

**Swami Ramanand Teerth Marathwad University,  
Nanded  
B.Sc IIIrd Year  
Computer Science (Optional)**

**(Semester Pattern)**

**( W.E.F. – June 2011)**

Paper No	Paper Title	Teaching Periods/week	Marks (University Evaluation)	Marks (Internal Evaluation)	Total Marks	Total periods	Duration of Examination
<b>Semester - V</b>							
XII	Software Engineering	03	40	10	50	40	03 Hours
<b>Elective</b> (any one) XIII-A	Relational Database Management System	03	40	10	50	40	03 Hours
XIII-B	<b>OR</b> E-Commerce	03	40	10	50	40	03 Hours
<b>Semester - VI</b>							
XIV	Programming in Visual Basic	03	40	10	50	40	03 Hours
<b>Elective</b> (any one)							
XV- A	Computer Network	03	40	10	50	40	03 Hours
XV- B	<b>OR</b> Unix Shell Programming	03	40	10	50	40	03 Hours
<b>Annual Practical Papers</b>							
XVI	<b>Computer Lab-4</b> (Annual Practical based on Paper No XIII & XIV)	01 Practical (03 Periods)	50		50	20 Minimum Practicals	03 Hours
XVII	<b>Computer Lab-5</b> (Project work )	01 Practical (03 Periods)	50		50	20 Minimum Practicals	03 Hours

**Paper No: XII**  
**Software Engineering**  
**(Theory)**

**1. Introduction to software Engineering**

The Evolving role of software, Software, Software Myths

**2. Software Process Models**

Software Engineering- A layered technology, Waterfall model, Incremental Process models, Evolutionary Process models, Specialized Process models

**3. Requirement & Design Engineering**

Requirement Engineering task, Building the analysis model, Requirement analysis, Design within the context of software engineering, Design process & design quality, The Design model

**4. Software testing**

A Strategic approach to software testing, System testing, Software Testing fundamentals, White box testing, Basis path testing , Black box testing

**5. Web Engineering**

Attributes of web based systems and applications ,Web Engineering layers , Web engineering process

**6. Risk Management**

Software risks , Risk identification, Risk projection

**Ref. Books:**

Software Engineering – A Practitioner’s Approach By Roger S. Pressman  
(McGraw Hill ) Sixth Edition

(Elective- Select any one from Paper No- XV –A & XV –B)

**Paper No: XIII-A**  
**Relational Database Management System**  
**(Theory)**

**1. Basic Concepts**

Data Modeling for a database , Records and files, Three level architecture, Components of DBMS, Advantages and disadvantages

**2.Data models**

Introduction, Data Associations, Data models classification, Entity Relationship Model, Relational Data Model, Network Data Model,

**3. Relational Model**

A Brief Review of Set theory , Relational Database, Physical Implementation Issues

**4. SQL**

Basic Structure , Set Operations, Aggregate functions, Null Values , Nested sub queries ,Derived Relations , Views , Modification of database, Joined relations, Data Definition Language ,Embedded SQL

**4. Relational Database Design**

Pitfalls in Relational Database Design , Decomposition, Normalization using functional Dependencies,

**5. Database System Architectures**

Centralized Systems , Client Server Systems, Parallel Systems, Distributed Systems

**Ref. Books :**

1. An Introduction to Database Systems by Bipin Desai ( Galgotia Publications )
2. Database System Concepts By Abraham Silberschatz and Henry F Korth ( McGraw Hill ) 4<sup>th</sup> Edition.

**Paper No: XIII-B**  
**E-Commerce**  
**(Theory)**

1. E- Commerce
2. EDI
3. The UN/EDIFACT Standard
4. Identification and Tracking Tools
5. Legal Issues
6. Information Technology Act 2000
7. Electronic payment system and Internet Banking

**Ref. Books:**

1. E- Commerce – The cutting edge of business By Kamlesh K Bajaj & Debjani Nag ( Second Edition)  
(Tata Mcgaw Hill Publications)

**Paper No: XIV**  
**Programming in Visual Basic**  
**(Theory)**

**1. Getting Started with VB**

The IDE , The Elements of user interface, Designing user interface, Programming an application Visual Development and Event Driven Programming.

**2. Visual Basic- The language**

Variable, Constants, arrays, collections, Procedures, control flow & loop statements

**3. Working with forms**

Form types, Appearance of forms, Designing menu structure, Building dynamic forms at run time

**4. The Multiple document Interface**

MDI Applications, Accessing child forms Implementing scrolling forms

**5. Database Programming with VB**

Understanding Database and DBMS , Understanding relational concepts, Understanding Visual data manager

**6. Introduction to Web**

Internet & web protocols , An HTML Primer, Activating the client with VBScript, Dynamic HTML, Study of Web browser control and Internet explorer object.

**Ref. Books :**

1 Mastering Visual Basic 6 By Evangelos Perroustos (BPB Publications)

**(Elective- Select any one from Paper No- XV -A & XV -B)**

**Paper No: XV -A**  
**Computer Network**  
**(Theory)**

**1.Introduction to Computer networks**

Uses of Computer Networks, Network Hardware, Network Software, Reference Models

**2. Physical Layer & Data link Layer**

Transmission Media, Wireless Transmission, The Mobile Telephone System, Design issues of Data link layer.

**3. The Network Layer**

Internetworking, The IP Protocol, IP addresses

**4. The Transport Layer**

Services Provided to the upper layers, Transport service primitives

**5. The Application Layer**

Domain name system, E-mail, The world wide web

**6. Network Security**

Introduction to cryptography, Two Fundamentals Cryptographic principals.

**Ref. Books:**

1. Computer Networks By Andrew S. Tanenbaum (Prentice Hall India) Fourth Edition

**Paper No: XV -B**  
**Unix Shell Programming**  
**(Theory)**

1. Getting Started
2. Gaining Confidence
3. The Unix file system
4. Essential Unix Commands
5. I/O Redirection & piping
6. Vi Editor
7. Shell Programming – First Step
8. Taking Decision
9. The Loop Control Structure
10. Shell meta Characteristics

**Ref. Books:**

1. Unix- Shell Programming By Yeshwant Kanentkar (BPB Publications)

**(Practical Papers are Annual)**

**Paper No: XVI  
Computer Lab-4  
(Practical)**

Annual Practical based on Paper No XIII & XIV - At least 20 practical exercises

**Paper No: XVII  
Computer Lab-5  
(Project Work )**

**About Project Work**

- Maximum a group of 03 students are allowed to work on a project.
- Project Synopsis should be submitted by the students to their concern faculty also a declaration should be submitted by the students regarding the originality of work.
- Project report should prepared by the students & it should be certified by concern faculty & head of the department.
- Students should submit one hardcopy of report to the department.

• **Distribution of marks for project is as**

○ Project Work	30
○ Project Viva	10
○ Project Report	10

**Total Marks: - 50**