TILAK MAHARASHTRA VIDYAPEETH,PUNE

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSE

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

DURATION OF COURSE : 6 SEMESTERS

SEMESTER : SIXTH SEMESTER **DURATION : 16 WEEKS**

FULL TIME

SR. NO.	SUBJECT TITLE	SUBJECT CODE	TEACHING SCHEME		EXAMINATION SCHEME											
			TH	PR	PAPER HRS	TH		INT	TOTAL		PR		OR		TW	
						Max	Min		Max	Min	Max	Min	Max	Min	Max	Min
1	Principles of Management	CO6001	04	--	3	80	32	20	100	40	--	--	--	--	--	--
2	Software Testing	CO6002	04	04	3	80	32	20	100	40	--	--	25**	10	25*	10
3	Advanced Java Programming	CO6003	04	04	3	80	32	20	100	40	50**	20	--	--	25*	10
4	**Elective II (Any one)**															
	Object Oriented Modeling and Design	CO6004	04	04	3	80	32	20	100	40	--	--	25**	10	25*	10
	Introduction to Embedded System	CO6005	04	04	3	80	32	20	100	40			25**	10	25*	10
5	Entrepreneurship Development	CO6006	01	--	--										50*	20
6	Industrial Projects	CO6007	--	06	--								50**	20	50*	20
7	Professional Practices-V	CO6008	--	02***	--										50*	20
TOTAL			**15**	**20**	**--**	**320**	**--**	**80**	**400**	**--**	**50**	**--**	**100**	**--**	**225**	**--**

STUDENT CONTACT HOURS PER WEEK : **35 HRS : Theory and Practical Periods are of 60 minutes each**

* - INTERNAL ASSESSMENT , ** - EXTERNAL ASSESSMENT , @ - COMMON TO ALL CONVENTIONAL DIPLOMA

***-TUTORIAL

TOTAL MARKS – 775

ABBREVIATIONS : TH – THEORY , INT- INTERNAL, PR – PRACTICALS , OR –ORAL, TW – TERMWORK

All Practical, Orals and Term Work assessments are to be done as per the prevailing norms for implementation and assessment

COURSE NAME : ALL BRANCHES FOR ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : PRINCIPLES OF MANAGEMENT

SUBJECT CODE : CO6001

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	**PR**	**PAPER HRS**	**TH**	**INT**	**PR**	**OR**	**TW**	**TOTAL**
04	--	03	80	20	--	--	--	100

Pre-requisites: The student must know the following concepts:

1. Industrial working & different requirements of production.
2. Different activities in the Organization.

Objectives: The student will be able to

1. Familiarize with the environment in the world of work.
2. Explain the importance of management process in the business.
3. Identify various components of management.
4. Describe role & responsibilities of a technician in an organizational structure.
5. Apply various rules and regulations connected to business and social responsibilities of the technician.

Subject Title : PRINCIPLES OF MANAGEMENT	Subject Code: CO6001

Content : Theory

Unit	Name of the Topics	Hours	Marks
01	**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 with respect to India Intellectual Property Rights (I.P.R.).	02	02
02	**MANAGEMENT PROCESS** What is management? Evolution, Various definitions, Concept of management, Levels of management, Administration & management, Scientific management by F.W. Taylor. Principles of Management (14 principles of Henry Fayol), Functions of Management Planning, Organizing, Directing, Controlling.	07	10
03	**ORGANIZATION MANAGEMENT** **Organization** Definition, Steps in organization. **Types of organization** Line, Line & staff, Functional Project. **Departmentation** Centralized & Decentralized, Authority & Responsibility, Span of Control. **Forms of ownership** Proprietorship, Partnership, Joint stock, Co-operative Society, Government Sector.	07	12
04	**HUMAN RESOURCE MANAGEMENT** **Personnel Management** Introduction, Definition, Functions. **Staffing** Introduction to HR Planning, Recruitment procedure, Personnel- Training & Development, Types of training, Induction, Skill Enhancement. Leadership & Motivation, Maslow's Theory of Motivation, **Safety Management** Causes of accident, Safety precautions. **Introduction to** Factory Act, ESI Act, Workmen Compensation Act, Industrial Dispute Act.	08	16

05	**FINANCIAL MANAGEMENT** Financial Management - Objectives and Functions, Capital Generation and Management, Types of Capitals, Sources of raising Capital, **Budgets and Accounts:** Types of Budgets, Production Budgets (including Variances Report), Labour Budget. **Introduction to** Profit & Loss Account (only concepts), Balance Sheet. **Introduction to** Excise Tax, Service Tax, Income Tax, VAT, Custom Duty.	**08**	**16**
06	**MATERIALS MANAGEMENT** **Inventory Management** (No Numerical) Meaning and Objectives, ABC Analysis, Economic Order Quantity, Introduction and Graphical Representation, **Purchase Procedure** Objects of Purchasing, Functions of Purchasing, Steps in Purchasing. **Modern Techniques of Material Management** Introductory treatment to JIT/SAP/ ERP.	**08**	**14**
07	**PROJECT MANAGEMENT** (NO NUMERICAL) **Project Management** Introduction and meaning, Introduction to CPM & PERT Technique, Concept of Break Even Analysis **Quality Management** Definition of Quality, concept of Quality, Quality Circle, Quality Assurance. **Introduction to** TQM, Kaizen, 5 'S' and 6 Sigma.	**08**	**10**
	TOTAL	**48**	**80**

Recommended Books:

Sr. No	Title	Author	Publisher
01	Industrial Engg & Management	Dr. O.P. Khanna	Dhanpal Rai & sons New Delhi
02	Business Administration & Management	Dr. S.C. Saksena W.H. Newman	Sahitya Bhavan Agra
03	The process of Management	E.Kirby Warren Andrew R. McGill	Prentice- Hall
04	Industrial Management	Rustom S. Davar	Khanna Publication
05	Industrial Organization & Management	Banga & Sharma	Khanna Publication
06	Industrial Management	Jhamb & Bokil	Everest Publication , Pune

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : SOFTWARE TESTING

SUBJECT CODE : CO6002

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	**PR**	**PAPER HRS**	**TH**	**INT**	**PR**	**OR**	**TW**	**TOTAL**
04	02	03	80	20	--	25**	25*	150

Pre-requisites: The student must know the following concepts:

1. Basic knowledge of Computer Application.
2. Basic knowledge of Computer Hardware & Software.
3. Knowledge of Security system.
4. Knowledge of Programming Languages.

Objectives: The student will be able to

1. Understand the impact of software bugs and importance of software testing.
2. Develop the skills necessary to find bugs in any types of software.
3. Learn how to effectively plan your tests, communicate the bugs you find, and measure your success as a software tester.
4. Use new testing skills to test not just the software, but also the product specifications, the raw code and even the user's manual.
5. Learn how to test software for compatibility, usability and cultural issues.
6. Discover how to improve your testing efficiency by automating your tests.

Subject Title: SOFTWARE TESTING	Subject Code: CO6002

Content : Theory

Unit	Name of the Topic	Hours	Marks
01	**SOFTWARE TESTING BACKGROUND** What is a Bug? Software Bug: Formal definition. Why do Bugs occurs? Cost of bugs. What Exactly does a software tester do? Software Development Process: What effort goes into a software product? Software project Staff. Software Development Lifecycle Models: Big-Bang Model, Code & Fix Model, Waterfall Model, Spiral Model. The Realities of Software Testing, Testing Axiom.	**04**	**10**
02	**TESTING FUNDAMENTALS** Black-Box and white-box testing, Static and Dynamic Testing, High Level Review of the Specification, Low Level Specification. Test Techniques: Specification Terminology Checklist, Verification and Validation, Test-to-pass and Test-to-fail, Equivalence Partitioning. Data Testing: Boundary Conditions, Sub Boundary Conditions, default, empty, blank, Null, Zero and None, Invalid, Wrong, Incorrect and garbage data.	**10**	**15**
03	**STATIC WHITE BOX TESTING** Examining the design and code, Formal Review: Peer Review, Walkthroughs, Inspections. Coding Standards and Guidelines: Generic Code Review, Checklist, Data Reference Errors, Data Declaration Errors, Computation Errors, Comparison Error, Control Flow Errors, Subroutine Parameter Errors, Input/ Output Errors. Unit and integration Testing.	**10**	**10**
04	**CONFIGURATION TESTING** Isolating Configuration: Bugs, Sizing up the job. Decide which hardware features, modes and options are possible, Configuration to a Manageable Set, Design the test cases to run on each configuration, Execute the tests on each configuration, Obtaining the hardware, Identify hardware standard, Configuration testing other hardware, Compatibility Testing Overview, Platform and Application versions, Backward and Forward compatibility, Impact of testing multiple versions.	**06**	**10**
05	**USABILITY TESTING** User Interface Testing: What makes a Good UI? Follow standards or Guidelines, Intuitive, Consistent, Flexible, Comfortable, Correct,	**06**	**10**

	Useful testing, Testing for the Disabled, Accessibility Testing: 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.		
06	**AUTOMATION TESTING AND TEST TOOLS** The benefits of automation and tools, Test tools, Viewers and Monitors, Drives, 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.	**03**	**10**
07	**PLANNING YOUR TEST EFFORTS** The goal of the test planning, Test planning topic: high level expectation, people, place, 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. Getting your bugs fixed, isolating & reproducing bugs, Not all bugs are created equal, a bug's life cycle, Bug Tracking System: The test incident Report, Manual Bug Reporting and Tracking.	**06**	**10**
08	**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.	**03**	**05**
	TOTAL	**48**	**80**

Practical:

Skills to be developed:

Intellectual skills:

1. Apply logic to solve given problem.
2. Analytical skills are required.
3. Use of programming language constructs in program implementation.

Motor skills:

Handling and operating computer in proper way.

List of Practical: (Any 10)

1. Introduction to: Software Testing Concepts.
2. Case Study: Study any system specification and report bugs.
3. Write Test Cases for any Application (e.g. Railway Reservation Form).
4. Display "Hello World".
5. Write a program to demonstrate use of :
   1) For …Loop 2) Switch … Case 3) Do…While 4) If….else
6. Automate Notepad Application.
7. Automate any installation procedure (e.g. WinZip).
8. Automate Microsoft Word Application
   1) Open Microsoft Word.
   2) Type text (automatically).
   3) Generate random file name.
   4) Save files and close Microsoft Word.
9. Create GUI Objects.
10. Create any GUI Application e.g. Calculator.
11. Assignment for Web Testing (use any Web testing tools e.g. Selenium).
12. Assignment for any Bug Tracking Tool (e.g. Bugzilla, Bugit).
13. Assignment for any test management tool (e.g. Test Director).

All the above practical questions may be performed on Windows or Linux Platform, using the tools mentioned below:

Sr. No	Testing Tools	Type of Tool
01	Auto IT	Free Ware
02	Ruby	Free Ware
03	Water	Free Ware
04	Sahi	Free Ware
05	Bugzilla	Licensed Software
06	Test Track	Licensed Software

Recommended Books:

Sr. No	Title	Author	Publication
01	Software Testing	Ron Patton	SAMS Techmedia
02	Software Testing : Principles and Practical	Srinivasan Desikan Gopalaswamy Ramesh	Pearson Education

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : ADVANCED JAVA PROGRAMMING

SUBJECT CODE : CO6003

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
04	04	03	80	20	50**	--	25*	200

Pre-requisites: The student must know the following concepts:

1. Knowledge of Object Oriented Concepts.
2. Knowledge of basic Java concepts such as Inheritance, Packages, Error Handling, Interface.

Objectives: The student will be able to

1. Create business applications.
2. Create network based applications.
3. Implement Server side programming.
4. Develop dynamic software components.
5. Develop database application.
6. Design and develop powerful GUI based components.
7. Create Animation using Applet, Thread and AWT controls.

Subject Title: ADVANCED JAVA PROGRAMMING	Subject Code: CO6003

Content : Theory

Unit	Name of the Topic	Hours	Marks
01	**INTRODUCTION THE ADVANCED WEB TECHNOLOGY** 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 and 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	16	20
02	**NETWORKING** Basics, Socket overview, Client/server, Reserved sockets, Proxy servers, Internet addressing. Java and Networking: The networking classes and interfaces, InetAddress Factory methods, Instance method, TCP/IP Client Sockets What is URL, Format, URL connection, TCP/IP Server Sockets. Datagram: Datagram packets, Datagram server and client.	08	12
03	**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: The API Components, Limitations Using JDBC(Applications vs. Applets), Security Considerations, JDBC Database Example JDBC Drivers, JDBC-ODBC Bridge, Current JDBC Drivers.	08	20
04	**THE TOUR OF SWINGS** JApplet, Icons and Labels, Text Fields, Buttons Combo Boxes, Tabbed Panes, Scroll Panes, Trees, Tables, Exploring the Swings.	08	08
05	**SERVLETS** Background, The life cycle of a Servlet, Java servlet development kit, the simple Servlet, 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, Exploring Servlet.	08	20
	TOTAL	48	80

Practical:

Skills to be developed:

Intellectual skills:

1. Object oriented concepts must be known.
2. Use of programming language constructs in program implementation.
3. Apply logic to solve given problem.
4. Identify different types of errors as syntax, semantic, fatal, linker & logical.

Motor skills:

Handling and operating of Computer in proper way.

List of Practical:

1. Write a program to design a form using components textbox, text field, checkbox, buttons, list and handle various events related to each component.
2. Write a program to design a calculator using Java components and handle various events related to each component and apply proper layout to it.
3. Write a program to demonstrate use of Grid Layout.
4. Write a program to demonstrate use of Flow Layout.
5. Write a program to demonstrate use of Card Layout.
6. Write a program to demonstrate use of Border Layout.
7. Write a program to display any string using available Font and with every mouse click change the size and style of the string. Make use of Font and Font metrics class and their methods.
8. Write a program to create a menu bar with various menu items and sub menu items. Also create a checkable menu item. On clicking a menu Item display a suitable Dialog box.
9. Write a program to increase the font size of a font displayed when the value of thumb in scrollbar increases at the same time it decreases the size of the font when the value of font decreases.
10. Write a program to retrieve hostname using methods in InetAddress class.
11. Write a program that demonstrates TCP/IP based communication between client and server.
12. Write a program that demonstrates UDP based communication between client and server
13. Write a program to demonstrate use of URL and URL Connection class for communication.
14. Write an Application program /Applet to make connectivity with database using JDBC API.
15. Write an Application program/Applet to send queries through JDBC Bridge and handle result.
16. . Write a program to design a form using basic swing components.
17. Write a program to demonstrate the use of scroll panes in Swing.
18. Write Java Program to map Directory tree.
19. Write a Java program to demonstrate the use of Tables.

20. Write a servlet for demonstrating the generic servlet class.
21. Write a servlet for demonstrating the generic servlet class.
22. Write a servlet to demonstrate the Http Servlet class using doGet ();
23. Write a servlet to demonstrate the Http Servlet class using doPost ();
24. Write a servlet to demonstrate the cookie.

Recommended Books:

Sr. No.	Title	Author	Publisher
01	The Complete Reference Java 2 (Third Edition)	Patrick Naughton –Herbert Schildt	Tata McGraw hill
02	Java 2 Unleashed	Jawroski	Techmedia
03	Java 2 Programming	Keyur Shah	Tata McGraw hill

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : OBJECT ORIENTED MODELING AND DESIGN (ELECTIVE II)

SUBJECT CODE : CO6004

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
02	04	03	80	20	--	25**	25*	150

Pre-requisites: The student must know the following concepts:

1. Knowledge of software development life cycle.
2. Knowledge of difference between procedural and object oriented languages.

Objectives: The student will be able to

1. Interpret /give the meaning of object-oriented concepts.
2. Understand different Modeling Methodology.
3. Prepare an object model for a given problem statement.
4. Prepare dynamic for a given problem statement.
5. Describe and Design the concepts of class diagram, object diagram, interaction diagram, sequence diagram collaboration, use case diagram, state and activity diagram.
6. Usage of anyone design tool.

Subject Title: OBJECT ORIENTED MODELLING AND DESIGN (ELECTIVE II)
Subject Code: CO6004

Content : Theory

Unit	Name of the Topic	Hours	Marks
01	**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.	**03**	**10**
02	**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 verses Association and Generalization, Recursive Aggregates and Propagation of Operations, Abstract Classes, Multiple Inheritance, Metadata, Candidate Keys, Constraints, Introduction to Dynamic and Functional Modeling.	**07**	**20**
03	**OVERVIEW OF UML** Efforts of standardization / Integration ,OMG approval for UML, Scope of UML, Conceptual model of UML, Architectural Metamodel, Unified Software Development Lifecycle, Introduction to UML Diagrams.	**05**	**15**
04	**UML - STRUCTURAL MODELING** Advanced Class Diagrams: Advanced Classes and Relationships, Interfaces, Types and Roles, Packages, Instances. Object Diagrams. Component Diagrams: Terms and Concepts, Common modeling techniques. Deployment Diagrams: Terms and Concepts, Common modeling techniques.	**05**	**15**
05	**UML BEHAVIORAL MODELING** Use case diagram: Terms and Concepts, Modeling techniques. 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.	**12**	**20**
	TOTAL	**32**	**80**

Practical:

Skills to be developed:

Intellectual skills:

4. Object oriented concepts must be known.
5. Use of programming language constructs in program implementation.
6. Apply logic to solve given problem.
7. To know the basic concepts of designing.

Motor skills:

Handling of Computer in proper way.

1. Basic understanding of GUI.

List of Practical:

1. Analyze and design the UML diagrams for :

    - ATM System
    - Railway Reservation System
    - Library Management System.

2. Analyze and design the UML diagrams and develop program for minimum three systems.

Recommended Books:

Sr. No.	Title	Author
01	Object Oriented Modeling and Designing (Refer for First and Second Chapter)	Rumbaugh, Blaha
02	The UML User Guide (Addison Wesley) (Refer for Third, Fourth and fifth Chapter)	Booch, Jacobson, Rumbaugh
03	Practical OOD with UML-. (Refer for Fourth and Fifth Chapter)	Mark Paiestly

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : INTRODUCTION TO EMBEDDED SYSTEM

(Elective II)

SUBJECT CODE : CO6005

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
02	04	03	80	20	--	25**	25*	150

Pre-requisites: The student must know the following concepts:

1. Architecture of 8051 Microcontroller.
2. Pin Diagram of 8051 Microcontroller.
3. 8051 Instruction Set.
4. Assembly Language Programming.
5. RISC & CISC architecture.

Objectives: The student will be able to

1. Access embedded systems hardware units like processor, I/O device, On-chip and off chip Device, Power supply etc.
2. Interface various devices using ports.
3. Write embedded program.
4. Develop programmable interrupt controller.
5. Perform software analysis, design, implementation, testing, debugging for embedded Systems.

Subject Title: INTRODUCTION TO EMBEDDED SYSTEM (ELECTIVE II)
Subject Code: CO6005

Content : Theory

Unit	Name of the Topic	Hours	Marks
01	**8051- MICROCONTROLLERS** Overview of 8051 family, Architecture, Memory organization, Functional pin, Ports & circuit, Addressing mode, Instruction Set.	**03**	**05**
02	**HARDWARE OVERVIEW** Study of interrupt structure, Port structure and Programming, Study of SBUF, TCON, TMOD, SMOD, SCON Register, Timer/Counter & Serial Communication Programming.	**04**	**10**
03	**SERIAL COMMUNICATION & PARALLEL COMMUNICATION** Serial Communication - RS-232, I2C, CAN Parallel Communication - ISA, PCI, PCI-X Advance I/P and O/P buses, Study of RS-232 Pin out.	**05**	**15**
04	**EMBEDDED SYSTEM** Introduction, Processor in the system, Different Hardware Units, Software Embedded into System, Exemplary Embedded system, System-On-Chip (SOC) & VLSI systems.	**03**	**15**
05	**MEMORY ORGANIZATION** Structure unit in processor, Processor selection, Memory devices & selection, allocation of memory, DMA, Interfacing processor and I/P, O/P devices.	**04**	**05**
06	**DEVICE DRIVER & INTERRUPTS SERVICING MECHANISM** Device Drivers, Parallel port device driver , Serial port device driver, Internal Programmable timing devices, Interrupts handling mechanism, Context switching.	**05**	**15**

07	**RTOS & INTERPROCESS COMMUNICATION** Concepts of RTOS, Requirement, Need, Specification of RTOS in Embedded systems, Multitasking, Task synchronization and Mutual Exclusion, Starvation, Deadlock, Multiple process Problem of sharing data by Multiple task and routines, Inter process communication.	**08**	**15**
	TOTAL	**32**	**80**

Practical:

Skills to be developed:

Intellectual skills:

1. Use of programming language construct in program implementation.
2. To be able to apply different logics to solve given problem.
3. To be able to write program using different implementation for different problem.
4. Debugging of program.

Motor skills:

Understanding different steps to develop program such as:
Problem definition, Analysis, Design of logic, Coding, Testing and Maintenance.

List of Practical:

It is expected that students should perform at least 8 experiments from the following list. Out of which any one of the experiments shall be performed on 8051 kit and the remaining can be performed using pc and kit either using Assembler or "C" programming language. Students must also do a mini project covering practical knowledge gained in the subject and submit a brief project report with subject journal. This report should also include the importance of the project from industry point of view.

1. Write a Program on Block Move.
2. Assume 1Hz.Frequency pulse is connected to I/P P3.4. Write a Program display count on LCD kit.
3. Write a Program to find the frequency of square wave generated on pin P1.0.
4. Write a Program to generate a square wave of 50Hz. frequency on pin P1.2 using interrupt for timer.
5. Write a Program to connect INT 1 pin to a switch that is normally high whenever it goes low LED should turn ON which is connected to P 1.3 & LED is normally OFF. LED should be ON as long as switch is pressed.
6. Write a Program to transfer massage "Yes" serially at 9600 baud rate 8-bit,
7. data,1 stop-bit & do this continuously.
8. Write a Program for Interfacing ADC & DAC.
9. Write a Program to Interface keyboard.

10. Write a Program to Interface LCD.
11. Write a Program to Interface stepper motor.

11. Mini project:

This project should be at least of the level of interfacing some devices. "C" Programming language can also be used for the development of project.

Recommended Books:

Sr. No	Title	Author	Publisher
01	Embedded Systems	Raj Kamal	--
02	An Embedded Software Primer	David E. Simon	Pearson Education
03	The 8051 Microcontroller and Embedded Systems	--	Pearson Education
04	Embedded System Design: A unified Hardware/Software Introduction	Frank Vahid, Toney Givargis	John Wiley
05	Embedded Linux	Craig Hollabaugh	Pearson Education
06	Fundamentals of Embedded Software	Daniel Lewis	Pearson Education
07	Embedded C Programming and the Atmel AVR	Barnett, Cox, O'Cull	Thomson Learning
08	Programming and Customizing the 8051 Microcontroller	Mike Predko	TataMcgrawHill

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : ENTREPRENEURSHIP DEVELOPMENT

SUBJECT CODE : CO6006

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
01	--	--	--	--	--	--	50*	25

Pre-requisites: The student must know the following concept:

Knowledge of basic management concepts.

Objectives: The student will be able to

1. Identify entrepreneurship opportunity.
2. Acquire entrepreneurial values and attitude.
3. Use the information to prepare project report for business venture.
4. Develop awareness about enterprise management.

Subject Title : ENTREPRENEURSHIP DEVELOPMENT	Subject Code: CO6006

Content : Theory

Unit	Name of the Topic	Hours
01	**ENTREPRENEURSHIP, CREATIVITY & OPPORTUNITIES** Concept, Classification and Characteristics of Entrepreneur Creativity and Risk taking : Concept of Creativity & Qualities of Creative person. Risk Situation, Types of risk & risk takers. Business Reforms : Process of Liberalization, Reform Policies, Impact of Liberalization, Emerging high growth areas. Business Idea Methods and techniques to generate business idea. Transforming Ideas in to opportunities transformation involves Assessment of idea and Feasibility of opportunity, SWOT Analysis.	03
02	**INFORMATION AND SUPPORT SYSTEMS** Information Needed and Their Sources. Information related to project, Information related to support system, Information related to procedures and formalities SUPPORT SYSTEMS Small Scale Business Planning, Requirements, Government and Institutional Agencies, Formalities. Statutory Requirements and Agencies.	02
03	**MARKET ASSESSMENT** Marketing -Concept and Importance, Market Identification, Survey Key components, Market Assessment.	02
04	**BUSINESS FINANCE & ACCOUNTS** Business Finance Cost of Project : Sources of Finance, Assessment of working capital, Product costing, Profitability, Break Even Analysis, Financial Ratios and Significance. Business Account: Accounting Principles, Methodology, Book Keeping, Financial Statements, Concept of Audit.	03
05	**BUSINESS PLAN & PROJECT REPORT** Business plan steps involved from concept to commissioning: Activity Recourses, Time, Cost Project Report: Meaning and Importance, Components of project report/profile (Give list).	03

	Project Appraisal: Meaning and definition Technical, Economic feasibility, Cost benefit Analysis.	
06	**ENTERPRISE MANAGEMENT AND MODERN TRENDS** Enterprise Management: Essential roles of Entrepreneur in managing enterprise. Product Cycle: Concept and importance. Probable Causes Of Sickness Quality Assurance: Importance of Quality, Importance of testing. E-Commerce: Concept and process. Global Entrepreneur Prepare project report and study its feasibility.	**03**
	TOTAL	**16**

Assignments:

1. Assess yourself- Are you an entrepreneur?
2. Prepare project report and study its feasibility.

Recommended Books:

Sr.No.	Title	Author	Publisher
01	Entrepreneurship Theory and Practice	J.S. Saini B.S.Rathore	Wheeler Publisher New Delhi
02	Entrepreneurship Development	TTTI, Chandigadh	TTTI, Chandigadh
03	Entrepreneurship Development	E. Gorden K.Natrajan	Himalaya Publishing. Mumbai

Components of Project Report:

1. Project Summary (One page summary of entire project).
2. Introduction (Promoters, Market Scope/ requirement).
3. Project Concept & Product (Details of product).
4. Promoters (Details of all Promoters- Qualifications, Experience, Financial strength).
5. Manufacturing Process & Technology.
6. Plant & Machinery Required.
7. Location & Infrastructure required.
8. Manpower (Skilled, unskilled).
9. Raw material, Consumables & Utilities.
10. Working Capital Requirement (Assumptions, requirements).
11. Market (Survey, Demand & Supply).
12. Cost of Project, Source of Finance.
13. Projected Profitability & Break Even Analysis.
14. Conclusion.

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : INDUSTRIAL PROJECTS

SUBJECT CODE : CO6007

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
--	--	06	--	--	--	--	50**	50*	100

Pre-requisites: The student must know the following concepts:

1. Knowledge of programming language such as VB.
2. Knowledge of database concepts.
3. Knowledge of Ms Access, Oracle.
4. Knowledge of software development lifecycle.
5. Should be able to design using designing tool.

Objectives: The student will be able to

1. Work in groups, plan the work, and coordinate the work.
2. Develop leadership qualities.
3. Develop innovative ideas.
4. Implement the acquired knowledge practically.
5. Develop basic technical Skills by hands on experience.
6. Write project report.
7. Develop skills to use latest technology in Computer/Information Technology field.
8. Analyze the different types of Case studies.

Subject Title : INDUSTRIAL PROJECTS	Subject Code: CO6007

Contents: Two hours should be allotted for giving the instructions for preparing a project Report

Group	Projects
I Software Oriented Projects	(1) Develop Application Software for Hospital / Shopping Mall/Cinema Theatre/Commercial Complex. Complex/Educational Institute/Industrial (2) Develop In-house Systems. (3) Case Studies Related to Industries - Operation / Maintenance / Repair and Fault Finding. (Refer Guideline Document). (4) Develop Information Processing System. (5) Develop Web Based Applications using Web Technologies. (6) Develop Network monitoring system. (7) Develop systems for financial organization. (8) Develop System Program based system like compilers, editors, spreadsheets, mini database systems.
II Hardware Oriented Projects	(1) Develop Intrusion Detection System. (2) Develop Speech Recognition System. (3) Develop Image Processing Systems. (4) Develop Expert Systems. (5) Develop Artificial Intelligence based Systems. (6) Develop various types of Interfacing Applications. (7) Develop device Controllers.
III Seminar	Seminar on any relevant latest technical topic based on latest research, recent trends, new methods and developments in the field of Computer Engineering / Information Technology.

Note: - One project from any one group.

Recommended Reading :

Sr. No	
01	IEEE Transactions/Journals
02	Computer Today.
03	PC Quest.
04	Data Quest
05	Any Journal Related to Computer/Information Technology/Electronics field.
06	Computer World
07	Chip
08	IT World

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING

COURSE CODE : CO

SEMESTER : SIXTH

SUBJECT TITLE : PROFESSIONAL PRACTICES -V

SUBJECT CODE : CO6008

TEACHING AND EXAMINATION SCHEME:

Teaching Scheme		Examination Scheme						
TH	TUT	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
	02***	--	--	--	--		50*	50

Pre-requisites: The student must know the following concepts:

1. Proficient in English.
2. Good communication skill.
3. Knowledge of using internet and search engine.

Objectives: The student will be able to

1. Acquire information from different sources.
2. Prepare notes for given topic.
3. Present given topic in a seminar.
4. Interact with peers to share thoughts.
5. Prepare a report on industrial visit, expert lecture.

Subject Title : PROFESSIONAL PRACTICES – V	Subject Code: CO6008

Content: Theory

Sr. No.	Activity	Hours
01	**INDUSTRIAL VISITS(any 2)** Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form part of the term work. Visit an industry, Collect organization chart, Roles and responsibilities of each post. No. of resources available in industry etc.	10
02	**GUEST LECTURES** By professional / industrial expert be organized from any three of the following areas: Data Mining, SAP, Neural network, Software project Management, Wi-Fi Technology, Any other suitable topic.	06
03	**INFORMATION SEARCH :** 1. Buying of a new computer (cost, make, model etc.), 2. Comparison of .different computer architectures, 3. Software security, 4. Video conferencing, 5. XML, 6. Any other suitable topic.	08
04	**GROUP DISCUSSION :** The students should discuss in group of six to eight students and write a brief report on the same as a part of term work. The topic group discussions may be selected by the faculty members. Some of the suggested topics are Hacking, Computer virus, Chatting on Net, Working BPO, Software piracy, Computer gaming, Any other suitable topic.	04
05	**STUDENT ACTIVITIES :** The students in a group of 3 to 4 will perform any one of the following activities (other similar activities to be considered), and write a report as part of term work. **Activity :** Collect information from Computer repairing center (at which level repairing is done, cost). Collect information regarding latest requirement for a job from any industry.	08
	TOTAL	36