## SEMESTER II

### Theory

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<tbody>
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### Practical

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**Total** 24
# SEMESTER III

**Theory**  

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**Practical**  

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### SEMESTER IV

#### Theory

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**Total** 24
# SEMESTER V

## Theory

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## Practical

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## SEMESTER VI

## Theory

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**Total Credits to be earned for the award of degree: 135**
ELECTIVES
Theory

**ELECTIVE –I: 10377MCE01**

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**ELECTIVE –II: 10377MCE02**

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**ELECTIVE –IV: 10377MCE04**

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UNIT I

Databases and Database Users- Introduction- An Example- Characteristics of the Database Approach-
Advantages of Using the DBMS Approach- Brief History of Database Applications – Situations in which we should
not to use a DBMS. Database System Concepts and Architecture – Data Models , schemas , and Instances –
Database Languages and Interfaces – The Database System Environment - Centralized client/server
Architectures - Classification.

UNIT II

Data Modeling Using the Entity - Relationship(ER) Model - Using High -Level conceptual Data Models for
Database Design – An Example Database Application- Entity Types, Entity Sets, Attributes, and Keys –
Relationship Types, Relationship sets, Roles, and Structural Constraints – Weak Entity Types – ER diagrams –
Naming Conventions and Design Issues – Subclasses – Super classes – Inheritance – Specialization and
Generalization.

UNIT III

The Relations Data Model and Relations Database Constraints – Relational Model Concepts – Relational Model
Constraints and Relational Database Schemes – Update Operations, Transactions, and Dealing With Constraint
Violations.

SQL- 99: Schema Definition, Constraints, Queries, and Views - SQL Definition and Data Types – Specifying
Constraints in SQL – Schema Change Statements in SQL – Basic Queries in SQL – More Complex Queries –
INSERT, DELETE, and UPDATE - Specifying Constraints as Assertions and Triggers – Views.

UNIT IV

Functional Dependencies and Normalization – Informal Design Guidelines – Functional Dependencies - Normal
Forms Based on Primary Keys – General Definitions of Second and Third Normal Forms – Boyce-Codd Normal
Form – Properties of Relational Decompositions – Algorithms for Relational Database Schema Design – Multi-
valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT V


Reference Books:

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Reference Books:
UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


Reference Books:

10377MC204 OPERATING SYSTEMS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Reference Books:
10377MC205 FINANCIAL MANAGEMENT & ACCOUNTING

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


Reference Books:

Experiments:

1. Apply the divide and Conquer technique to arrange a set of numbers using merge sort method.

2. Perform Strassen’s matrix multiplication using divide and conquer method.


4. Construct a minimum spanning tree using greedy method.


6. Find the solution for travelling salesperson problem using dynamic programming approach.

7. Perform graph traversals.

8. Implement the 8 Queens Problem using backtracking.


10. Find the solution of travelling salesperson problem using branch and bound technique.
1. Creation of base tables and views.

2. Data Manipulation
   INSERT, DELETE and UPDATE in Tables.
   SELECT, SUB Queries and JOIN.

3. Data Control Commands.

4. High level language extensions – PL/SQL OR Transact SQL.

5. Use of Cursors, Procedures and Functions.

6. Embedded SQL or Database Triggers.

7. Oracle or SQL Server Triggers.

8. Working with Forms, Menus and Report.

10377MC301

OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT I


UNIT II

Nature of a class - Relationship among classes - Interplay of Classes and Objects –Classification – Identifying Classes and objects - Key abstractions and mechanisms.

UNIT III


UNIT IV


UNIT V

Class Diagrams – Advanced concepts, Stereotypes, object diagrams - Class scope operations, Aggregation, Composition - Derived associations and Attributes,Classification and generalization - Packages and Collaborations - State Diagrams -Physical Diagrams.

Reference Books:

UNIT I
Connecting to the Internet – Domain Name System - Exchanging E-mail – Sending and Receiving Files - Fighting Spam, Sorting Mail and avoiding e-mail viruses –Chatting and Conferencing on the Internet – Online Chatting - Messaging – Usenet Newsgroup – Internet Relay chat (IRC) – Instant Messaging - Voice and Video Conferencing.

UNIT II

UNIT III

UNIT IV

UNIT V

Reference Books:


UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


References Books:


UNIT I


UNIT II


UNIT III


UNIT IV

Strategic approach to software testing – Test Strategies for conventional and OO software – Validation testing – System testing – Debugging Vs. Testing – Testing Tactics – White Box Testing – Black Box testing – OO testing methods

UNIT V


Reference Books:


UNIT I GRAPHICS FUNDAMENTALS

I/O devices – I/O Primitives – DDA – Bresenham technique – Circle drawing algorithms – Interactive input methods.

UNIT II 2D GRAPHICS


UNIT III 3D GRAPHICS


UNIT IV OVERVIEW OF MULTIMEDIA


UNIT V MULTIMEDIA SYSTEMS AND APPLICATIONS


TEXT BOOK:


Reference Books:


1. Programs illustrating the use of Objects.
2. Programs using classes and inheritance.
3. Programs using JNI concepts.
4. Programs to achieve Inter thread communication and deadlock avoidance.
5. Programs to implement Exception handling.
6. Programs implementing packages, access specifiers and interfaces.
7. A Game Program implementation using multithreading.
8. Programs using streams.
9. A JDBC program using different statements.
10. An Applet program for Animation text, images and sounds.
11. Program for Events and interactivity using Layout Manager.
BASIC PROGRAMMING EXERCISES

1. Implementation of DDA algorithm.

2. Implementation of Bresenham’s algorithms.
   a) Line b) Circle c) Ellipse.

3. 2D Transformations:
   a) Translation.
   b) Rotation.
   c) Scaling.
   d) Reflection.
   e) Shearing of Objects.

4. Cohen-Sutherland 2D clipping and windowing.

5. 3D Transformations:
   a) Translation.
   b) Rotation.
   c) Scaling.

6. Animation using any Animation software.

7. Basic operations on image using any image editing software.

8. Examples using PHOTOSHOP, FLASH.
UNIT I

UNIT II
INTEGER PROGRAMMING MODELS-Formulation —Gomory’s all integer Cutting plane Algorithm, Gomory’s mixed Integer cutting plane method, Branch and Bound Method.

UNIT III

UNIT IV
SEQUENCING AND SCHEDULING-Processing n jobs through Two machines - Processing n jobs through Three machines -- Processing n jobs through m machines - Processing Two jobs through m machines - Network construction – Critical Path Method – Project Crashing – Project Evaluation and Review Technique.

UNIT V
INVENTORY CONTROL AND QUEUEING MODEL-Inventory Costs- Inventory Models- Purchase and Manufacturing Model with and without shortage- Order quantity with price break- Features of Queuing System—Single Server Queueing Models.

Reference Books:
UNIT I


UNIT II


UNIT III

Java Script : Introduction, Documents, forms, Statements, Functions, Objects in Java scripts, events and event handling, arrays, FORMS, Buttons, Checkboxes, Text fields and text areas.

UNIT IV


UNIT V

ASP : Introduction - Internet Information Server - ASP Example - Server Side Active- X Components - File System Objects - Session Tracking - Accessing Database from ASP.

Reference Books:


UNIT I .NET ARCHITECTURE


UNIT II PROGRAMMING IN C#


UNIT III WINDOWS PROGRAMMING


UNIT IV WEB APPLICATION DEVELOPMENT


UNIT V DISTRIBUTED COMPUTING IN .NET


TEXT BOOKS:


REFERENCE Books:

I-Static HTML

1. Develop a static pages using HTML of an online Departmental Store. The website should be user friendly and should have the following pages:
   - Home page.
   - Registration and user login.
   - User profile page.
   - Items catalog.
   - Shopping cart.
   - Payment by credit card.
   - Order confirmation.

II-Dynamic HTML.

1. Develop a page using Cascading Style Sheets.

2. Develop a page using Object Model and Collections.

3. Develop a page using Event Model.

4. Develop a page using Filters and Transitions.

III-XML

5. creating xml documents.

6. xml style sheet.

7. xml document object model.

8. Xml query language.

IV-Scripting Language Using Javascript & VBscript

9. Develop a site for user authentication.

10. Develop a site for creating a new email-id after checking the necessary Validation.

V-ASP

11. Develop a page using Server side Activex components.

13. Develop a page using Session tracking.

14. Develop a site for simple online reservation.

**VI-JSP**

15. Develop a page using request, response, session, application.

16. Develop a site for simple online banking.
1. Implementation of Streaming Models – Stream Customization.

2. Threading – Synchronization of Threads And Applications.

3. COM Interop Applications.


5. Implementation of UDP Datagrams, SMTP Client, FTP Application.

6. .NET Remoting
   a. MBR – WKO activation and CAO activation
   b. Single all and Singleton patterns
   c. callback.
   d. MBV.

7. Customizing IL.

8. Developing IDE intellisense using Reflection API.
   a. Developing Application to dynamically load assembly and invoke private method.

9. ADO.NET Applications – Data Retrieval – Storing Multimedia Data And Retrieval.

10. Designing a Website implementing
    a. Server-side client side controls
    b. Session managements
    c. Caching
    d. Security
UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


Reference Books:
UNIT-I


UNIT – II


UNIT – III

Mining Association Rules in Large Databases : Association rule mining – Mining single-dimensional Boolean association rules from transactional databases – Mining multilevel association rules from transaction databases - Mining multidimensional association rules from relational databases and data warehouses - Constraint-based association mining Classification and Prediction: Definitions - Issues regarding classification and prediction - Classification by decision tree induction - Bayesian classification - Classification by back-propagation -Other classification methods.

UNIT – IV


Unit – V

Mining Complex Types of Data: Multidimensional analysis and descriptive mining of complex data objects - Mining spatial databases - Mining multimedia databases - Mining time-series and sequence data - Mining text databases - Mining the World Wide Web-Data Mining Applications and Trends in Data Mining: Data mining applications.

Reference Books:


UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


Reference Books :


1. Create a distributed application to download various files from various servers using RMI.

2. Create a Java Bean to draw Various graphical shapes and display it using or without using BDK.

3. Implementing a Entity Bean for any application.

4. Implementing a Session Bean for any application.

5. Create an Active-X control for File operations.

6. Develop a component for converting the currency values using COM / .NET.

7. Develop a component for encryption and decryption using COM / .NET.

8. Develop a component for retrieving information from message box using DCOM / .NET.

9. Develop a middleware component for retrieving Stock Market Exchange information using CORBA.

10. Develop a middleware component for retrieving Weather Forecast information using CORBA.
1. Edit Pad Development using Swings (Tools Development).

2. Hospital management (Application Development).

3. Online Railway Reservation (web Application).

4. Library Management (Application Development).

5. E-Banking (web Application).

6. Inventory control (Application Development)
UNIT I

Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities.

UNIT II

Hardware and software components of the host environment, Key protocols and concepts used by each component, Physical and logical components of a connectivity environment, Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components, Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6.

UNIT III

Evolution of networked storage, Architecture, components, and topologies of DAS, NAS, and SAN. Benefits of the different networked storage options, Understand the need for long-term archiving solutions and describe how CAS fulfills the need, Understand the appropriateness of the different networked storage options for different application environments.

UNIT IV

List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime, Differentiate between Business Continuity (BC) and Disaster Recovery (DR), RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures, Architecture of backup/recovery and the different backup/recovery topologies, replication technologies and Remote replication technologies.

UNIT V

Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies, block-level and file-level virtualization technologies and processes.

Reference Books:

UNIT I FUNDAMENTALS OF GRID COMPUTING


UNIT II GRID COMPUTING ARCHITURE


UNIT III GRID COMPUTING TECHNOLOGIES


UNIT IV FUNDAMENTALS OF CLOUD COMPUTING

Fundamentals – Shot history of cloud computing – Cloud Architecture – Cloud Storage – Cloud Service – Pros and Cons of cloud computing – Benefits from cloud computing.

UNIT V CLOUD SERVICES

Need for Web-Based Application – The cloud Service Development – Cloud Service Development Types – Cloud Service development tools.

Text Books:


Reference Books:


UNIT – I INTRODUCTION

Business analysis, Business analyst, Competencies of business analyst, Strategy analysis, Stakeholders analysis, Environment analysis, SWOT analysis.

UNIT – II BUSINESS ANALYSIS PROCESS MODEL

Process models, Process analysis, Investigation techniques, Requirements engineering, Validating the requirements, Modelling business systems.

UNIT – III BUSINESS SYSTEM


UNIT – IV BUSINESS PROCESS MODELLING

Business processes - Business process modelling, business modelling techniques, business case analysis, case development, Managing business change, Governance.

UNIT – V MANAGING THE INFORMATION RESOURCE

Managing data resource, modelling system functions, system data, data modeling and administration, technology for capturing and storing data, Security.

Reference Books:


UNIT I


UNIT II

Electronic Commerce for service industries-Ordering journals electronically-Broker- Based services-Travel and tourism services-Employment placement and job market-Trading stocks online-Cyberbanking and personal finance-Electronic Auctions-Types of Auctions-Benefits and limitations-Business to business Auction-Managerial issues.

UNIT III


UNIT IV


UNIT V


Reference Books:
1. “Electronic Commerce-A Managerial Perspective”, Efraim Turban, Jae Lee, David King and H. Micheal Chung, Person Education, 2005. Chapters 1, 2, 5, 6, 7, 8, 9, 10 and 11.

UNIT II

UNIT III

UNIT IV

UNIT V

Reference Books:

10377MCE02

10377MCE22 SUPPLY CHAIN MANAGEMENT

UNIT I

UNIT II


UNIT III

Manufacturing scheduling – Manufacturing flow system – work flow automation – Flexibility in manufacturing to achieve dynamic optimization. Material handling system design and decision. Warehousing and store keeping – strategies of warehousing and storekeeping – space management.

UNIT – IV


UNIT – V

Information technology and SCM – EDI, ERP, Internet and Intranet, E-Commerce, Bar coding, Telecommunication Network, Advanced planning system, Decision support models for Supply Chain Management, Artificial Intelligence for SCM- Best practice in supply chain management – organizational issues to implement SCM.

Reference Books:

2. B. S. Sahay and Ramneesh Mohan, Macmillan India Limited, 2007

10377MCE02

10377MCE23

HEALTH CARE SYSTEMS

UNIT I PLANNING AND DEVELOPING AN IT STRATEGY

UNIT II PREPARING FOR ORGANIZATIONAL CHANGE


UNIT III TRANSFORMATION

IT: Transition Fundamentals in Care Transformation - The Role of the CIO - Northwestern Memorial Hospital, Chicago: Patients First from the Ground Up – The Jewish Home and Hospital Lifecare System.

UNIT IV PATIENT-CENTERED TECHNOLOGIES


UNIT V OUTLOOK ON FUTURE TECHNOLOGIES

Technologies in Progress - Evidence-Based Medicine - Aligning Process and Technology - Clinical Decision Support Systems - Quality Information and Care – Role for Health Information Systems - Connecting the Community for Better Health.

Reference Books:


UNIT II DEVELOPMENTS IN MEASURING QUALITY


UNIT III QUALITY MANAGEMENT SYSTEM


UNIT IV PRINCIPLES AND PRACTICES IN QMS


UNIT V MEASURES AND METRICS IN PROCESS AND PROJECT DOMAINS


Reference Books:

UNIT I

NETWORK SECURITY

UNIT II

Modern techniques: S-DES scheme and analysis, Block cipher principles: Feistel cipher, DES Encryption and Decryption, Strength - Differential and Linear crypt analysis- Block cipher design principles – AES cipher.

UNIT III


UNIT IV

Key Management - Diffie Hellman key exchange - Elliptic curve cryptography - Message authentication and hash functions: Requirements, Authentication Functions, Message authentication codes, Hash functions, security of Hash functions and MACs, Hash algorithms.

UNIT V

Digital signatures and authentication protocols: Digital signatures – Authentication protocols - Digital Signature Standard - Authentication applications: Kerberos - Electronic mail security: Pretty good privacy-Cryptographic keys and key rings, Public key management.

Reference Books:


Introduction to Linux- The Future- Why use Linux-The GNU Difference- Linux Distributions- Installation Requirements- Understanding various Installation Methods- Starting the Installation Process-Troubleshooting- Installing & Configuring LILO.

UNIT-II CONFIGURING ADDITIONAL HARDWARE

Configuring the Linux system- Configuring the Network- Configuring a Printer- Configuring Standard User Features- Adding Hardware to your Linux system- Dealing with the kernel- Adding a modem- Adding a Sound Card- Running the XWindow System- Installing GNOME- KDE- Xutilities.

UNIT-III SYSTEM ADMINISTRATION


UNIT-IV SHELL PROGRAMMING TOOLS

Using the Command Line Shell- Redirection and Pipes- Environment Variables- Invoking a shell- Special Command Line Constructions- Shell Functions- Shell Aliases- Built-In Bash Commands- Some Handy Command Line Utilities- Introduction to Shell Programming- Conditional Execution- Execution of Scripts and Programs- Some Utilities That can Be Useful in Scripts.

UNIT- V WEB SERVER


Reference Books:

2. Introduction to Linux: Installation and Programming; N. B. Venkateshwarlu (Ed); B S Publishers; 2005.

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10377MCE33 WEB SERVICES

UNIT I INTRODUCTION TO WEB SERVICES

UNIT II SOA Fundamentals

Defining SOA, Business Value of SOA, Evolution of SOA, SOA characteristics, concept of a service in SOA, misperceptions about SOA, Basic SOA architecture, infrastructure services, Enterprise Service Bus (ESB), SOA Enterprise Software models, SOA Planning and Analysis: Stages of the SOA lifecycle, SOA Delivery Strategies, service-oriented analysis, SOA Design and implementation:
Service-oriented design process, design activities, determine services and tasks based on business process model, choosing appropriate standards, articulate architecture, mapping business processes to technology, designing service integration environment (e.g., ESB, registry), Tools available for appropriate designing, implementing SOA, security implementation, implementation of integration patterns.

UNIT III SOAP: SOAP Essentials


UNIT IV WSDL: WSDL Essentials


UNIT V UDDI: UDDI Essentials


Reference Books:


Enterprise Resource Planning (ERP)-Introduction-Basic concepts-Evolution of ERP
Materials Requirements Planning (MRP)-Manufacturing Resource Planning (MRP II)- Business modelling-ERP and its related technologies-
Data Mining-Data Warehousing- Business Process Reengineering-Decision Support System (DSS)-Management Information System (MIS)-Executive Information System (EIS)-OLAP-Supply Chain Management (SCM).

UNIT II

MRP, MRP II and ERP from a manufacturing perspective-Distribution requirements planning (DRP)-Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM)-Made to Order-Made to Stock-Assemble to Order-Engineer to Order-Configure to Order. Master production schedule-Bill of Material (BOM)- advantages of BOM.

UNIT III


UNIT IV

Modules in an ERP package-Finance-Sales & distribution-Plant maintenance-Human resource management-
Materials management-Quality management. ERP implementation lifecycle-different phases in ERP implementation-Comparing traditional software development and ERP software development-Training-Maintenance.

UNIT V

Future directions of ERP-Electronic commerce, Mobile commerce and Electronic business using ERP-ERP using Internet, Intranet and Extranet. Case Studies of ERP implementation-Problems-challenges and opportunities for the enterprises-ERP software solution for the enterprise-Solutions-Performance indicators of an ERP package.

Reference Books:


UNIT II


UNIT III


UNIT IV


UNIT V

Investment analysis and Portfolio management-Role of investment practitioners-Equity researchers-Portfolio managers-Investment counsellors. Portfolio management framework-strategies-Guidelines for investment decisions-International investing.

Reference Books:

UNIT I

Introduction-Key services for the Mobile Internet – productivity applications – Life enhancing applications – Business opportunities – WAP Versus WEB.

UNIT II


UNIT III


UNIT IV


UNIT V


Reference Books:


UNIT I


UNIT II


UNIT III


UNIT IV


UNIT-5


Reference Books:


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<th>Course Code</th>
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<tr>
<td>10377MCE04</td>
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UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT


UNIT II THE CONCEPT OF BEST FIT EMPLOYEE


UNIT III TRAINING AND EXECUTIVE DEVELOPMENT

Types of training, methods, purpose, benefits and resistance. Executive development programmes – common practices - benefits – self development – knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST


UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS


TEXT BOOKS:


2. Biswajeet Pattanayak, Human Resource Mana