VEER NARMAD SOUTH GUJARAT UNIVERSITY

Master of Computer Application
Semester - I
Effective from: July - 2012

Paper No.: 101
Paper Title : Computer Organization and Fundamentals of Operating Systems

1. Memory, Number System & Basic Computer Architecture

1.1 RAM, ROM, PROM, EPROM etc, Virtual Memory, Cache Memory
1.2 Secondary Storage Devices
1.3 Binary, Hexadecimal, Octal Number System
1.4 Integer & Floating Point representation
1.5 Block Diagram of CPU and execution process.
1.6 Introduction to bus architecture
1.7 H/W parts of PC
1.8 I/O devices: Keyboard, Display, Pointing devices, MODEM, Scanners, OMR, OCR, CD-ROM, DVD, printers.

2. Operating System Concepts

2.1 Evolution of Operating System & History
2.2 Needs of an Operating System
2.3 Single User & Multi-User Operating System
2.4 Elements of an Operating System

3. Single User Operating System

3.1 BIOS, POST Operation, Vector Table, Device Drivers, TSR Programs
3.2 System Files
3.3 Configuration Files
3.4 Disk Architecture
3.5 Commands
3.6 Introduction to Windows

4. Multiuser Operating System

4.1 Introduction to Windows Server, UNIX/LINUX

5. Introduction to System S/W Components

5.1 Assemblers
5.2 Compilers
5.3 Linker & Loader

6.[Self Study]

Comparison of two multi – user o.s.

Reference Books:

1. Fundamentals of Computer – V. RajaRaman
2. How Computers work - Ron White – Techmedia
3. Introduction to computers:- Peter Norton – TMH
4. Understanding Operating Systems - 4th Ed- Flynn – Thomson Course Technology
5. Inside IBM PC - Peter Norton - PHI
6. Unix Concepts And Application - Das – McGrawHill
7. MS DOS 6.22 – Comdex Computer Publishing
8. Netware for dummies - Dummy Series
9. Advanced MSDOS - Ray Duncon - McGraw Hill
10. Advanced Unix -A Programmer's Guide - Stephen Prata - SAMS
11. User Manual of DOS, Windows-Windows-NT, Netware
12. Operating Systems - Stallings – PHI
13. System Programming & Operating System – Dhamdhere- TMH
14. Compilers Principles Techniques & Tools – Aho A – Addison Wesley

Note: 5% weight may be given to self study topic in the final exams

VEER NARMAD SOUTH GUJARAT UNIVERSITY

Master of Computer Application
Semester – I
Effective from: July - 2012

Paper No. : 102
Paper Title : Database Management System

1. Basic Concepts of Database Management System.
- 1.1 Fundamental concepts of File and databases
- 1.2 Purpose of database system
- 1.3 Introduction to Data models
  - 1.3.1 Conceptual Data model – E- R model
  - 1.3.2 Record based Data models – Hierarchical, Relational, Network

2. Features of Database Systems
- 2.1 Data abstraction & Data independence
- 2.2 Type of Database Languages: DDL, DML,TCL
- 2.3 Database users: Database manager, administrator and Users
- 2.4 Overall system structure.

3. Structure of relational database model
- 3.1 Relation scheme, Relation, Views
- 3.2 Notion of Keys
- 3.3 Pure query language: relational algebra

4. Relational Commercial Language - SQL

5. Commercial RDBMS: Microsoft Access, DB2 & MySQL
- 5.1 Basic Architecture of DBMS
- 5.2 Working with databases and tables.
- 5.3 Managing constrains and relationships.
- 5.4 Using SQL queries.

6. Integrity Constrains
- 6.1 Domain Constrains, key Constrains, Referential Integrity Constrains
- 6.2 Functional Dependencies

7. Relational Database Design
- 7.1 Pitfalls in relational database design
- 7.2 Normalization using Functional Dependencies
- 7.3 Normalization using Multi valued Dependencies
- 7.4 Normalization using Join Dependencies
- 7.5 Domain – Key normal form

8. [Self Study]
Security features provided by access, DB2 and MySQL

Reference Books

1. Database System Concepts – SILBERSCHATZ, KORTH, SUDARSHAN- McGraw- Hill
2. An introduction to Database Systems- C.J.DATE – Addison Wesley
3. Database System: A practical approach to design implementation and management – THOMAS CONNOLLY, CAROLYN BEGG, Pearson Education
4. Access - The Complete Reference – Virginia Andersen – McGraw - Hill
5. Access Database Design & Programming – Steven Roman - O' Reilly
6. Microsoft Access: Bible – Cary N. Prague
7. The Definitive Guide to MySQL 5, Micheal Kofler, Apress
8. MySQL in a Nutshell, Russell Dyer, O'Reilly

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VEER NARMAD SOUTH GUJARAT UNIVERSITY

Master of Computer Application
Semester – I
Effective from: July – 2012

Paper No. : 103
Paper Title : Computer Programming & Programming Methodology

1. **Algorithm & Flowcharting**

2. **Programming Languages & Structured Programming**
   - 2.1 Structured Programming
   - 2.2 Levels of Programming languages
   - 2.3 Compiler/Interpreter

3. **Program Bugs & Testing**
   - 3.1 Program Bugs
   - 3.2 Preparing Test data
   - 3.3 Functional & Structural Testing

4. **Constants & Variables**
   - 4.1 Character Set
   - 4.2 Constants - needs & definition
   - 4.3 Variables - needs & definition
   - 4.4 Storage Class
   - 4.5 Scope of Variables

5. **Expressions & Operators**
   - 5.1 Operators : Assignment, Arithmetic, Increment, Decrement, Relational, Logical, Bitwise, Conditional
   - 5.2 Expression
   - 5.3 Evaluation & Assignment of Expression
   - 5.4 Elementary built-in functions.

6. **Input & Output Functions**

7. **Jumping, Branching & Looping Statements**

8. **String Built-in functions**

9. **Array**

10. **Structure Union & Enumerated data types**

11. User Defined Functions

- 11.1 Call by value
- 11.2 Passing Structures & Array
- 11.3 Recursion

12. Pointer's

- 12.1 Basics of Pointers
- 12.2 Pointer Arithmetic
- 12.3 Pointer array
- 12.4 Call by reference in User Defined Functions
- 12.5 Multi-Dimensional arrays using pointers

13. Files

- 13.1 Reading & Writing from a file
- 13.2 Reading & writing structures
- 13.3 Random access of a file

14. Pre-processor

- 14.1 # and ## operator
- 14.2 Pre-processor statements
- 14.3 Macro definitions

15 [Self Study]

- 15.1 Pointers to Functions
- 15.2 Functions with variable arguments

Reference Books:

1. C Language Programming - Byron Gottfried - TMH
2. Pointers in C – Yashwant Kanitkar
3. Programming ANSI C – E Balagurusamy –
4. Let US 'C' – Yashwant Kanitkar
5. C Programming Language - Karnighan & Ritchie – TMH
6. 'C' Odyssey (6 Volumes) - Vijay Mukhi - PHI
7. The Complete Reference - C - Herbert Schildt, Tata Mc Graw Hill
8. Structured programming concepts - La Budde - (Mc.Graw HIll)
9. Programming in 'C' - Stephan Kochan - CBS
10. Mastering Turbo C - Kelly & Bootle – BPB
11. Mastering Turbo C - Stan Kelly - BPB

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VEER NARMAD SOUTH GUJARAT UNIVERSITY

Master of Computer Application
Semester - I
Effective from: July – 2012

Paper No. : 104
Paper Title : Enterprise Resource Planning & Financial Management

1. Enterprise Resource Planning

- 1.1. Introduction
- 1.2. Modules
  - 1.2.1. Finance/Accounting
    - 1.2.1.1. General Ledger
    - 1.2.1.2. Payables
    - 1.2.1.3. Cash Management
    - 1.2.1.4. Fixed Assets
    - 1.2.1.5. Receivables
    - 1.2.1.6. Budgeting
  - 1.2.2. Human Resources
    - 1.2.2.1. Payroll
    - 1.2.2.2. Training
    - 1.2.2.3. Recruiting
    - 1.2.2.4. Diversity Management
  - 1.2.3. Manufacturing
    - 1.2.3.1. Bill of Materials
    - 1.2.3.2. Work Orders
    - 1.2.3.3. Scheduling
    - 1.2.3.4. Workflow Management
    - 1.2.3.5. Quality Control
    - 1.2.3.6. Cost Management
    - 1.2.3.7. Manufacturing Process
    - 1.2.3.8. Manufacturing Projects
    - 1.2.3.9. Manufacturing Flow
    - 1.2.3.10. Activity Based Costing
    - 1.2.3.11. Product Life Cycle Management
  - 1.2.4. Supply Chain Management
    - 1.2.4.1. Order to Cash
    - 1.2.4.2. Inventory
    - 1.2.4.3. Order Entry
    - 1.2.4.4. Purchasing
    - 1.2.4.5. Product Configurator
    - 1.2.4.6. Supply Chain Planning
    - 1.2.4.7. Supplier Scheduling
    - 1.2.4.8. Inspection of Goods
    - 1.2.4.9. Claim Processing

1.2.5. Project Management
- 1.2.5.1. Costing
- 1.2.5.2. Billing
- 1.2.5.3. Time & Expense
- 1.2.5.4. Performance Units
- 1.2.5.5. Activity Management

2 Financial Management
- 2.1 Meaning and role
- 2.2 Working Capital Requirements
- 2.3 Capital Budgeting
- 2.4 Source of Finance
- 2.5 Ratio Analysis
  - 2.5.1 Meaning
  - 2.5.2 Advantages
  - 2.5.3 Limitations
  - 2.5.4 Types of ratios and their usefulness.

3 Fund Flow Statement
- 3.1 Meaning of the terms - fund, flow and fund, working capital cycle
- 3.2 Preparation and interpretation of the fund flow statement.

4 Costing
- 4.1 Nature, importance, basic principles and Cost sheet

5 [Self Study]
- 5.1 Comparison of different commercial ERP available.

Reference Books:

1. Mahadeo Jaiswal, Ganesh Vanapalli: Textbook of Enterprise Resource Planning, McMillan Pub.
2. Van Home, James, C.: Financial Management & Policy, prentice Inc.
3. Shukla & Grewal: Advanced Accounts
4. S.N.Maheshwari: Management Accounting and Financial Control
5. S.N.Maheshwari: Problems & Solutions in Management Accounting & Financial Management
6. S. M. Maheshwari: Cost and Management Accounting, Sultan Chand & Sons Pub.

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VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.C.A.
Semester - I
Effective from: July - 2012

Paper No. : 105
Paper Title : Mathematical Foundation of Computer Science

1. Statistics
- 1.1 Concepts of Random Variable
- 1.2 Probability & Probability Distribution
- 1.3 Mean & Variance of Probability Distribution
- 1.4 Statistical data
- 1.5 Frequency Distributions
- 1.6 Mean, Variance & Standard Deviation of Data
- 1.7 Bivariate data
- 1.8 Concept of Dependent & Independent Variable
- 1.9 Correlation
- 1.10 Linear Regression

2. Linear Algebra
- 2.1 Matrices
- 2.2 Elementary matrix operations
- 2.3 Determinants
- 2.4 Rank of matrix
- 2.5 Adjoin & Inverse of a matrix
- 2.6 Matrix representation of simultaneous linear equation
- 2.7 Solution of simultaneous linear equations using Cramer's Rule

3. Graph Theory
- 3.1 Definition & Representation of graphs
- 3.2 Properties of general Graphs
- 3.3 Matrix representation of Graphs
- 3.4 Trees and their properties.

4. [Self Study]
Problem solving using Excel/SPSS

Reference Books:

1. Introduction to Mathematical Statistics - Hogg R V & Craig A L - Tata Mc-Graw Hill
2. An Introduction to the Theory of Statistics - Yule U G & Kendall M G - Chailes Griffin & Co.
3. Fundamental of Mathematical Statistics - Kapoor & Gupta - S Chand & Co.
4. Matrix and Linear Algebra - K B Datta - PHI
5. Linear Algebra - A R Rao & P Bhimashankaram - Tata McGraw Hill
6. Graph Theory - Harry F - Addison Wesley Publication

7. Discrete Mathematical Structures with Applications to Computer Science – Trembley J P & Manohar R P - McGraw Hill

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M.C.A.
Semester - I
Effective from: July - 2012

Paper No. : 106
Paper Title : Software Lab

Practical based on Paper No: 102 (Microsoft Access, DB2 & MySQL)

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M.C.A.
Semester - I
Effective from: July - 2012

Paper No. : 107
Paper Title : Programming Skills-I

Practical based on Paper No: 103 (C Language)