

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**Semester - II**

Effective From July-2003

**Paper No : 201**  
**Paper Title : Maths – II.**  
**Prerequisite : Matrix Theory & Discrete Mathematics.**

**[L : 4, P : 0 Hrs]**

**1. Basic concept of Graph Theory:**

Definition of (undirected) graphs: Basic Terminology; Types of undirected graphs; Weighted graphs; Multi graphs, Digraphs; Some applications of graph theory: NTLN's Graph isomorphism; Sub graphs; Walks, Paths and Circuits: Connected graphs and components; Operations on graphs; Fusion of vertices.

**2. Trees:**

Definition of a tree; Some important properties; Cut vertices edges; Distance and center; Rooted and Binary trees; Spanning trees; Kruska's algorithm; Prim's algorithm; computer implementation; connectivity; Shortest path problems; (BFS and Dijkstra's Algorithm); separability.

**3. Euler and Hamiltonian Graphs:**

Eulerian lines and Euler graphs; Euler's theorem on the existence of Eulerian paths and circuits; Hamiltonian paths and Hamiltonian graphs; The traveling salesman problem; TWO optimal algorithm; The colset insertion algorithm.

**4. Planar graphs:**

Definition; Plane representation of a graph; Kuratowski's graphs; Euler's formula; Detection of planarity.

**5. Matrix representation of graphs:**

Incidence matrix; path matrix; Adjacency matrix; Properties; Algorithm (WARSH ALL & MINIMA); Some types of digraphs; Digraphs and binary relation; relation matrix.

**Main Readings:**

1. N. Deo: Graph Theory with applications to engineering and computer science; Prentice – hall Inc. (1974).
2. K.R. Parthasarthy: Basic Graph theory; Tata McGraw Hill pub. Comp. Ltd; new Delhi (1994)
3. F. Harry: Graph Theory; Addison – Wesley Pub. Comp. (1972).
4. J.P. Trembly & R.P. Manohar: Discrete Mathematical structures with applications to Computer Science; McGraw Hill (1975).
5. B. Kolman; R.C Busby & S. Ross: Discrete Mathematical structures; Prentice Hall of India Pvt. New Delhi (2001).

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**2<sup>nd</sup> Semester Syllabus**

**Paper No : 202**  
**Paper Title : “C” Programming.**

**[L : 4, P : 0 Hrs]**

- 1. Introduction**
  - 1.1. Language
  - 1.2. Language Structure
  - 1.3. Various options of Compiler
- 2. Constants & Variables**
  - 2.1. Character Set
  - 2.2. Constants - needs & definition
  - 2.3. Variables - needs & definition
- 3. Expressions & Operations**
  - 3.1. Operators
  - 3.2. Expression
  - 3.3. Evaluation & Assignment of Expression
  - 3.4. Elementary built-in functions.
- 4. Input & Output Functions**
- 5. Jumping, Branching & Looping Statements**
- 6. String & Mathematical Built-in functions**
- 7. User Defined Functions**
  - 7.1. Call by value & by reference
  - 7.2. Passing Structures & Arrays
  - 7.3. Recursion
- 8. Program Structure**
  - 8.1. Storage Classes
  - 8.2. Automatic Variables
  - 8.3. External (Global) Variables.
  - 8.4. Static Variables.
- 9. Array**
  - 9.1. Defining & Processing an Array.
  - 9.2. Passing Arrays to a Function
  - 9.3. Multidimensional Arrays.
- 10. Pointers**
  - 10.1. Pointers and Memory Storage
  - 10.2. Operations on Pointers
  - 10.3. Arrays of Pointers, Pointer to Array
  - 10.4. Passing pointers to functions
  - 10.5. I/O statements related to file

## **11. Structure & Union**

### **12. Data files**

- 12.1. Opening and Closing a File.
- 12.2. Creating a Data File.
- 12.3. Processing a Data File.
- 12.4. Unformatted Data File.

### **Main Readings:**

- |                           |                     |       |
|---------------------------|---------------------|-------|
| 1. C Language Programming | - Byron Gottfried   | - TMH |
| 2. Programming in C       | - Balaguruswami     | - TMH |
| 3. Let Us "C"             | - Yashwant Kanitkar | - BPB |

### **Supplementary Readings:**

- |                             |                          |              |
|-----------------------------|--------------------------|--------------|
| 1. Pointers in "C"          | - Yashwant Kanitkar      | - BPB        |
| 2. "C" Programming Language | - Kernighan & Ritchie    | - TMH        |
| 3. The Sprit of "C"         | - Cooper H. & Mullish H. | - JAICO Pub. |
| 4. Programming in "C"       | - Stephan Kochan         | - CBS        |
| 5. Mastering Turbo "C"      | - Kelly & Bootle         | - BPB        |
| 6. Mastering Turbo "C"      | - Stan Kelly             | - BPB        |

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**2<sup>nd</sup> Semester Syllabus**

Effective From July-2003

**Paper No : 203**  
**Paper Title : Database Management System – I.**

**[L : 4, P : 0 Hrs]**

- 1. Database Package :**
  - 1.1. Introduction
  - 1.2. Data Base, Record, Field
  - 1.3. Capabilities and Limitations of Database system
- 2. Operators**
- 3. Database & Array Handling**
  - 3.1. Creation, Editing & Modification
  - 3.2. Sorting and Indexing
  - 3.3. Processing by writing programs
- 4. SET Commands**
- 5. Inbuilt Functions, User Defined Functions and Procedures**
- 6. Screen Handling, REPORT & LABEL Generation**
- 7. Generating Menu**
  - 7.1. POPUP Menus
  - 7.2. BAR Menus
  - 7.3. Pull Down Menus
- 8. Handling Memo Fields**
- 9. Introduction to Visual FoxPro.**

**Main Readings :**

1. Foxpro 2.5 made Simple - R. K. Taxali - BPB

**Supplementary Readings :**

1. Illustrated FoxPro 2.0 - Robert Granillo - BPB
2. Foxpro 2.0 the art of Visual Programming - Mukhis
3. Foxpro 2.6 for Windows Developer's Guide - Jeb Long - PHI.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**2<sup>nd</sup> Semester Syllabus**

Effective From June-2003

**Paper No : 204**  
**Paper Title : Basic Electronics.**

**[L : 4, P : 0 Hrs]**

**1. Fundamentals of Electrical Engineering**

- 1.1. Introduction of AC supply, Voltage, Current, Power, Frequency, Phase & DC supply
- 1.2. Passive components, Resistor, capacitor, Inductor & their properties, Simple R, L & C circuits.
- 1.3. Ohm's Law & Kirchoff's laws, Series & parallel connection of resistors & capacitors.
- 1.4. Heating effect due to current and need of fuses.
- 1.5. Voltage source, Ideal Volt source, conversion of voltage source into current source, Thevenin's theorem, maximum power transform theorem.
- 1.6. Electromagnetism, Flux, Flux density, Magnetic force, permeability, B-H curve
- 1.7. RC time constant
- 1.8. Electromagnetic Induction & transformer.
- 1.9. Resonance tank circuits

**2. Semi conductor Physics**

- 2.1. Properties of Semiconductors
- 2.2. Commonly used Semiconductors
- 2.3. Intrinsic & Extrinsic semi conductors
- 2.4. P Type & N Type semiconductors
- 2.5. PN Junction & Biasing

**3. Semiconductor Diode**

- 3.1. Diode, symbol, ratings, forward & reverse bias characteristics
- 3.2. Half wave rectifier, full wave rectifier, bridge rectifier, simple filter circuits
- 3.3. Zener Diode & its applications

**4. Transistor (Introductory concepts)**

- 4.1. PNP & NPN Transistor,
- 4.2. CB, CC, CE configurations & biasing
- 4.3. Transistor as an amplifier
- 4.4. Transistor as a switch
- 4.5. Alpha & Beta parameters
- 4.6. Frequency response & bandwidth
- 4.7. RC coupled Transistor Amplifier & Transformer coupled transistor amplifier - their circuit diagram.
- 4.8. Audio power amplifier
- 4.9. Push Pull amplifier
- 4.10. Principle of negative feedback in Amplifier & Gain.
- 4.11. Transistor tuned amplifier circuit
- 4.12. Oscillate Circuits, Crystal Oscillator
- 4.13. Different type of signals: Sine Wave, Saw Tooth, Triangular, Pulses.
- 4.14. Multivibrators

5. LED, Photo Diode, Photo Transistor, Thermistor, LDR, BCR, Triode, their Characteristics & Applications.
6. FET, MOSFET & Construction, Symbol & Basic Circuits, their Advantage over Transistor.

**Recommended Books:**

1. Principles of Electrical Engineering & Electronics - V.K. Mehta
2. Fundamentals of Electronics - Asok Singh
3. Electrical Technology - B.L.Theraja (Part I)
4. Electronics Principles - Malvino

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**2<sup>nd</sup> Semester Syllabus**

Effective From July-2003

**Paper No : 205**  
**Paper Title : Business System – I.**

**[L : 4, P : 0 Hrs]**

**1. Accounting :**

- 1.1 Principles, Concepts And Conventions
- 1.2 Double Entry System Of Accounting
- 1.3 Introduction Of Basic Books Of Accounts Of Sole Proprietary Concern
- 1.4 Control Accounts For Debtors And Creditors
- 1.5 Closing Of Books Of Accounts And Preparation Of Trial Balance(R)

**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, Final Accounts Of Partnership Firms- Admission, Retirement & Dissolution
- 2.4 Limited Company - Schedule Vi, Amalgamation

**3. Financial Management :**

- 3.1 Meaning And Role(R)
- 3.2 Working Capital Requirements
- 3.3 Capital Budgeting

**4. Ratio Analysis :**

- 4.1 Meaning
- 4.2 Advantages
- 4.3 Limitations
- 4.4 Types Of Ratios And Their Usefulness(R)

**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 And Basic Principles(R)

**7. Introduction To Computerized 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(R)

### **Main Readings :**

1. Elements Of Accounting, Heinemann, 1978 – Kellock.
2. Finance For The Non-Accountant, 2nd Edn(R) Basic Books, 1976. – Rockely.
3. Principles Of Financial Management, Prentice - Hall International. - Levy, And Sarnat.

### **Supplementary Readings :**

1. Financial Accounting , Prentice - Hall International. - Arnoel
2. Introduction To Financial Accounting. – Prentice Hall International. - Horngren, And Sundem.
3. Management Finance, 2nd Edn., Vakils Fefers & Simons Ltd., 1978. – Murthy.
4. Financial Management & Policy, Prentice Inc. - Van Home, James.
5. Advanced Accountancy. - R.L.Gupta
6. Advanced Accounts - Shukla & Grewal
7. Management Accounting And Financial Control - S. N. Maheshwari
8. Problems & Solutions In Management Accounting & Financial Management. - S. N. Maheshwari

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**2<sup>nd</sup> Semester Syllabus**

Effective From July-2003

**Paper No : 206**  
**Paper Title : Practicals.**

**[ P : 10 Hrs]**

**Practicals based on subjects no. 202, 203 & 204.**

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Years Integrated Course]**  
**B.Sc. (Information Technology)**  
**Semester: 2**

Paper Sr. No.	Paper Title	Teaching Schedule (Hours/Week)		University Exam Theory / Practical Duration   Hrs.   Marks		Internal Exam Theory / Practical Duration   Hrs.   Marks		Total Theory / Practical
		Lect	Prac	Hrs.	Marks	Hrs.	Marks	
201	Maths – II	4	-	3	70	2	30	100
202	“C” Programming	4	-	3	70	2	30	100
203	DBMS – I	4	-	3	70	2	30	100
204	Basic Electronics	4	-	3	70	2	30	100
205	Business System – I	4	-	3	70	2	30	100
206	Practicals		10	5	140	3	60	200
<b>Total</b>					490		210	700