplify installation of Apache, PHP, Basics of PHP, Flow control statements, Arrays, Strings, Date and Time functions, Forms
4. Demonstrate configuration of MYSQL server, MYSQL Tables, MYSQL commands, MYSQL Date and Time functions
5. Build a simple android application using Android SDK components

List of Experiments:

1. Installation of Linux
2. Use of various commands
3. Use of Text Processing Tools : grep, cut,
4. Back up using tar
5. C/C++ program using cc / gcc
6. Configuring Apache
7. PHP script for sorting the marks
8. PHP scripts for other tasks
9. MySQL Installation , Configuration and Testing
10. Design of admission form using PHP – MYSQL
11. Install Eclipse for Android.
12. Build small Applications using Android

CS306: Web Programming Lab (WP(P))

(For B.Tech V Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 2 Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Use various text formatting tags, images, tables to design Web pages.
2. Design HTML forms Using HTML Forms and Controls.
3. Design Dynamic web pages and bind two web pages using DHTML concepts.

List of Experiments:

1) Design   an application using Text formatting Tags.

2) Design   an application using <img> element with all attributes.

3) Design   an application using Links and Lists.

4) Design   an application using Client-side Image maps.

5) Design   an application using <TABLE>element withall attributes.

6) Design   an application using <FRAME> element with all attributes.

7) Design   an application using HTML Forms and Controls.

8) Simple programs using Java Script.

9) Write a program to implement Dynamic Styles and Dynamic Content.

10) Write a program to implement Data binding using Data source Controls (MSHTML, TDC).

11) Write a program to implement Java Beans.

12) Write a program to implement Servlets.

CS308: DOT NET TECHNOLOGIES (DNT)

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Illustrate the usage of loops, conditional statements, Arrays, Collections and Generics using console based applications.
2. Explain inheritance, polymorphism using classes, objects and interfaces.
3. Understand the working of Menus, Button, Label, Radio Button, Checkbox, Text Box, List Box, Checked List Box, List View and Tab Control using Windows applications.
4. Compare the features of SDI and MDI applications using windows forms.
5. Explain the process of writing insert, update ,delete and select statements using ADO .NET
6. Understand the creation, validation and post back mechanisms of an ASP page using ASP
   a. .NET

Unit: 1

Introduction to C#: .NET Framework, What is C#, Writing a C# program, Variables and Expressions, Flow control - Branching & Looping.

Unit: 2

Control Structures in C#: Type conversion – Implicit & Explicit, Complex variable types – Arrays, Structures & Enumerations, Functions, Error handling.

Unit: 3

Introduction to OOP using C#: OOP Techniques – Inheritance, Polymorphism, Interfaces, Events, Defining classes, Defining class members – Member definitions, Collections, Generics – Using generics.

Unit: 4

Basic windows programming: Controls – Button, Label, LinkLabel, TextBox, RadioButton, CheckBox, RichTextBox, ListBox, CheckedListBox, ListView, TabControl.

Unit: 5

Advanced windows programming: Menus, Toolbars, Single Document Interface (SDI) and Multiple Document Interface (MDI) applications, Building MDI applications, Creating controls.

Unit: 6

Introduction to ADO.NET and ASP.NET: ADO.NET - Data Access components, Database programming with SQL SERVER, **ASP.NET** – ASP.NET Runtime, Creating a simple page, Server controls, ASP.NET Postback, ASP.NET AJAX Postback, Authentication and Authorization.

TEXT BOOKS:

1. Harsh Bhasin, Programming in C#, Oxford University Press 2014, New Delhi.
2. Karli Watson, Christian Nagel, Jacob Vibe Hammer, Jon D. Reid, Morgan Skinner, Daniel Kemper, Beginning Visual C# 2012 Programming, Published by John Wiley & Sons, Inc.,
3. Dan Clark, Beginning C# Object Oriented Programming, New York, 2013, 2nd edition.

REFERENCE BOOKS:

1. John Sharp, Microsoft Visual C# 2013 Step by Step, Microsoft Press, Washington, 2013.
2. E Balaguruswamy, Programming in C#, Tata McGraw-Hill Publisher 2010, New Delhi, 3rd Edition.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS310: DESIGN AND ANALYSIS OF ALGORITHMS (DAA)

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand time, space complexities, notations, Divide and conquer technique to solve problems.
2. Understand greedy method to solve knapsack, MCST, Tree vertex split and Job sequencing with deadline problems.
3. Describe Tree and graph traversals with complexities, bi-connected components and articulation points in a graph.
4. Understand Dynamic programming technique to solve shortest path, knapsack, TSP, OBST and reliability design problems.
5. Understand Backtracking technique to solve n-queens, graph coloring, Hamiltonian cycle's problems.
6. Understand branch & bound techniques (FIFO, LIFO, LC search) for TSP and 15-puzzle problem and Lower Bound Theory.

Unit: 1

Introduction: What is an Algorithm? Performance Analysis: Space & Time Complexities, Asymptotic notation.

Divide and Conquer :- General method, Binary search, Finding Maximum and Minimum, Merge sort, Quick sort, Strassen's Matrix Multiplication.

Unit: 2

Greedy Method : The General Method, Knapsack Problem, Job Sequencing with Deadlines, Minimum-Cost Spanning Trees, Optimal Storage on Tapes, Optimal Merge Patterns, Single Source Shortest Paths, Tree Vertex Problem.

Unit: 3

Basic Traversal and Search Techniques :- Techniques for Binary Trees, Techniques for Graphs, Biconnected Components and DFS.

Unit: 4

Dynamic Programming : The General Method, Multistage Graphs, All Pairs Shortest Paths, Optimal Binary Search Trees, 0/1-Knapsack, Reliability Design, The Travelling Salesperson Problem, String Editing problem .

Unit: 5

Backtracking: The General Method, The 8-Queens Problem, Sum of Subsets, Graph Coloring, and Hamiltonian cycles.

Unit: 6

Branch and Bound : The Method, 15 Puzzle problem, Travelling Salesperson

Lower Bound Theory : Comparison Trees, Oracles and Adversary arguments, Techniques for Algebraic problems.

TEXT BOOKS:

1. Ellis Horowitz, Sartaz Sahni & Sanguthevar Rajasekaran, *Fundamentals of Computer Algorithms,* Galgotia Publications Second Edition.

REFERENCE BOOKS:

1. Jon Kleinberg, Eva Tardos, *Algorithm Design,* Pearson Education Seventh Impression.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS311: NETWORK PROGRAMMING (NP)

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand Inter Process communication mechanisms in UNIX such as pipes, fifos, message queues, RPC Mechanism

2. Acquire Knowledge on OSI Layers, TCP connection establishment and its importance in internet applications

3. Use Elementary TCP Socket Functions(socket, connect, bind, listen, accept, close) in Network Programming

4. Understand the background mechanism for Normal start-up and Termination in TCP Client Server

5. Comprehend the role of I/O Multiplexing and socket Options in implementing robust client server applications

6. Use UDP socket functions and its applications in Network Programming

Unit: 1
IPC : Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores, rlogin Overview, RPC Transparency Issues.

Unit: 2
Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.

Unit: 3
Sockets : Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.
.
Unit: 4
TCP client server : Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.

Unit: 5
I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option, IPV6 socket option.

Unit: 6

Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP**,**
Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information.

TEXT BOOKS:

1.UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.

2.**UNIX Network Programming**, 1st Edition, - W.Richard Stevens. PHI.

REFERENCE BOOKS:

1.**UNIX Systems Programming using C++** T CHAN, PHI.

2.**UNIX for Programmers and Users**, 3rd Edition Graham GLASS, King abls, Pearson Education

3.**Advanced UNIX Programming** 2nd Edition M. J. ROCHKIND, Pearson Education

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS313: COMPILER DESIGN (CD)

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	1	0	4

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the phases of compiler and compiler construction tools
2. Identify tokens in the source program using lexical analyzer technique
3. Understand parsing table using top down and bottom up parsing techniques
4. Explain type checking and storage allocation strategies
5. Describe three address code and code optimization techniques
6. Understand code generator, flow graph and DAG representation

Unit: 1
Compilers: Basic function of Language translator, differences between compiler and interpreter, logical phase of a compiler, difference between pass and phase, grouping the phases into passes, compiler construction tools.

Unit: 2
Lexical Analysis: The role of lexical analyzer, input buffering, specifications of tokens, recognition of tokens, a language for specifying lexical analyzers, design of a lexical analyzer generators.

Unit: 3
Syntax Analysis: Top-Down Approach: Role of parser, parsing, top down parsing, recursive decent parsing, predictive parsers, non recursive predictive parsing, bottom up parsing, operator precedence parsing, LR parser.

Unit: 4
Semantic Analysis: Typical semantic errors, type checking, type conversions, specification of a simple type checker, equivalence of type expressions, storage allocations, strategies of storage allocation, static, dynamic and heap.

Unit: 5
Intermediate Code Generation: Intermediate code languages, three address code, types of three address code, syntax directed translation into three address code, implementations of three address statements - quadruples, triples, indirect triples

Code Optimization: Introduction to code optimization, principles sources of optimization, optimization of basic blocks, peephole optimization.

Unit: 6
Code Generation: Issues in the design of code generator, the target machine, basic blocks and flow graphs, a simple code generator, DAG representation of basic blocks, generating code from DAGs.

TEXT BOOKS:

1. Alfred V.Aho, Ravi Sethi, Jeffrey and D.Ullman [2014], Compilers Principles, Techniques and tools, Pearson edition.

2. John J. Donovan [2008], Systems Programming , Tata McGraw-Hill Edition.

REFERENCE BOOK:

1. Trembly & Sorenson [2007], Theory & practice of compiler writing , MC GrawHill.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS315: MOBILE COMPUTING (MCP)

(For B.Tech VI Semester CSE)

		L	**T/D**	**P**	**C**
Scheme	**: 2013**				
Internal Assessment : 30					
		3	**0**	**0**	**3**
End Exam	**: 70**				
End Exam Duration : 3 Hrs					

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Understand the basic concepts of wireless communication & mobile computing
2. Learning about wireless medium access controlling mechanisms : SDMA, FDMA, TDMA, CDMA
3. Understand the basic concepts of GSM, System Architecture, Protocol Architecture, Handovers, DECT and TETRA.
4. Understand the WLAN System Architecture, Protocol Architecture, Physical Layer, Mac Management
5. Acquiring knowledge on the structure & concepts of Mobile IP ,Encapsulation Methods, DHCP
6. Get knowledge about Traditional TCP and Classical Improvements of TCP

Unit: 1
Wireless transmission: Frequencies for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems

Unit: 2
Medium access control: Motivation for a Specialized MAC, SDMA, FDMA, TDMA, CDMA, Comparison of S/T/F/CDMA.

Unit: 3
GSM: Mobile services, System Architecture, Radio interface, Protocols, Localization and calling, Handover, Security.
DECT: System architecture, Protocol architecture, **TETRA**.

Unit: 4
Wireless LAN: Infrared Vs Radio Transmission, Infra Red and ad-hoc network, IEEE 802.11: System architecture, Protocol architecture, Physical layer.
IEEE 802.11: Medium access control layer, MAC management, 802.11b, 802.11a.

Unit: 5
Mobile IP: Goals & requirements, Entities and terminology, IP Packet delivery, Agent discovery, Registration, Tunneling & encapsulation, Optimizations, Reverse tunneling, IPv6, IP micro- mobility support, Dynamic host Configuration protocol.

Unit: 6
Traditional TCP: Congestion control, Slow start, Fast retransmit/fast recovery, implications of mobility, Classical TCP improvements.

TEXT BOOKS:

1. Jochen Schiller [2008], [Second Edition], *Mobile Communications*, Low price edition, Pearson Education.

REFERENCE BOOKS:

1. Talukder [2008], *Mobile Computing: Technology, Applications & service creation*, TMH.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS309:DOT NET TECHNOLOGIES LAB (DNT(P))

(For B.Tech VI Semester CSE)

Scheme   **: 2013**

	L	T/D	P	C
	0	0	3	2

Internal Assessment : 30
End Exam   **: 70**
End Exam Duration : 3Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Implement arrays, structures, inheritance and collections using console based applications.
2. Demonstrate the usage of buttons, textbox, labels, radio buttons, menus, context menus and MDI using windows applications.
3. Execute insert, update, delete and select statements in ADO.NET using MS Access, SQL server.
4. Create an ASP page and validate the controls using ASP.NET features

List of Experiments:

1. Create a Console Based Application to implement Arrays concept.
2. Create a Console Based Application to implement Structures concept.
3. Create a Console Based Application to implement Inheritance concept.
4. Create a Console Based Application to implement the concept of Collections.
5. Create a Window Based Application to display the day of the desired date.
6. Create a Window Based Application to simulate Online Examination.
7. Create a Window Based Application to simulate ATM machine.
8. Create a Window Based Application to simulate Menus.
9. Create a Window Based Application to simulate MDI.
10. Create a Window Based Application to retrieve and insert the records into the database using SQL SERVER.
11. Web Application to perform Data Entry and Validation.
12. Web Application to perform Data Base Connectivity Using Data Grid View.

CS312: NETWORK PROGRAMMING LAB (NP(P))

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Implement Inter process communication concepts in UNIX programming using Pipes, FIFOs, Message Queues and semaphores
2. Use TCP Sockets functions to develop Client Server applications
3. Develop Client Server applications using UDP Sockets functions
4. Building robust client-server applications using I/O Multiplexing and Socket Options

List of Experiments:

1. Implementing the Pipes.

2. Implementing FIFO.

3. Implement file transfer using Message Queue form of IPC.

4. Write a program to implement day time client & server.

5. Implementation of Chatting Application.

6. Write a program to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions.

7. Design TCP iterative Client and server application to reverse the given input sentence.

8. Design TCP client and server application to transfer file.

9. Implementation of the Concurrent Servers.

10. Design UDP client and server application to transfer file.

11. Design UDP iterative Client and server application to reverse the given input sentence.

12. Design using select client server application to multiplex TCP and UDP requests for reversing input sequence.

CS314: ASSEMBLY LANGUAGE PROGRAMMING & COMPILERS LAB (ALP(P))

(For B.Tech VI Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to
1. Implement DFA's in high level languages
2. Develop lexical analyzer
3. Determine simplified grammar for a given left recursion grammar
4. Construction of predictive parser for a context free grammar

List of Experiments:

1.Conversion from Infix to Postfix.

2.Evaluation of Postfix expression.

3. a. DFA accepting a string ending with two 0's.

   b. DFA accepting a string starts with two 1's.

   c. DFA accepting a string with odd number of 0's.

   d. DFA accepting a string with even number of 1's.

4. Implement LEXICAL ANALYZER.

5. Elimination of Left Recursion and Left factor the Grammar.

6. Implementing Predictive Parser.

7. ALP for Linear Search.

8. ALP for Matrix Addition.

9. ALP for Bubble Sort.

10. ALP for sum of 'n' numbers.

CS401: OBJECT ORIENTED ANALYSIS & DESIGN (OOAD)

(For B.Tech VII Semester CSE)

	L	T/D	P	C
Scheme : 2013				
Internal Assessment : 30				
End Exam : 70	3	0	0	3
End Exam Duration : 3 Hrs				

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the concepts of object oriented system, unified approach.
2. Understand object oriented system development, methodologies.
3. Demonstrate UML diagrams.
4. Identify use cases, classes, attributes and methods.
5. Develop access layer classes using axioms and corollaries.
6. Model user interface and map object oriented system to relational system.

Unit: 1
Rational Rose S/W:Introduction, Working with Rational Rose Environment.
An overview of Object Oriented System development –Introduction, Overview of the unified approach.
Object basics: Objects, classes, state and properties, behavior and methods, messages, encapsulation and information hiding, Class hierarchy, polymorphism, relationships and associations, aggregation and containment, object identity, static and dynamic binding, persistence, Meta –classes.

Unit: 2
Object Oriented Systems Development Life Cycle – The software development process, Object Oriented Systems development: A use case driven approach, Reusability.
Object Oriented Methodologies–Rumbaugh methodology, Booch methodology, Jacobson methodology, Patterns, Unified approach, Layered approach.
Unified Modeling Language(UML) –Introduction, UML class diagrams, Use-case diagram, Interaction diagram, sequence diagram, Collaboration diagram.

Unit: 3
State chart diagram, Activity diagram, component diagram, deployment diagram, packages.
UML extensibility –Model constraints, note, stereotype, UML Meta model.

Object Oriented Analysis Process: Identifying Use Cases- Introduction, Business Object analysis, use-case driven object oriented analysis: unified approach, use-case model, developing effective documentation, case studies.

Unit: 4
Object Analysis: classification theory, Noun Phrase approach, use-case driven approach, classes, responsibilities and collaborators, naming classes.
Identifying Object Relationships, Attributes and Methods – Associations, super and subclass relationships, A-part-of relationship, class responsibilities, Object responsibility: Methods and messages, case studies.

Unit: 5
Object Oriented Design Process and Design Axioms – Object Oriented design Axioms, corollaries, design patterns.
Designing Classes: Introduction, philosophy, class visibility, refining attributes, designing methods and protocols, Packages and Managing Classes.
Access Layer: Object store and persistence, DBMS, logical and physical database organizations and access control, client-server computing.

Unit: 6
Distributed objects computing, Object Relational systems, multi database systems, designing access layer classes.
View Layer: User interface design, designing view layer classes. Macro-level process, micro - level process, UI design rules, view layer interface.

TEXT BOOKS:

1. Ali Bahrami – Irwin [1999], *Object Oriented systems development,* McGraw. (1,2,3,4,5,6 Units).

REFERENCE BOOKS:

1. Grady Booch, James Rambaugh, Ivar Jacobson [1998], UML User Guide, Addison Wesley.
2. Jason T. Roff [2006], *UML a Beginner's Guide*, TATA McGraw- Hill.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS403: DATA WAREHOUSING & MINING (DWM)

(For B.Tech VII Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the data warehouse business process and managers.
2. Identify components that are required to meet the Data Warehouse architecture.
3. Design a Data Warehouse using multiprocessor architecture.
4. Understand data ware house schemas for multidimensional data models.
5. Determine predictions on Multi dimensional Data Bases using OLAP tools.
6. Understand the conceptual steps involved in data mining in solving business problems.

Unit: 1
Introduction to system process: Delivery Process, System Process – Process flow, Extraction and Loading of Data, Clean and Transform Data, Backup and Query Management process. Process Architecture – Various types of Managers.

Unit: 2
Datawarehousing components: Overall Architecture, Data warehouse database, Sourcing, Acquisition Cleanup and Transformation Tools, Meta Data, Access tools, Data Marts, Data warehouse Administration and Management, Information Delivery system.

Unit: 3
Building a data warehouse : Business considerations, Design considerations, Technical considerations, Benefits of data warehousing. Mapping Data warehouse to Multiprocessor Architecture.

Unit: 4
DBMS Schemas for decision support : Data layout for best access, Multidimentional data model, Star schema, Star Join and Star Index, Bitmapped Indexing.

Unit-5
Reporting and query tools : Reporting Tools, Managed Query Tools, Executive Information system Tools, OLAP Tools, Data Mining Tools. OLAP – Need for OLAP, Guidelines, Categorization.

Unit-6
Patterns and models :Where and What of a Model, Sampling, Experimental Design.
DATA MINING : Introduction, Decision Trees – What and where How of Decision Trees, Nearest Neighbour and Clustering.

TEXT BOOKS:

1. Sam Anahory and Dennis Murray [2008], "*Data Warehousing in the Real World*", Pearson Education.
2. Alex Berson, Stephen J. Smith [2008], "*Data Warehousing, Data Mining & OLAP*", Tata McGraw–Hill Publications.

REFERENCE BOOKS:

1. Jiawei Han, Micheline Kamber, Elsevier [2008], "*Data Mining concepts and techniques*".
2. Margaret H. Dunham, S. Sridhar [2003], "*Data Mining Introductory and Advanced Topics*", Pearson Education.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one compulsory question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of one compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS405: SOFTWARE PROJECT MANAGEMENT

(For B.Tech VII Semester CSE)

Scheme : 2013

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the Processes, Project Management, Capability Maturity Model and Project Planning Infrastructure.
2. Define standard process, process tailoring and change management process.
3. Estimate effort of software project using bottom-up, top-down and use case points approach.
4. Understand Quality Concepts, Quantitative Quality Management Planning and Defect Prevention Planning.
5. Describe risk management activities, measurements and project tracking.
6. Explain project management plan, review process, and project monitoring.

Unit: 1
Managing Software Projects: Processes and Project, Project Management and the CMM, Overview of the CMM, KPAs for project management, Project Management at Infosys, SEPG support to projects, Senior Management Involvement in project, The project management process, Case study.

Unit: 2
Project Planning: The project planning infrastructure, the process database, a sample entry, The process capability baseline, Process assets and the body of knowledge system. Process Planning: The standard process, process tailoring, Tailoring for short duration project, Requirement change management, Change management process, Examples ,Case study.

Unit: 3
Effort Estimation and scheduling: Effort estimation models, estimation schedule, Effort estimation approaches, the bottom up estimation approach, top down estimation approach, the use case points approach, case study, Scheduling, the effectiveness of the approach.

Unit: 4
Quality planning: Quality concepts, Procedural approach to quality management, Quantitative approaches to quality management, Quantitative quality management palnning, Estimating defects for other stages, Quality process planning, Defect prevention planning, The quality plan for a project.

Unit: 5
Risk Management: Concepts of Risks and Risk Management, Risk Assessment, Risk Identification, Risk Control, Risk Management planning, Examples, Case Study, Measurement and Tracking planning, metrics and measurement, Process monitoring through statistical process control, Measurement, Logging and tracking defects, Measuring schedule.

Unit: 6

The project management plan: Team structure, communication, issue resolution, configuration management, concepts, configuration management process, status monitoring and audits, Reviews, Data collection, Group review summary report, NAH syndrome.

TEXT BOOKS:

1.Pankaj Jalote , " Software project management in practice" , Springer , Universities Press.

REFERENCE BOOKS:

1.Sommerville [2008], [7th Edition], *Software Engineering* ,Pearson education.
2. Roger S.Pressman [2005], [6th Edition], *Software Engineering, A Practitioner's Approach*, Mc GrawHill International Edition.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS406: ADVANCED COMPUTER ARCHITECHTURE (ACA)

(For B.Tech VII Semester CSE)

Scheme : 2013

	L	T/D	P	C
Internal Assessment : 30

End Exam : 70   3   0   0   3

End Exam Duration : 3 Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the parallel processing in parallel computer structures, parallel classification schemes and memory hierarchy in parallel processing systems.
2. Understand the working of nonlinear pipelines using Reservation tables, instruction and Arithmetic pipelines.
3. Apply the Principles of designing pipeline processors: Instruction prefetch and branch handling, Data buffering and busing structures, internal forwarding and register tagging, Hazard detection and resolution, Job sequencing and collision prevention.
4. Understand SIMD array processors and interconnection networks.
5. Design multistage networks based on the characteristics of multiprocessor systems and interconnection networks.
6. Determine the importance of Data Flow computers over control flow computers and stack computers.

Unit: 1

Introduction to parallel processing: Trends towards parallel processing, parallelism in uniprocessor systems, parallel computer structures, architecture classification schemes, parallel processing Applications, memory hierarchy in parallel processing systems.

Unit: 2

Pipelining: pipeline concept, linear pipelining and space time diagram, classification of pipeline processor, nonlinear pipeline and reservation table, instruction and arithmetic pipelines.

Unit: 3

Principles of designing pipeline processors-instruction prefetch and branch handling, data buffering and busing structures, internal forwarding and register tagging, hazard detection and resolution, job sequencing and collision prevention.

Unit: 4

SIMD Array Processors: SIMD structures and algorithms for array processors, organization, masking and routing mechanisms, inter processor communication, parallel algorithms for array processors(matrix multiplication and parallel sorting)
SIMD interconnection network: single stage and multistage network, cube network, barrel shifter, shuffle exchange and omega networks.

Unit: 5

Multiprocessor architecture: Loosely coupled and tightly coupled multiprocessor systems, processor characteristics, interconnection network, timeshared or common busses, crossbar switch and multi port memories, multistage network.

Unit: 6

Data flow computers: control flow Vs data flow, data flow computer architectures, , data flow graphs and languages, data flow and design alternatives-dependency driven approach and multi level driven approaches.

Stack computers: Stacks, arithmetic evaluation stacks, control stacks, storage for simple and structured variables, the parameter preparation stack.

TEXT BOOKS:

1. Kai Hwang, Faye Briggs [1993], *Computer architecture and parallel processing*, MC GRAW HILL.
2. Stone Harolds [1995], *Introduction to computer architecture*, Galgotia.

REFERENCE BOOKS:

1. Kai Hwang [1993], *Advanced computer architecture*, MC GRAW HILL.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS402: OBJECT ORIENTED ANALYSIS AND DESIGN LAB (OOAD(P))

(For B.Tech VII Semester CSE)

Scheme : 2013

	L	T/D	P	C

Internal Assessment : 30

End Exam : 70

End Exam Duration : 3 Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Develop UML diagrams for case studies using Rational Rose tool.

List of Experiments:

1. Introduction to unified modeling language (UML).

2. Mini Project1: Elevator problem.

3. Mini Project2: Online book shop.

4. Mini Project3: library system.

5. Mini Project4: ATM system.

6. Mini Project5: Student Information System.

7. Mini Project6: Vending Machine.

8. Mini Project7: Graphics Editor.

9. Mini Project8: Payroll Systems.

10. Implementation of Case Studies.

CS404: DATA WAREHOUSING LAB (DW (P))

(For B.Tech VII Semester CSE)

Scheme : 2013

Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Implement data warehouse using Open Data Sources.
2. Use Code Reusability in mappings.
3. Apply Conversion techniques of one Data base file format to another file format.

List of Experiments

1. Understanding Source Qualifier and Implementing it.

2. Implementation of Filter Transformation.

3. Implementation of Aggregations transformation.

4. Implementation of Expressions Transformation.

5. Implementation of Rank Transformation.

6. Implementation of Joiner Transformation.

7. Implementation of Constraint Based Loading.

8. Implementation of Merging.

9. Implementation of sorting using sorter Transformation.

10. Implementation of Sequence generator Transformation.

11. Transforming the Data from XML to DATABASE.

12. Transforming the Data from FIXED FLAT FILE to DATABASE.

13. Transforming the Data From DELIMITED FILE to DATABASE.

CS407: PROJECT WORK PRELIMINARY LAB
(For B.Tech VII Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Formulate a real world problem and develop with requirements

2. Survey of the current state work in the specified area

3. Identify the gaps in the existing system and to design new solution to fill the gaps

4. Determination of methodologies used in the past studies of the same or similar topic

5. Acquire practical knowledge within chosen area of technology for project development

6. Contribute as an individual or as a team member in the development of technical project

CS408: NETWORK SECURITY & CRYPTOGRAPHY (NSC)

(For B.Tech VIII semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70
End Exam Duration : 3 Hrs

L	T/D	P	C
3	0	0	3

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Understand the importance of security, active and passive attacks on information in the network.
2. Describe conventional cryptographic techniques DES and AES.
3. Explain the purpose of public and private keys in security algorithms for encryption and decryption of data.
4. Define the security concepts to develop highly secure algorithms using MAC and Hash functions.
5. Compare Cryptographic Hash Algorithms MD5 and SHA-1
6. Understand the design principles of security Models and their applications

Unit: 1
Introduction to Security: Services, Mechanisms and Attacks, Security Services, A model for network security, Internet standards and RFC's. Symmetric cipher model, permutation, transposition, substitution techniques.

Unit: 2
Conventional Cryptography : Block cipher principles, Fiestal structure, Simplified DES, DES (including double DES, Triple DES), The Strength of DES, AES, Block Cipher modes of Operation.

Unit: 3
Public Key Cryptography: Principles of Public Key Cryptosystems, Private Key Vs Public key cryptography, RSA Algorithm. Key Management, Diffie- Hellman Key Exchange algorithm.

Unit: 4
Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions.

Unit: 5
Hash Algorithms:MD5 Message Digest Algorithm, Secure Hash algorithm: SHA-1, Comparison of SHA-1 and MD5.

Unit: 6
Digital Signatures: Digital Signatures, Digital Signature Standard (DSS), Kerberos, X.509 Authentication Service.

TEXT BOOKS:

1. William Stallings, Cryptography and Network Security: Principles and Practices, Pearson Education, 6th Edition, 2013.
2. William Stallings, Network Security Essentials: Applications and Standards, Pearson Education, 5th Edition, 2013

REFERENCE BOOKS:

1. Fundamentals of Computer Security, Springer.
2. Network Security: The Complete Reference, Robert Bragg, Mark Rhodes, TMH.
3. Principles of Information Security Whitman, Thomson.

NOTE:

Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS409: BIG DATA & ANALYTICS (BDA)

(For B.Tech VIII Semester CSE)

Scheme : 2013

	L	**T/D**	**P**	**C**
Internal Assessment : 30	3	0	0	3

End Exam : 70
End Exam Duration : 3 Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Recognize the need for change in processing due to Big Data.
2. Understand the impact of Big Data in Digital Marketing, Fraud, Algorithmic Trading, Risk Management and HealthCare.
3. Classify the Predictive Analytics, Crowd Sourcing Analytics, Inter and Trans Firewall Analytics.
4. Understand the R and Hadoop Working environment.
5. Explain Web Page Categorization, Stock Market Frequency Change Computation and Bulldozers blue book sale price prediction –Data Analytics Problems.

Unit: 1
Introduction
What Big Data is, How data is changing, Shift in Processing due to Big Data, Changing focus with Big Data, Role of Data Analyst,

Unit: 2
Foundation of Big Data
Industry examples of Big Data: Digital marketing and non-line world, Big Data and the marketing. Fraud and Big Data, Credit Risk Management, Big Data and algorithmic Trading, Big Data and Advances in Health care.

Unit: 3
Big Data Technology
Hadoop's Parallel World, Data Discovery, Open Source Technology for Big Data Analytics, The cloud and Big Data, Predictive Analytics, Crowd Sourcing Analytics, Inter and Trans Firewall Analytics.

Unit: 4
R & Hadoop
Understanding the features of RStudio, performing data modeling in R, Understanding different Hadoop modes, Understanding Hadoop features, Learning HDFS and MapReduce architecture.

Unit: 5
Hadoop MapReduce
Understanding the basics of MapReduce, Introducing Hadoop MapReduce, Hadoop MapReduce fundementals. Hadoop MapReduce Example, different ways to write hadoop MapReduce in R.

Unit: 6
Data Analytics with R and Hadoop
Understanding the data analytics project life cycle, understanding data analytics problems- exploring web pages categorization, computing the frequency of stock market change, predicting the sale price of blue book for bulldozers-case study.

TEXT BOOKS:

1) Big Data Analytics, By Michael Wessler, OCP & CISSP. John Wiley & Sons, Inc. 2013.

2) Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses by Michael Minelli, Michele Chambers, Ambiga Dhiraj : John Wiley & Sons 2013.

3) Big Data Analytics with R and Hadoop, Vignesh Prajapati: PACKT Publishing. 2013.

REFERENCE BOOKS:

1) Data Science & Big Data Analytics: Discovering, Analyzing, Presenting Data Visualizing.

2) Hadoop: The Definitive Guide, 3rd Edition , By Tom White , O'reilly Media

3) Big Data Now: 2012 Edition Publisher: O'Reilly Media.

4) Too Big to Ignore: The Business Case for Big Data (Wiley and SAS Business Series) By Phil Simon, Wiley 1e.

 NOTE:

 Internal Assessment: The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

 End Exam: The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

CS410: ALGORITHMS & BIG DATA LAB (ABD(P))

(For B.Tech VIII Semester CSE)

Scheme   **: 2013**

	L	T/D	P	C
Internal Assessment : 30				
End Exam **: 70**	0	0	3	2

End Exam Duration : 3 Hrs

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Implement Knapsack, Single Source Shortest Path, All Pairs Shortest Path and Travelling Sales Person Problems.
2. Compute Arithmetic, Logical operations Vectors, Lists, Data Frames In R.
3. Demonstrate installation procedure of R Studio & Hadoop in Ubuntu.
4. Implement Mapper & Reducer classes in Hadoop environment.

List of Experiments:

1. Implementation of the sorting and searching techniques using divide and conquer method.

2. Implementation of single source shortest path using greedy method.

3. Implementation of greedy knapsack problem

4. Implementation of all pairs shortest path using dynamic programming.

5. Implementation of knapsack problem using backtracking.

6. Implementation of travelling salesperson problem.

7. Installing R Studio.

8. Installing Hadoop on Linux.

9. Installing Cloudera Hadoop on Ubuntu.

10. Perform various Hadoop shell commands.

11. Implement MapReduce job.

12. Monitor and Debug Hadoop MapReduce job.

CS411: PROJECT WORK LAB (PWP(P))
(For B.Tech VIII Semester CSE)

Scheme : 2013
Internal Assessment : 30
End Exam : 70

L	T/D	P	C
0	0	3	2

Course Outcomes: Upon successful completion of this course, the student shall be able to

1. Analyze, formulate and handle programming projects with a comprehensive systematic approach
2. Develop a design solution for a set of requirements
3. Test and validate the conformance of the developed prototype
4. Generate alternative solution, compare them and select the optimum one
5. Develop effective communication skills for the presentation of project related activities and able to document the work
6. Identify one's need for further knowledge and continuously develop one's own competencies