

Management [MAN]

T.Y. Diploma : Sem VI

[EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/CS/CR/CO/CM/IF/EE/EP/CH/CT/PS/TX/TC]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	–
Oral Exam	–	–
Term Work	–	–
Class Test (Two Test)	–	25 (each)

External Assessment, @ Internal Assessment

SYLLABUS

1. Overview of Business

- Types of Business
 - Service
 - Manufacturing
 - Trade
- Industrial sectors
 - Introduction to
 - Engineering Industry
 - Process Industry
 - Textile Industry
 - Chemical Industry
 - Agro Industry
- Globalization
 - Introduction
 - Advantages & disadvantages w.r.t India
- Intellectual Property Rights I(I P R)
 - Concept
 - Types of IPR

2. Management Process

- What is Management?
 - Evolution
 - Various Definitions
 - concept of Management
 - Levels of Management
 - Administration and Management
 - Scientific Management by F W Taylor
- Principles of Management (14 principles of Henry Fayol)
- Functions of Management:
 - Planning
 - Organizing
 - Coordinating
 - Directing
 - Controlling
 - Decision Making

3. Organizational Management

- Organization
 - Definition
 - Steps in forming organization
- Types of Organization
 - Line
 - Line & Staff
 - Functional
 - Project type
- Departmentation
 - Centralized & Decentralized
 - Authority & Responsibility
 - Span of Control (Management)
- Forms of ownerships
 - Proprietorship
 - Partnership
 - Joint stock company
 - Co-operative society
 - Govt. Sector

4. Human Resource Management

- Personnel Management
 - Introduction
 - Definition
 - Function
- Staffing
 - Introduction to HR
 - Introduction to HR Planning
 - Recruitment procedure
- Personnel - Training & Development
 - Types of training
 - Induction
 - Skill enhancement
- Leadership & Motivation
 - Leadership- Styles & types
 - Motivation -Definition , Intrinsic & Extrinsic
 - Maslow's theory of Motivation and its significance
- Safety Management
 - Causes of Accidents
 - Safety Procedures
- Introduction, Objectives & feature of Industrial Legislation such as
 - Factory Act
 - ESI Act,
 - Workman Compensation Act,
 - Industrial Dispute Act

5. Financial Management (No Numericals)

- Financial Management- Objectives & Functions
- Capital Generation & Management
 - Types of capitals
 - Sources of finance
- Budgets and Accounts

- Types of Budgets
- Production Budget (including Variance Report)
- Labour Budget
- Introduction to Profit & Loss Account (Only concept)
- Balance sheet etc.
- Introduction to Various Taxes
 - Excise Service Tax,
 - Income Tax
 - VAT
 - Custom Duty

6. Materials Management

- Inventory Management (No Numericals)
 - Meaning & Objectives
- ABC Analysis
- Economic Order Quantity
 - Introduction & Graphical Representation
- Purchase Procedure
 - Objectives of Purchasing
 - Functions of Purchasing Department
 - Steps in Purchasing
- Modern Techniques of Material Management
 - Introductory treatment to Just in Time (JIT)/ System Applications & Products (SAP)/Enterprise Resource Planning (ERP)

7. Project Management (Simple /Elementary Numericals)

- Project Management
 - Introduction & Meaning
 - Introduction to CPM/PERT Techniques (simple network problems)
 - Concept of Break Even Analysis and its significance
- Quality Management
 - Definition of Quality, Concept of Quality, Quality Circle, Quality Assurance
 - Introduction to TQM, Kaizen, 5 'S' & Six Sigma

References :

1. Industrial Engg & Management (Dr. O.P. Khanna) Dhanpal Rai & sons New Delhi
2. Business Administration & Management (Dr. S.C. Saksena) Sahitya Bhavan Agra
3. The process of Management (W.H. Newman E. Kirby Warren Andrew R. McGill)Prentice- Hall of India Pvt. Ltd. New Delhi - 110001

Software Testing [STG]

T.Y. Diploma : Sem VI
[CO/CM]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	–
Oral Exam	–	25@
Term Work	–	–
Class Test (Two Test)	–	25 (each)

@ Internal Assessment

SYLLABUS

1. Purpose of Testing

- Software Testing Background
- Software Error Case Studies:- Disney Lion King, Intel Pentium Floating Point Division Bug, NASA Mars Polar Lander, Patriot Missile Defense System, Y2K Bug.
What is Bug?
Terms for software Failures, Software Bug: A Formal Definition , Why do Bug occurs? , cost of bugs, What Exactly does a software tester do? What makes a good software tester?
Software Development Process
- Product Components:- What Effort Goes into a software product?, What parts make up a software product? , Software Project Staff
- Software Development Lifecycle Models :- Big-Bang Model , Code and fix Model, Waterfall model, Spiral Model, The Realities of Software Testing
- Software Testing terms and definition:- Precision and accuracy, verification and validation, Quality Assurance and quality control

2. Testing Fundamentals

Examining the Specification

- Getting Started :- Black-Box and white-box Testing,
Static and Dynamic Testing, Static Black Box Testing :- Testing the specification
- Performing a High Level Review of the Specification:- Pretend to be a customer, Research Existing Standards and guidelines , Review and test similar software
- Low Level Specification Test Techniques:- Specification Attributes Checklist , Specification Terminology Checklist.

Testing the software with Blinders On

- Dynamic Black-Box Testing : testing the software While, Blindfolded, Test-to-pass and Test-to-fail, Equivalences Partitioning
Data Testing :- Boundary Condition, Sub-Boundary Conditions, default, empty, blank, Null, Zero and None, Invalid, Wrong, Incorrect and garbage data. State Testing:- Testing Software 's Logic Flow, Testing States to Fail.

3. Examining the Code

- **Static White Box Testing:** Examining the design and code,
Formal Review: - Peer Review, Walkthroughs, Inspections.
Coding Standards and Guidelines:- Examples of Programming Standards and Guidelines, Obtaining Standards. Generic Code Review Checklist:-Data Reference Errors, Data Declaration Errors, Computation Errors, Comparison Error, Control Flow Errors, Subroutine Parameter Errors, Input/Output Errors, Other checks.

- **Dynamic White Box Testing:**
Dynamic White Box Testing, Dynamic white box testing versus debugging,
Testing the Pieces: - Unit and Integration Testing, An Example of Module Testing.
Data Coverage: - Data Flow, Sub-Boundaries, Formula and Equations, Error Forcing.
Code Coverage: - Program Statements and Line Coverage, Branch Coverage, Condition Coverage.

4. Applying Your Testing Skills Configuration Testing

- An Overview of Configuration Testing: - Isolating Configuration Bugs, Sizing up the job. Approaching the Task: - Decide the Types of Hardware You'll Need, Decide What Hardware Brands, Model, and Device Drivers are available. Decide which Hardware features, modes and options are possible. Pare Down the identified Hardware Configuration to a Manageable Set.

Identify your Software's Unique Features that work with the Hardware Configurations. Design the test Cases to Run on each configuration. Execute the tests on each configuration. Rerun the tests until the results satisfy your team. Obtaining the hardware, Identify hardware standards, configuration testing other hardware.

- **Compatibility Testing**
Compatibility Testing Overview, Platform and Application Versions, Backward and forward compatibility, the impact of testing multiple versions. Standards and Guidelines: - High-Level standards and Guidelines, Low-level standards and Guidelines, Data Sharing Compatibility.

5. Foreign Language Testing

Making the words and Pictures Make Sense , Translation Issues :-Text Expansion , ASCII , DBCS and Unicode , Hot Keys and shortcuts , Extended Characters , Computation on characters , Reading Left to Right and Right to Left , Text on Graphics, Keep the Text out of the code .

Localization Issues: - Content, Data Formats.

Configuration and Compatibility Issues: - Foreign platform configurations, Data Compatibility. How much should you Test?

6. Usability Testing

- **User Interface Testing:** What makes a Good UI? , Follows standards or Guidelines, Intuitive, Consistent, Flexible, Comfortable, Correct, Useful. Testing for the Disabled: Accessibility Testing: - It's the Law, accessibility features in software.
- **Web site Testing**
Web Page Fundamentals, Black-Box Testing: - Text, Hyperlinks, graphics, forms, object and other simple miscellaneous Functionality. Gray Box Testing, White Box Testing, Configuration and compatibility testing, Usability Testing, Introducing Automation.

7. Supplementing Your Testing

- **Automation Testing and test tools**
The benefits of automation and tools, Test tools: - Viewers and Monitors, Drivers, Stubs, Stress and load tools, Interference injectors and noise generators, analysis tools.
Software Test Automation: -Macro Recording and playback, programmed macros, Fully Programmable Automated Testing Tools.
Random Testing: monkeys and gorillas, Dumb monkeys, Semi-smart monkeys, Smart Monkeys, Realities of using test tools and automation.beta testing

8. Working With Test documentation

- **Planning your test effort :** the goal of the test planning , test planning topics :- high level expectations , people , places , and things , definitions , Inter group Responsibilities , what will and won't be tested , test phases , test strategy , resource requirements , tester assignments , test schedule , test cases , bug reporting , Metrics and statistics , Risk and Issues.
- **Writing and Tracking Test Cases**

The goal of test case Planning, Test case planning overview, test design, test cases, test procedures, test case organization & tracking.

- **Reporting What you Find**

Getting your bugs fixed, isolating & reproducing bugs , Not all bugs are created equal , a bug's life cycle , bug tracking system :- The standard : The test incident Report , Manual Bug Reporting and Tracking , Automated bug reporting and tracking.

9. The Future

- **Software Quality Assurance** : Quality is free, testing and quality assurance in the workplace , software testing , Quality Assurance, other names for software testing groups, Test management and organizational structures, Capability Maturity Model (CMM), ISO 9000.
- **Your Careers As a Software Tester:** Your job as a software tester, finding software testing position, gaining hands-on experience,

Reference :

1. Software Testing (Ron Patton) SAMS Techmedia
2. Software Testing : Principles and Practical (Srinivasan Desikan Gopaldaswamy Ramesh) Pearson Education

Advanced Java Programming [AJP]

T.Y. Diploma : Sem VI
[CO/CM/IF]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	50#
Oral Exam	–	–
Term Work	–	25@
Class Test (Two Test)	–	25 (each)

External Assessment, @ Internal Assessment

SYLLABUS

1. Introduction the Abstract Window Toolkit: (AWT)

- Working with Windows and AWT AWT classes, Windows Fundamentals, Working with frame windows, Creating a frame window in applet, Creating windowed program, Display information within with in a window
- Working with graphics, Working with color, Setting the paint mode, Working with Fonts, Managing text output using Font Metrics, Exploring text & graphics
- **Using AWT Controls, Layout Managers and Menus Control Fundamentals**
Labels, Using Buttons, Applying Check Boxes, Checkbox Group, Choice Controls, Using Lists, Managing scroll Bars, Using a Text Field, Using a Text Area, Understanding Layout Managers, Menu Bars and Menu, Dialog Boxes, File Dialog, Handling events by Extending AWT Components, Exploring the Controls, Menus, and Layout Managers

2. Networking:

- Basics
 - Socket overview, client/server, reserved sockets, proxy servers, internet addressing.
- Java & the Net
 - The networking classes & interfaces
- Inet address
 - Factory methods, instance method
- What is URL
 - Format
- URL connection
- Creating TCP Client, Creating TCP Server, Reading and Writing from TCP Sockets, Accepting and processing request from TCP Client
- Data grams
 - Data gram packets, Data gram server & client

3. Java Data Base Client/ Server

- Java as a Database front end, Database client/server methodology, Two-Tier Database Design, Three-Tier Database Design
- The JDBC API
 - Connection, DatabaseMetaData, PreparedStatement, ResultSet, ResultSetMetaData, Statement
 - The API Components, Limitations Using JDBC (Applications vs. Applets), Security Considerations, A JDBC Database Example JDBC Drivers, JDBC-ODBC Bridge, Current JDBC Drivers

4. The Tour of Swing

- J applet, Icons and Labels, Text Fields, Buttons Combo Boxes, Tabbed Panes, Scroll Panes.
- Trees, Tables, Exploring the Swings

5. Servlets

- Background, The Life Cycle Of a Servlet, The Java Servlet Development Kit, The Simple Servlet, Using Tomcat for Servlet development, The Servlet API
- The Javax Servlet Package, Reading Servlet Parameters Reading Initialization Parameters, The Javax. Servlet. http package, Handling HTTP Requests and responses
- Using Cookies, Session Tracking, Security Issues

Reference :

1. The Complete Reference Java 2 (Third Edition) (Patrick Naughton-Herbert Schildt) Tata McGraw hill
2. The Complete IDIOT's Guide To JAVA 2 (Michael Morrison) Prentice Hall of India
3. Java2 Unleashed (Jawroski) Techmedia
4. Keyur Shah (Java 2 Programming) Tata McGraw hill

Object Oriented Modelling and Design [OMD]

T.Y. Diploma : Sem V
[CM/IF]

(Elective - II)

EVALUATION SYSTEM

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Theory Exam	3 Hrs.	100
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External Assessment, @ Internal Assessment

SYLLABUS

1. Importance of Modeling

- Brief overview of Object Modeling Technology (OMT) by Ram Baugh, Booch Methodology, Use Case driven approach (OOSE) by Jacobson, Overview of CRC card method by Cunningham.
- Importance of Modeling, Four principles of Modeling

2. Object Modeling

- Objects and Classes (Object Diagrams, Attributes, Operations and Methods), Links, Associations and Advanced Concepts (General Concepts, Multiplicity, Link Attributes, Association as a Class, Roll names, Ordering, Qualification, Aggregation).
- Generalizations and Inheritance, Grouping Constructs.
- Aggregation versus Association And Generalization, Recursive Aggregates, and Propagation of Operations.
- Abstract Classes, Multiple Inheritance, Metadata, Candidate Keys, Constraints
- Introduction to Dynamic and Functional Modeling

3. Overview of UML

- Overview of UML, Scope of UML, Conceptual model of UML, Architectural - Metamodel, Unified Software Development Lifecycle.
- Introduction to UML Diagram

4. UML - Structural Modeling and Use Cases

- Class Diagram and Advanced Class Diagrams: - Advanced Classes and Relationships, Interfaces, Types and Roles, Packages, Instances. Object Diagram.
- Use case diagram: Terms and Concepts, Modeling techniques

5. UML Behavioral Modeling

- Interaction diagram-Sequence and collaboration diagram: Terms and Concepts, Modeling techniques.
- State chart diagram: Terms and Concepts, Modeling techniques.
- Activity diagram: Terms and Concepts, Modeling techniques.
- Component Diagrams: Terms and Concepts, Common modeling techniques.
- Deployment Diagrams: Terms and Concepts, Common modeling techniques

Reference :

1. Object Oriented Modelling and Designing (Refer for First and Second Chapter) (Rumbaugh, Blaha)
2. The UML User Guide(Addison Wesley) (Refer for Third, Fourth and fifth Chapter) (Booch, Jacobson, Rumbaugh)
3. Practical OOD with UML-.(Refer for Fourth and Fifth Chapter) (Mark Paiestly)
4. Web Sites
 - <http://uml.tutorials.treeme.com/>
 - <http://pigseye.kennesaw.edu/~dbraun/csis4650/A&D/UML tutorial/>
 - <http://www.smartdraw.com/tutorials/software-uml/uml.htm>
 - <http://www-db.stanford.edu/~burback/watersluice/node55.html>

Advanced Web Technology [AWT]

T.Y. Diploma : Sem VI
[CM]

(Elective - II)

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Theory Exam	3 Hrs.	100
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@ Internal Assessment

SYLLABUS

1. Introduction

- Why dot Net
 - Introduction to Microsoft .Net Framework.
 - Building blocks in .Net
 - Drawback of previous languages.
 - Understand what is .Net
- Introduction to .Net
 - Types of application architecture.
 - Net initiative.
 - .Net framework: components of .Net framework, Advantages, requirement of .Net.

2. Introduction and implementation of VB.Net

- Introduction to VB.Net
 - VB.Net overview.
 - Difference between VB and VB.Net
- Implementation of VB.Net
 - Features
 - VB.Net IDE.
 - Data Types, Loops, Control structures, Cases, Operators
 - Creating forms
 - Procedures and functions
 - Form controls
 - Error Provider
 - ComboBox
 - MonthCalendar
 - RadioButton
 - TextBox
 - CheckBox
 - CheckedListBox
 - DateTimePicker
- Implementation of OOP
 - Creation of class and objects
 - Inheritance
 - Constructors
 - Exception handling

- Component based programming
 - Working with Private assembly, shared assembly
 - Using COM components developed in VB or other language

3. Introduction to ADO.Net and data manipulation

- Introduction to ADO.Net
 - What is database?
 - Writing XML file
 - ADO.Net architecture
 - Creating connection
 - Dataset and Data reader
 - Types of Data adapter and ADO controls
 - Reading data into dataset and data adapter
 - Binding data to controls
 - Data table and Data row
- Accessing and manipulating data
 - Selecting data.
 - Insertion, deletion, updation, sorting.
 - How to fill dataset with multiple tables.
- Multi-threading
 - Working with multithreading.
 - Synchronization of Threads.
- Migrating from VB 6.0 to VB.Net
 - Updating the applications developed in VB to VB.Net

4. Introduction and implementation of ASP.Net

- Introduction to ASP.Net
 - Difference between ASP and ASP.Net
 - Introduction to IIS.
 - What is web application? Why it is used?
- Implementation of ASP.Net
 - ASP.Net IDE.
 - Creation of web forms.
 - Using web form controls.

5. ASP.Net objects and components

- ASP.Net Objects
 - Response.
 - Server.
 - Application.
 - Session.
 - Request
 - ASP.Net scope, state, view state, post back and configuration.
- How to use objects?
 - Object creation: Scripting, Drive, folder, file.
 - How to use Application object.
 - Events
 - Methods and collection.
 - Example.
 - How to use session object : enabling and disabling of session,
 - Event, properties, methods, collection.
 - Example.

- Server components :
 - Ad rotator, Content linker, Browser capabilities.
 - Use and creation of global.asax file.

6. ADO.Net and Data Manipulation

- ADO.Net in ASP.Net
 - Connection.
 - Dataset and data reader.
 - Data table and Data row.
 - Web.config introduction.
 - Binding data with data grid.
 - Accessing and manipulating data.
- ADO.Net : Server control templates and Data binding techniques
 - Understand data access in .Net using ADO.Net
 - Understand various Server Control Templates available for Data Binding using Repeater Control, Data List control, Data
 - Grid Controls, FormView Control, DetailView Control.

7. ASP transactions and e-mail

- Transactions.
- Transaction db design.
- CDONTS object, CDOSYS object.
- Email sending web page creation.

Reference :

1. Prog. In VB.Net (Anita & Bradely) TATA Mc Grow Hill
2. ASP.net (Dave Mercer) TATA Mc Grow Hill
3. Beginning VB.Net 2003, Wrox Publication
4. Designing Application with Microsoft VB.net (Robert LandLizer) TATA Mc Grow Hill
5. Beginning ASP.Net, Wrox Publication
6. Prog. In VB.net (Grun grundgier) Oerilly
7. .Net Frame Work Essential (Thwan ThAI , Hoang Lan) Oreilly
8. Websites
 - www.startvbdotnet.com
 - www.w3schools.com

Embedded System [ES]

T.Y. Diploma : Sem VI
[CO]

(Elective-II)

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
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@ Internal Assessment

SYLLABUS

1. 8051- Microcontrollers

- Overview of 8051 family
- Architecture
- Memory organization.
- Functional pin, Ports & circuit.
- Addressing mode, Instruction Set

2. Hardware overview

- Study of interrupt structure
- Port structure. & Programming
- Study of SBUF, TCON, TMOD, SMOD, SCON Register
- Timer/Counter & Serial Communication Programming

3. Serial Communication & Parallel communication

- Serial Communication - RS-232, I2C, CAN
- Parallel Communication - ISA, PCI, PCI-X
- Advance I/P O/P buses.
- Study of RS-232 Pinout.

4. Embedded System

- Introduction
- Processor in the system
- Different Hardware Units
- Software Embedded into System
- Exemplary Embedded system
- System - On-Chip (SOC) & VLSI system

5. Memory organization

- Structure unit in processor
- Processor selection
- Memory devices & Selection
- Allocation of memory
- DMA
- Interfacing processor & I/P O/P device

6. Device Driver & Interrupts Servicing Mechanism

- Device Drivers
- Parallel port device driver
- Serial port device driver
- Internal Programmable timing devices
- Interrupts handling Mechanism
- Context switching

7. RTOS & Interprocess Communication

- Concepts of RTOS
- Requirement, Need, Specification of RTOS in Embedded systems
- Multitasking
- Task synchronization & Mutual Exclusion
- Starvation, Deadlock, Multiple process
- Problem of sharing data by Multiple task and routines
- Interprocess communication

Reference :

1. Embedded Systems (Raj Kamal) Tata McGraw Hill
2. The 8051 Microcontroller And Embedded Systems (Muhammad Ali Mazidi, Janice Gillispie Mazidi) PHI
3. Microcontrollers (Theory And Applications) (Ajay V Deshmukh) Tata McGraw Hill
4. The 8051 Microcontroller (Kenneth J. Ayala) PRI
5. Embedded System Design: A unified Hardware/Software Introduction (Frank Vahid, Toney Givargis) John Wiley
6. An Embedded Software Primer (David E. Simon) Pearson Education
7. The 8051 Microcontroller And Embedded Systems (Mazidi) Pearson Education
8. Embedded Linux (Craig Hollabaugh) Pearson Education
9. Fundamentals of Embedded Software (Daniel Lewis) Pearson Education
10. Embedded C Programming and the Atmel AVR (Barnett, Cox, O'Cull) Thomson Learning
11. **Websites:**
<http://www.embeddedindia.com/>
<http://www.esacademy.com/>
www.EmbeddedTechJournal.com

Systems Programming [SPG]

T.Y. Diploma : Sem VI
[CO]

(Elective-II)

EVALUATION SYSTEM

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@ Internal Assessment

SYLLABUS

1. Features of System Programming

- What is System Software
- Components of System Software : Assemblers; Loaders; Macros; Compilers
- Evolution of System Software
- Foundations of system Programming.

2. Assemblers

- General design procedure
- Design of the assembler - Statement of the problem; Data Structure; Format of databases; Algorithm; Look for modularity.
- Table Processing: Searching and Sorting- Linear Search; Binary Search Sorting: Interchange sort; Shell sort; Bucket sort; Radix exchange sort; Address calculation sort; Comparisons of sort; Hash or Random entry searching

3. Macro Language and Macro Processors

- Macro Instructions
- Features of a Macro facility - Macro Instruction Arguments; Conditional macro expansion; Macro call within Macros; Macro Instruction defining Macros.
- Implementation - Implementation of restricted faculty : Two Pass Algorithm, A Single Pass Algorithm, Implementation of macro calls within Macros, Implementation within an assembler_

4. Loaders

- Loaders Schemes - "Compile and go" loaders; General Loader Schemes; Absolute Loaders; Subroutine linkages; Relocating loaders; Direct linking loaders; Other loaders scheme: Binders, Linking loaders Overlays, Dynamic Binders.
- Design of Absolute loaders
- Design of Direct Linking Loaders: Specification Problem; Specification of data structures; Format of database; Algorithm

5. Compilers

- Statement of a problem - Recognizing basic elements; Recognizing Syntactic units and Interpreting meaning; Intermediate form: Arithmetic statements, Non-Arithmetic statement, Non-executable statements; Storage Allocation; Code Generation: Optimization(M/c independent), Optimization (M/c dependent); Assembly Phase; General Model of Compiler.
- Phases of Compiler - Lexical Phase: Tasks, Databases, Algorithm; Syntax Phase: Databases, Algorithm; Interpretation Phase: Databases, Algorithm; Optimization: Databases, Algorithm;

Storage Assignment: Databases, Algorithm; Code Generation: Databases, Algorithm; Assembly Phase: Databases, Algorithm; Passes of a Compiler

Reference :

1. System Programming (John J. Donovan) Tata McGraw-Hill Edition 2003
2. System Programming and Operating System (Mr. Dhamdhere) Tata McGraw-Hill Edition