

VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.C.A.

Semester - I

Effective From : July - 2006

PAPER NO. : 101

Paper Title : COMPUTER ORGANIZATION & 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 & MultiUser 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-NT, UNIX
 - 4.2 LAN Fundamentals
 - 4.3 Basic Commands of NETWARE, Windows-NT, Unix
- 5.[Self Study]

Comparison of two multi – user o.s.

Reference Books :

1. Operating Systems Concepts - James Peterson- McGraw Hill
2. Inside IBM PC - Peter Norton - PHI
3. Advanced MSDOS - Ray Duncon - McGraw Hill
4. Advanced Unix -A Programmer's Guide - Stephen Prata - SAMS
5. User Manual of DOS, Windows-Windows-NT, Netware
6. Netware for dummies - Dummy Series
7. Operating Systems - Stallings - PHI
8. Unix Concepts And Application - Das - McGrawHill
9. How Computers work - Ron White - Techmedia
10. Introduction to computers :- Peter Norton - TMH

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

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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 – base Data models – Hierarchical. Relation , 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 instant, Viws
 - 3.2 Notion of Keys
 - 3.3 Pure query language : relational algebra
4. **Relational Commercial Language - SQL**
5. **Commercial RDBMS : Microsoft Access**
 - 5.1 Basic Architecture as DBMS
 - 5.2 Working with databases and tables.
 - 5.3 Managing constrains and relationships.
 - 5.4 Using SQL queries.
 - 5.5 Introduction to other object : Forms , Reports, Macros, etc.
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.

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

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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 & Operations**
 - 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 Pointer of function**
- 13 [Self Study]**
 - Multi – Dimensional arrays using pointers**

Reference Books :

- 1. Structured programming concepts - La Budde - (Mc.Graw Hill)**
- 2. C Programming Language - Kernighan & Ritchie - TMH**
- 3. 'C' Odyssey (6 Volumes) - Vijay Mukhi - PHI**
- 4. Programming in 'C' - Stephan Kochan - CBS**
- 5. Mastering Turbo C - Kelly & Bootle - BPB**
- 6. C Language Programming - Byron Gottfried - TMH**
- 7. Mastering Turbo C - Stan Kelly - BPB**
- 8. The Complete Reference - C - Herbert Schildt, Tata Mc Graw Hill**

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Effective From : July - 2006

Paper - 104 - Accounting and Financial Management

1. Accounting :

- 1.1 Principles, concepts and conventions**
- 1.2 Double entry system of accounting, ledger & preparation of Trial balance**
- 1.3 Subsidiary Books**

2. Final Accounts :

- 2.1 Trading, profit and loss accounts**
- 2.2 Balance sheet of sole proprietary concern with normal closing entries.**
- 2.3 Introduction to manufacturing account.**
- 2.4 Limited company - Schedule VI**
- 2.5 Accounts of Non-profit organization**

3. FINANCIAL MANAGEMENT :

- 3.1 Meaning and role.**
- 3.2 Working Capital Requirements**
- 3.3 Capital Budgeting**
- 3.4 Source of Finance**

4. RATIO ANALYSIS :

- 4.1 Meaning**
- 4.2 Advantages**
- 4.3 Limitations**
- 4.4 Types of ratios and their usefulness.**

5. FUND FLOW STATEMENT :

- 5.1 Meaning of the terms - fund, flow and fund, working capital cycle**
- 5.2 Preparation and interpretation of the fund flow statement.**

6. COSTING :

- 6.1 Nature, importance, basic principles and Cost sheet**

7. [Self Study]

Introduction to computerised accounting system :

- 7.1 Coding**
- 7.2 Logic and codes required**
- 7.3 Master files, transaction files**
- 7.4 Introduction to documents used for data collection**
- 7.5 Processing of different files and output obtained.**

REFERENCE BOOKS :

- (1) Kellock, J. : Elements of Accounting, Heinemann, 1978.**
- (2) Van Home, James, C. : Financial Management & Policy, prentice Inc.**
- (3) R.L.Gupta : Advanced Accountancy**
- (4) Shukla & Grewal : Advanced Accounts**
- (5) S.N.Maheshwari : Management Accounting and Financial Control**
- (6) S.N.Maheshwari : Problems & Solutions in Management Accounting & Financial Management**
- (7) A. Raman : Advanced Accountancy, Himalya Pub. House**
- (8) Mukharji Hanif : Modern Accountancy, Vol. I and II, THM Pub.**
- (9) S. M. Maheshwari : Cost and Management Accounting, Sultan Chand & Sons Pub.**

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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 Adjoint & 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]

Matrix operations using Excel

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 - Chales 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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Paper No. : 106

Paper Title : Practical (Based on Paper No. 101 to 103)