

BHARATHIAR UNIVERSITY: COIMBATORE-641046
CENTRE FOR COLLABORATION OF INDUSTRY AND INSTITUTION (CCII)
PG DIPLOMA IN COMPUTER APPLICATIONS
(For the CCII students admitted from the academic year 2015-16 onwards)

SCHEME OF EXAMINATION

Semester 1

Paper	Course Title	Examinations			
		Duration Hours	CIA	Marks	Total Marks
1	Digital Computer Fundamentals and Computer Architecture	3	25	75	100
2	Data structure using C	3	25	75	100
3	Communicative English	3	25	75	100
4	Computer Network	3	25	75	100
Practical 1	C Lab	3	40	60	100

Semester 2

Paper	Course Title	Examinations			
		Duration Hours	CIA	Marks	Total Marks
5	Software Engineering	3	25	75	100
6	Operating System	3	25	75	100
7	Relational Database Management System and SQL Concepts	3	25	75	100
8	Web Scripting Languages	3	25	75	100
Practical 2	RDBMS Lab	3	40	60	100
Project	Mini Project *	-	-	-	50
Total Marks					1050

*** For Project Report 80% Marks & Viva-Voce 20% Marks**

Semester	I
Subject	1 : Digital Computer Fundamentals and Computer Architecture

Goal:

To enable the students to learn the Computer Fundamentals and Architecture of the Computer.

Unit – I: Number Systems

Digital Computer and Digital Systems – Binary Numbers – Number Base Conversion– Octal and Hexa Decimal Numbers – Complements – Binary Coders.

Unit – II: Boolean Algebra

Boolean algebra and Logic Gates : Basic Definitions – Axiomatic Definition of Boolean Algebra Boolean Functions – Canonical and Standard Forms – Other Logical Operations – Digital Logic Gates – 1C Digital Logic Families – Semiconductor Memories – Bipolar – CMOS – ROM –RAM –PROM – EPROM. Simplification of Boolean Functions – The map method – product of Sums – sum of products –simplifications – NAND and NOR implementation. Don't Care Conditions – the tabulation method.

Unit – III: Combinational Logic & Sequential Logic

Introduction – Adders – Subtractors – Code conversion - Binary Parallel Adder –Decimal Adder – Decoder – encoder – Multiplexers – DE Multiplexers. Introduction – Flip Flops – Flip Flop excitation tables – Design counters – Registers, Counters. Registers – shift Registers. – Ripple Counters.

Unit – IV: Computer Organization & Central Processing Unit

Organization of Computer – characteristics – machine language – assembly language– rules of the languages – translation to binary – register transfer language – register transfer. Central processing Unit: ALU – General Register organizations – control word –examples of micro operations – stack organization – instruction formats – addressing modes – data transfer and manipulation program controls.

Unit – V: Input – Output Organization & Memories

Peripheral devices – I/O interface – Synchronous and Asynchronous data transfer –Mode of transfer – priority interrupt – DMA – IOP. Micro computer memory – auxiliary memories – associative memory – cache memory – virtual memory.

Reference Books

1. Morris Mano, “ Digital Logic and Computer Design” – Prentice Hall of India –1998.
2. Morris Mano, “Computer System Architecture” – Prentice Hall of India – 1998.
3. Thomas C. Bartee, “Computer Architecture and Logical Design” McCrawHill International Edition 1998.
4. John P Hayes, “Computer Architecture and Organization” – McGraw Hill International 3rd Edition – 1998.

Subject	2 : Data Structure Using C
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Goal:

To enable the students to learn the Data Structures and implement its concepts in 'C' Language.

Unit – I:

Programming development methodologies – Programming style – problem solving techniques : algorithm, flowchart, Pseudocode – Structure of a program – C character set Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. Operators and Expressions – Formatted and Unformatted I/O functions – Decision statements – loop control statements.

Unit – II:

Arrays – String and its standard functions. Pointers – Functions – Preprocessor directives: #define, #include, #ifdef, Predefined Macros.

Unit – III:

Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, Bit fields, Enumerated data types, Union. Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, Command line arguments, I/O redirection.

Unit – IV:

Linear data structures: introduction to data structures – List: Implementations, Traversal, Searching and retrieving an element, predecessor and successor, Insertion, Deletion, Sorting, Merging lists – Stack: Representation, Terms, Operations on stack, Implementation. Single linked list, Linked list with and without header, Insertion, Deletion, Double linked list - Queues: Various positions of queue, Representation.

Unit – V:

Searching and Sorting – Searching: Linear, Binary. Sorting – Insertion, Selection, Bubble, quick, Tree, Heap.

Reference Books:

1. Ashok N Kamthane, "Programming and data structures" – Pearson Education, first Indian print 2004, ISBN 81-297-0327-0.
2. E Balagurusamy : programming in ANSI C, Tata McGraw-Hill, 1998.
3. Ellis Horowitz and Sartaj Sahni: fundamentals of Data Structure, Galgotia Book source, 1999.
4. Data structure using C – Aaron M Tanenbaum, Yedidyehlangsam, Moshe J

Subject	3 : COMMUNICATIVE ENGLISH
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Course Description:

Language English develops the ability to communicate clearly, accurately and effectively in both speech and writing. Students learn how to employ a wide-ranging vocabulary, use correct grammar, spelling and punctuation, and develop a personal style and an awareness of the audience being addressed.

Course Goals:

Enable students to communicate accurately, appropriately and effectively in speech and writing.

Course Activities and Schedule:

UNIT: 1 Match an oral description to a picture - Follow oral instructions given in familiar everyday situations - Understand classmates when they exchange personal information and speak about familiar topics - Distinguish different meanings marked by stress and intonation - Recognize the speaker's intentions as revealed through the tone - Follow descriptions which are complex in terms of linguistic, thematic and lexical content, e.g. television documentaries.

UNIT: 2 Rephrase information - Describe people including themselves, familiar topics, places and objects in detail - Tell a story in a simple sequence of events - Talk about own skills and abilities - Give a short presentation on a familiar topic that they have prepared in advance - Describe personal events and activities - Express future plans - Describe possessions and everyday items - Explain a viewpoint on a topical issue, e.g. global warming, and elaborate on different aspects of the issue.

UNIT: 3

Participate in short, structured dialogues on familiar topics of interest in the classroom and in other situations where English is required - Use basic interjections, e.g. Wow, Hey, Oh dear, Cheers appropriately - Give simple directions and instructions, e.g. how to get somewhere by using a plan or a map - Participate in lengthy conversations about a variety of topics of general interest and express their point of view - Identify and understand a wider range of text types in terms of literal meaning and inference - Identify different layers of meaning and understand their significance and effect.

UNIT: 4

Use punctuation correctly, in particular the capital letter, comma, full stop, question mark, apostrophe - nouns: singular and plural (regular and irregular) - pronouns: personal – adjectives - Use the definite and indefinite article: the, a, an - identify and use the following tenses - simple present - present continuous - simple past (regular and irregular verbs) - Form the interrogative with - verbs: to be, to have, to do - relative pronouns: who, what, where, when, why, how - Write statements in the affirmative and negative (including contractions) - Use the possessive - Use the

affirmative and the negative form of the imperative - Produce compound and complex sentences - Use adverbs of time and place - Use punctuation correctly -in particular the semi-colon, colon, parenthesis, dash and hyphen - Use quantifiers, e.g. much, many, a lot of, plenty, a few, little, a little, several - Use prepositions of time, e.g. until, since, for, during, after, before, while - Use nouns - used only in the singular, e.g. news, athletics, physics - used only in the plural, e.g. jeans, trousers - Use link words in - summing up, e.g. therefore, so, to conclude - comparing and contrasting, e.g. the same as, even more important, however, on the other hand - Identify the infinitive form - the present perfect simple - the past perfect simple - the simple present and present continuous with future time reference - Know when to use, make and do.

UNIT: 5

Use link words, e.g. furthermore, not only...but also, for instance, however, yet, either...or, whether...or, one or the other, namely, supposing - Use modal verbs: can, could, must (had to), shall, should, will, would, may, might in the affirmative, negative and interrogative forms - Use the passive - Use the following tenses - present perfect continuous - past perfect continuous - Use -ing and -ed clauses as in - Use affixes - negative suffixes -less - negative prefixes: il-, im-, in-, ir-, dis-, mis-, un.- change from direct to indirect/reported speech and from indirect/reported to direct speech - Use adverbs (in the comparative and superlative form) - Use adverbs of probability / degrees of certainty.

Reference Book

- Effective english communication: by krishnamohan
- Learning English: A Communicative Approach - Board of Editors

Subject	4 : Computer Network
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Goal: Knowledge on Computer Networks and technologies like broadband and Bluetooth.

UNIT-I:

Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. **Network Software:** Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. **Reference Models:** OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

UNIT-II:

PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. **Wireless Transmission:** Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. **Communication Satellites:** Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

UNIT-III:

DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. **MEDIUM-ACCESS CONTROL SUB LAYER:** Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

UNIT-IV:

NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. **TRANSPORT LAYER:** Elements of Transport Protocols – Internet Transport Protocols: TCP.

UNIT-V:

APPLICATION LAYER: DNS – E-mail. **NETWORK SECURITY:** Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

TEXTBOOKS:

1. COMPUTER NETWORKS – Andrew S. Tanenbaum, 4th edition, PHI.
(UNIT-I:1.2-1.4 UNIT-II:2.2-2.4 UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)

REFERENCE BOOKS:

1. DATA COMMUNICATION AND NETWORKS – Achyut Godbole, 2007, TMH.
2. COMPUTER NETWORKS Protocols, Standards, and Interfaces – Uyless Black, 2nd ed, PHI.

Subject	Practical 1: C Lab
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1. Write a Program to create Array Creation & Operations.
2. Write a Program to create Stack and Queue Operations.
3. Write a Program to create Polynomial Addition.
4. Write a Program to create Linear Search.
5. Write a Program to create Binary Search.
6. Write a Program to create Linked List
7. Write a Program to create Quick Sort.
8. Write a Program to create Merge Sort.
9. Write a Program to create Bubble Sort.

Semester	2
Subject	5: Software Engineering

Goal:

To enable the students to learn the different phases of Software Engineering.

Unit – I:

Introduction – The evolving role of s/w – s/w crisis – s/w myths – s/w engineering technology – the s/w process – s/w process models – the prototyping model.

Unit– II:

Requirements Engineering – System modeling – requirements analysis and elicitation for s/w – s/w prototyping – specification – mechanics of structured analysis – data dictionary – elements of analysis model – data modeling – functional modeling and information flow.

Unit – III:

Object oriented design – design for object – oriented systems – the system design process – s/w design and s/w engineering – the design process principles – design concepts – effective modular design – design heuristics for effective modularity.

Unit – IV:

Mapping requirements into a s/w architecture – transform mapping – transaction mapping – user interface design – interface design activities – s/w testing techniques –s/w testing fundamentals – white box testing – Basis path testing – control structure testing – Black Box testing.

Unit – V:

Software testing strategies – A strategic approach to s/w testing – validation testing –system testing – the art of debugging – s/w quality – s/w reengineering – reverse engineering – Building blocks for CASE – a taxonomy of CASE tools.

Reference Books:

1. Roger S Pressman, “Software Engineering”, 5th Edition. TMH Publishers.
2. Watts S Humphrey, “A discipline for Software Engineering”, Pearson Education Publishers, 2001.
3. Ian Somerville, “Software Engineering”, 6th Edition, Pearson Education.

Subject	6: Operating Systems
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Goal:

To enable the students to learn the Operating System, MS – DOS and UNIX.

Unit – I:

Introduction & process Concept: Definition of DOS – Early History – History of DOS & UNIX OS. Definition Of process – Process states – process states transition –Interrupt Processing – Interrupt classes – context switching – semaphores – deadlock & indefinite postponement.

Unit – II:

Storage management Real Storage: Real Storage management strategies –Contiguous Vs non-contiguous storage allocation – Fixed partition multiprogramming –Variable partition multiprogramming, Multiprogramming with storage swapping.**Virtual Storage:** Virtual storage management strategies – Page replacement strategies – Working sets – Demand paging – page size.

Unit – III:

Processor Management Job and Processor Scheduling: Preemptive Vs.No preemptive scheduling – Priorities – Deadline scheduling – FIFO – RR – Quantum size –SJF – SRT-HRN.

Distributed Computing: Classification of sequential and parallel processing – Array processors – Dataflow computers – Multiprocessing – Fault Tolerance.

Unit – IV:

Device and Information Management Disk Performance optimization: Operation of Moving head disk storage – Need for disk scheduling – Seek Optimization – FCFS –SSTF – SCAN- RAM Disks – Optical Disks.**File and Database systems:** File System – functions – organization – Allocating and freeing space – File descriptor – Access control matrix.

Unit – V:

MS – DOS: Introduction – Early History of MS – DOS – User’s view of MSDOS– the Systems view of MS-DOS – The future of MS-DOS.**UNIX:** Introduction – History – The Shell – The Kernel – File System – Process management – Memory Management – the Input/Output System.

Reference Books

1. H.M. Deitel, “Operating System”, Second Edition, Pearson Education Publ, 2003.
2. Achyut S Godbole, “Operating Systems”, TMH Publ, 2002.

Subject	7 : Relational Database Management Systems And SQL Concepts
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OBJECTIVES:

The purpose of this course is to equip the participants with the relevant quantitative tools and techniques for application in solving managerial problems. The focus of this course will be on applications of quantitative methods in business situations.

UNIT 1:

RDBMS Introduction three layered Architecture Data Modeling Object Oriented and Record Based Models ER Model ER diagram.

UNIT 2:

Hierarchic Model, Network and relational Model, Normalisation Techniques - First Normal Form, second normal form and the third normal form.

UNIT 3:

Codd’s 12 rules for relational Database Transaction Management Properties of a transaction commit and Rollback concurrency control Locking, Access Control.

UNIT 4:

Date Integrity, Auditing Backup and Recovery Data Dishonor client server and ODBC connectivity Distributed Databases.

UNIT 5:

SQL language - DDL, DML, DCL select, insert, Update, Delete, Simple queries with use of WHERE, ORDER BY, GROUP BY, View, Create alee, Drop integrity constrains.

BOOKS RECOMMENDED

1. Schneider, Robert D & J. R. Garbus Optimizing SQL

Subject	8: Web Scripting Languages
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UNIT -1

Web Design Principles - Basic principles involved in developing a web site - Planning process - Five Golden rules of web designing - Designing navigation bar - Page design - Home Page Layout - Design Concept

UNIT -2

Basics in Web Design- Brief History of Internet - What is World Wide Web - Why create a web site - Web Standards - Audience requirement.

UNIT-3

Introduction to HTML- What is HTML- HTML Documents- Basic structure of an HTML document- Creating an HTML document- Mark up Tags- Heading-Paragraphs- Line Breaks- HTML Tags.

UNIT-4

Elements of HTML- Introduction to elements of HTML- Working with Text- Working with Lists, Tables and Frames- Working with Hyperlinks, Images and Multimedia- Working with Forms and controls.

UNIT -5

Introductions to Cascading Style Sheets- Concept of CSS- Creating Style Sheet- CSS Properties- CSS Styling(Background, Text Format, Controlling Fonts)- Working with block elements and objects- Working with Lists and Tables- CSS Id and Class- Box Model(Introduction, Border properties, PaddingProperties, Margin properties)- CSS Advanced(Grouping, Dimension, Display,Positioning, Floating, Align,Pseudo class, Navigation Bar,Image Sprites, Attribute sector)- CSS Color- Creating page Layout and Site Designs.

Reference Book:

Web Technologies: HTML, Javascript- Wiley

Subject	Practical 2:RDBMS Lab
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1. (DDL) command in RDMS
2. Data manipulation language and
3. DCL command in RDMS
4. High level language extension
5. High level language extension with triggers
6. Procedure and function
7. Embedded SQL
8. Data base design using Normalization
9. Design and implementation of Library Information System
10. Design and implementation of Banking System
11. Design and implementation of Pay roll processing

Subject	PROJECT
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