Rajiv Gandhi Proudhyogiki Vishwavidyalaya, Bhopal
Computer Application (MCA- Dual Degree) III Semester

Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory Slot)			Maximum Marks (Practical Slot)		Total Marks
		L	T	P		End Sem. Marks	Test (Two)	Assign. /Quiz	End Semester Practical/Viva	Practical Record /Assign./Quiz/ Presentation	
MCA DD -301	System Software	5		-	5	70	20	10	-	-	100

UNIT I INTRODUCTION:
System software and machine architecture – The Simplified Instructional Computer (SIC) - Machinearchitecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming.

UNIT II ASSEMBLERS
Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures -Machine dependent assembler features - Instruction formats and addressing modes – Program relocation- Machine independent assembler features - Literals – Symbol-defining statements – Expressions - Onepass assemblers and Multi pass assemblers - Implementation example - MASM assembler.

UNIT III LOADERS AND LINKERS
Basic loader functions - Design of an Absolute Loader – A Simple Bootstrap Loader - Machine dependentloader features - Relocation – Program Linking – Algorithm and Data Structures for Linking Loader -Machine-independent loader features - Automatic Library Search – Loader Options - Loader designoptions - Linkage Editors – Dynamic Linking – Bootstrap Loaders - Implementation example - MSDOS linker.

UNIT IV MACRO PROCESSORS
Basic macro processor functions - Macro Definition and Expansion – Macro Processor Algorithm and data structures - Machine-independent macro processor features - Concatenation of Macro Parameters –Generation of Unique Labels – Conditional Macro Expansion – Keyword Macro Parameters-Macro withinMacro- Implementation example - MASM Macro Processor – ANSI C Macro language.

UNIT V SYSTEM SOFTWARE TOOLS
Text editors - Overview of the Editing Process - User Interface– Editor Structure. - Interactive debuggingsystems - Debugging functions and capabilities – Relationship with other parts of the system – User-Interface Criteria.

REFERENCES

1. Leland L. Beck, "System Software – An Introduction to Systems Programming", 3rd Edition, Pearson Education Asia, 2000.

2. D. M. Dhamdhere, "Systems Programming and Operating Systems", Second Revised Edition, Tata McGraw-Hill, 1999.

3. John J. Donovan "Systems Programming", Tata McGraw-Hill Edition, 1972.
4. John R. Levine, Linkers & Loaders – Harcourt India Pvt. Ltd., Morgan Kaufmann Publishers, 2000.

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MCA DD -302	Computer Oriented Numerical Methods	5		-	5	70	20	10	-	-	100

MCADD-302 Computer Oriented Numerical Methods

UNIT – I

Numerical approximation, Representation of integers and real numbers in computers, fixed and floating point arithmetic, normalized floating point numbers, Round off and truncation errors, relative and absolute errors. Iterative methods: Zeros of single transcendental equations and zeros of polynomials using bisections, false position, Newton Raphson methods. Convergence of solutions.

Unit – II

Interpolation : Forward, Backward, central (Striplings) and divided difference formulas, lagrangie's interpolation, Inverse interpolation for equal and unequal intervals. Numerical Integration : Newton Cote's formula, Simpson's 1/3rd and 3/8th rule. Gauss Legendre (two and

three points) integration formula.

Unit – III

Simultaneous linear equations: Solutions of simultaneous linear equations – Gauss elimination method and pivoting, ill conditioned equations and refinement of solutions, Gauss-seidal iterative methods. Solution of differential equation: Runge-Kutta fourth order method. Euler's method, Picard's, Taylor's series.

Unit - IV

Distributions : Binomial distribution, Poisson distribution and normal distribution, χ^2 distribution, Rectangular distribution, hypergeometric distribution.

Unit -V

Hypothesis testing for sampling: Small samples, t, z and f tests. Chi-square test. Large samples : Comparision of large samples, testing the significance of the difference between the means of two large samples.

BOOKS

1. E. Balaguruswamy "Numerical Methods" , TMH, ISBN – 07-463311-2, 1999.
2. B.S. Grewal "Numerical Methods in Engineering & Science".
3. Miller "Mathematical Statistics with applications" 7 ed, Pearson.
4. Gupta & Kapoor, Introduction to Statistics, Chand & Co.
5. V. Rajaraman "Computer Oriented Numerical Methods".
6. M.Ray and Har Swarup Sharma " Mathematical Statistics".

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REFERENCE BOOKS

1. Iyengyr M.K. Jain & R.K. Jain "Numerical Methods for scientific and engineering computation", Wiley Eastern (New Age), 1995
2. E.V. Krishnamurthy & S.K. Sen "Computer Based Numerical Algorithms".
3. Miller & Freund's "Probability and Statistics for Engineers".

Note : Paper is to be set unit wise with internal choice & emphasis is to be given on computerized implementation.

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MCA DD -303	Web Designing in HTML	5		-	5	70	20	10	-	-	100

MCADD-303 Web Designing in HTML

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

UNIT-III
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.
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-IV
Introduction 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, Padding, Properties, Margin properties)
5.9 CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align,Pseudo class, Navigation Bar, Image Sprites, Attribute sector), CSS Color, Creating page Layout and Site Designs.

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UNIT-V
Introduction to Web Publishing or Hosting: Creating the Web Site, Saving the site, Working on the web site, Creating web site structure, Creating Titles for web pages, Themes-Publishing web sites.

BOOKS
1. A beginner's guide to HTML NCSA,14th May,2003
2. Murray,Tom/Lynchburg Creating a Web Page and Web Site College,2002
3. Web Designing & Architecture-Educational Technology Centre University of Buffalo
4. Steven M. Schafer HTML, XHTML, and CSS Bible, 5ed Wiley India
5. John Duckett Beginning HTML, XHTML, CSS, and JavaScript Wiley India Ian Pouncey,
6. Richard York Beginning CSS: Cascading Style Sheets for Web Design Wiley India
7. Kogent Learning Web Technologies: HTML, Javascript Wiley India

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MCA DD -304	Aptitude Skills and Reasoning	5		-	5	70	20	10	-	-	100

UNIT-1

Quantitative Apptitude: H.C.F. and L.C.M.,
Average ,
Percentage ,
Profit and loss ,
Simple and Compound interest

UNIT-2:

Mixture and Allegation,
Time , speed and distance ,
Problems on trains
Problems on boats and streams
Time and work,
Permutation and Combination,
Data Interpretation

UNIT-3

Series ,
Directions and distances,
Coding Decoding

UNIT-4

Blood relation,
Symbol and notations ,
Ranking and arrangement

UNIT5

Venn-diagram,
Cube and dice ,
Syllogism ,
Calender

Books:
A Modern Approach to Verbal & Non Verbal Reasoning
Author: By RS Agarwal, Publisher: S Chand Books
Code / ISBN No.: 9788121905510
Hand Book of Reasoning Quantitative Aptitude 2009
Author:P.K.Aggarwal **Publisher: S Chand Books**
Code / ISBN No.: 9788121924283.

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MCA DD -305	DBMS	5		-	5	70	20	10	-	-	100

MCADD-305 Data Base Management System

UNIT-I

Introduction: Advantage of DBMS approach, various view of data, data independence, schema and subschema, primary concepts of data models, Database languages, transaction management, Database administrator and users, data dictionary, overall system architecture.

ER model: basic concepts, design issues, mapping constraint, keys, ER diagram, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema, reduction of ER schema to tables.

UNIT-II

Domains, Relations and Keys: domains, relations, kind of relations, relational database, various types of keys, candidate, primary, alternate and foreign keys.

Relational Algebra & SQL: The structure, relational algebra with extended operations, modifications of Database, idea of relational calculus, basic structure of SQL, set operations, aggregate functions, null values, nested sub queries, derived relations, views, modification of Database, join relations, DDL in SQL.

UNIT-III

Functional Dependencies and Normalization: basic definitions, trivial and non trivial dependencies, closure set of dependencies and of attributes, irreducible set of dependencies, introduction to normalization, non loss decomposition, FD diagram, first, second, third Normal forms, dependency preservation, BCNF, multivalued dependencies and fourth normal form, Join dependency and fifth normal form.

UNIT-IV

Database Integrity: general idea. Integrity rules, domain rules, attribute rules, relation rules, Database rules, assertions, triggers, integrity and SQL.

Transaction, concurrency and Recovery: basic concepts, ACID properties, Transaction states, implementation of atomicity and durability, concurrent executions, basic idea of serializability, basic idea of concurrency control, basic idea of deadlock, failure classification, storage structure types, stable storage implementation, data access, recovery and atomicity- log based recovery, deferred Database modification, immediate Database modification, checkpoints.

Distributed Database: basic idea, distributed data storage, data replication, data fragmentationhorizontal, vertical and mixed fragmentation

UNIT-V

Emerging Fields in DBMS: object oriented Databases-basic idea and the model, object structure, object class, inheritance, multiple inheritance, object identity, data warehousing- terminology, definitions, characteristics, data mining and it's overview, Database on www, multimedia Databases-difference with conventional DBMS, issues, similarity based retrieval, continuous media data, multimedia data formats, video servers.

Storage structure and file organizations: overview of physical storage media, magnetic disks performance and optimization, basic idea of RAID, file organization, organization of records in files, basic concepts of indexing, ordered indices, basic idea of B-tree and B+-tree organization

Network and hierarchical models: basic idea, data structure diagrams, DBTG model, implementations, tree structure diagram, implementation techniques, comparison of the three models.

BOOKS

1. A Silberschatz, H.F Korth, Sudersan "Database System Concepts" –, MGH Publication.
2. C.J Date "An introduction to Database Systems" –6th ed.
3. Elmasri & Navathe "Fundamentals of Database systems" – III ed.
4. B.C. Desai. "An introduction to Database systems" BPB
5. Raghurama Krishnan "Database Systems" TMH

Note : Paper is to be set unit wise with internal choice.