
SEMESTER - III



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

**35231 - BASICS OF ELECTRICAL AND
ELECTRONICS ENGINEERING**

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35231

Semester : III

Subject title : BASICSOF ELECTRICAL AND ELECTRONICS ENGINEERING

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester 15 Weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
Basics of Electrical and Electronics Engineering	5Hrs	75Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

TOPICS AND ALLOCATION OF HOURS

Unit No.	Topic	No of Hours
I	AC FUNDAMENTALS , BATTERIES AND UPS	12
II	TRANSFORMER AND SPECIALMOTORS	12
III	SEMICONDUCTOR DEVICES	14
IV	BOOLEAN ALGEBRA , LOGIC GATES AND COMBINATIONAL SYSTEMS	14
V	SEQUENTIAL LOGICSYSTEM	13
TEST AND REVISION		10
TOTAL		75

Rationale:

Diploma Engineers from all branches of engineering are expected to have some basic knowledge of electrical and electronics engineering. Also the technicians working in different engineering fields have to deal with various types of electrical equipments. Various types of electronic circuits

are used in different electrical equipments. Hence it is necessary to study electric circuits, different types of electrical machines and electronic devices their principles and working characteristics. The basic concepts studied in this subject will be very useful for understanding of higher level subjects in further study.

Objectives:

On completion of the following units of syllabus contents, the students must be able to

- Understand the AC fundamentals
- Understand the working principle of UPS
- Know about stepper motors and servo motors
- Familiarize with semiconductor devices, rectifier circuits, transistors and its applications
- Use Binary, Octal and Hexadecimal numbers
- Define logic gates
- Significance of Boolean algebra in digital circuits
- Understand the working principles of sequential and combinational logic circuits
- Define Flip- flops and describe behavior of various flip flops
- Know about Synchronous and Asynchronous counters
- Know about the function of shift registers

DETAILED SYLLABUS

UNIT I. AC FUNDAMENTALS ,BATTERIES AND UPS		12Hrs
1.1	AC Fundamentals: Difference between AC and DC - Advantages of AC over DC – Waveform of sinusoidal A.C. Cycle – Generation of single phase A.C. by elementary alternator - Definition of cycle, frequency, time period, amplitude, peak value, average value and rms value – Define peak factor and form factor - Concept of phase , phase difference and phase angle – Single phase and 3 phase (Definition) - Meaning of lagging and leading sine wave - Advantages of three phase over single phase	6 Hrs
1.2	Batteries: Classification of cells - Construction of Lead acid cell – Methods of charging – Care and Maintenance of Lead acid battery – Indications of a fully charge battery – Maintenance free batteries.	3 Hrs
1.3	UPS : Need for UPS - Online and Offline UPS – Definition – Block Diagram – Explanation of each block – Merits and demerits of on line and off line UPS – Need of heat sink- Specification and ratings –Maintenance of UPS including batteries	3 Hrs

UNIT II.TRANSFORMER AND SPECIAL MOTORS		12 Hrs
2.1	Single Phase transformer: Working Principle and Construction of transformer – Brief description of each part – Function and materials used - emf equation of transformer (No derivation) – Voltage and current ratio of a transformer – Efficiency - Losses in a transformer - Auto transformer - Comparison with two winding transformer – Applications – Step up and Step down transformer (Definition only)	5Hrs
2.2	Special Motors: Stepper Motor: Definition - Working principle - Types and applications – Servo motors: Definition - Working principle - Types and applications – Factors to be considered for selecting a motor for a particular application.	5Hrs
2.3	Electrical Safety: Electric shock-need for earthing-types of earthing, fuses-need-types of fuses	2Hrs
UNIT III.SEMICONDUCTOR DEVICES		14 Hrs
3.1	Diodes: PN Junction diode – Barrier Voltage, Depletion Region – Forward biased and Reverse biased Junction – Working principle - forward /Reverse characteristics of P-N Junction diode - Applications of diode – Zener Diode: Construction -Characteristics (Forward and Reverse) – Avalanche and Zener break down - Applications of Zener diode. Light Emitting Diodes-operation, construction and characteristics. LDR – Principle of operation and Characteristics .Photo Diode – Principle of operation(concept only)	6Hrs
3.2	Rectifiers: Definition – Need of Rectification – Circuit diagram, Operation, i/p and o/p Waveforms of Half wave - Full wave- Bridge rectifiers (without filters) - Uses of filters in rectifier circuit – Ripple factor, Efficiency and PIV (No derivation) – Comparison	4Hrs
3.3	Bipolar Junction Transistor: Definition - Principle of NPN and PNP transistor - Symbol - Transistor terminals - Operating principle (NPN transistor only) - Configurations of transistor – Comparison between CB, CE and CC - Input and Output characteristics of CE configuration – Transistor application as switch.	4Hrs
UNIT IV.BOOLEAN ALGEBRA ,LOGIC GATES COMBINATIONAL SYSTEM		14 Hrs
4.1	Number representation: Decimal, Binary, Octal and Hexa decimal number systems- Conversion of number from one number system to another (without decimal point) - BCD CODE – ASCII Codes - Parity bit – Use of a parity bit – Odd parity and Even parity	3Hrs

4.2	Logic gates: Positive and Negative logic System - Definition, Truth table, Symbol and Logical equations of AND – OR - NOT – EXOR - EXNOR (Only 2-inputs) gates – Universal gates - NAND - NOR – Symbol and truth table .	3Hrs
4.3	Boolean Algebra : Basic laws of Boolean algebra – Demorgan’s Theorem and proofs – Duality theorem - Simplification of logical equations using Boolean laws - De-Morgan’s theorem – Two and three variable Karnaugh map	3Hrs
4.4	Arithmetic Circuits: Half Adder and full adder- Truth table, Circuit diagram – Half subtractor and Full subtractor - Truth table, Circuit diagram.	3Hrs
4.5	Combinational logic circuits: Parity generator and checker - Multiplexer - De multiplexer – Encoder - Decoder (Definition and Basic Circuits only) – Comparator Circuit for two bit words.	2Hrs
UNIT V .SEQUENTIAL LOGIC SYSTEM		-13 Hrs
5.1	Flip flops: Basic principle of operation - S-R, D flip-flop – Operation and truth table - Race Condition – JK flip flop – T flip flop – Toggling - Edge Triggered Flip-flop – Level Triggered flip flop - Need for a Master-slave flip flop - J-K Master Slave flip flop.	5Hrs
5.2	Counters: Need- Types of counters- 4 bit Asynchronous counter-Mod N counter-Decade Counter- 4 bit Synchronous counter-Distinguish between Synchronous and Asynchronous counter-Application of counters	4Hrs
5.3	Registers: Shift register - Block diagram representation and waveform of serial –in Serial out, Serial – in Parallel – out, Parallel in -parallel out Applications of Shift Registers.	4Hrs

TEXT BOOKS

S.No	Title	Author	Publisher	Year of Publishing / Edition
1	Electrical Technology Vol I and II	B.L.Theraja	S.Chand& Co , New Delhi	Mutiple Colour Revised First Edition,2012
2	Modern Digital Electronics	R.P. Jain	TataMc-GrawHill, New Delhi	Third Reprint 2010
3	Principles of Digital electronics	K.Meena	PHI learning Private Ltd	2009

REFERENCES

S.No	Title	Author	Publisher	Year of Publishing/ Edition
1.	Digital Electronics and Logic Design	Jaydeep Chakravarthy	University Press, Hyderabad	First Edition2012
2.	Basic Electrical Engineering	V.N.Mittle	Tata Mc-Graw Hill, NewDelhi	First Edition
3.	Basic Electrical and Electronics Engineering	R,Muthusubramanian R.Salivajanan	Tata Mc-Graw Hill, NewDelhi	Seventh Reprint 2011
4..	Principles of Electronics	V.K.Mehta	S.Chand & Co, NewDelhi	Second Edition
5.	Digital Electronics	G.K.Kharate	Oxford University Press	2010



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

35232 – OPEARTING SYSTEMS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35232

Semester : III

Subject title : OPEARTING SYSTEMS

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
OPEARTING SYSTEMS	5 Hrs	75 Hrs	Internal Assessment	Board Examination	Total	
			25	75	100	

TOPICS AND ALLOCATION OF HOURS

Unit	Topic	No of
1	Introduction to Operating System	14
2	Process management	16
3	Memory Management	12
4	I/O and File Management, Security and Protection	13
5	Linux – Case study	10
TEST AND REVISION		10
TOTAL		75

Rationale :

The heart of a computer is based around its Operating System. The processor deals with request coming from all directions asynchronously. The operating system has to deal with the problems of Contention, resource management and both program and user data management, and provide a

Useful no-wait user interface. The concept of Operating System is discussed through case studies of LINUX. The course provides clear vision, understanding and working of Operating Systems.

Objectives:

- Understand the purpose, goals, functions and evolution of Operating Systems.
- Understand the concept of process, various states in the process and their scheduling.
- Classify different types of schedulers and scheduling algorithms.
- Identify the significance of inter-process communication and synchronization.
- Discuss the usage of semaphore in inter-process communication.
- Understand the conditions for a deadlock.
- Describe the ways to recover from the deadlock.
- Know about memory protection against unauthorized access and sharing.
- Compare and contrast paging and segmentation techniques.
- Define virtual memory and its underlying concepts.
- Describe the page replacement policies like Optimal, FIFO and LRU.
- Discuss the disk scheduling techniques.
- Mention the role of security policies
- Discuss about significance of authentication
- Describe the features and brief history of Linux
- Compare Unix and Linux
- Explain Linux architecture
- Describe the process management, memory management handled by LINUX
- Describe file management , device drivers handled by Linux

DETAILED SYLLABUS

UNIT I INTRODUCTION TO OPERATING SYSTEMS		14 Hrs
1.1	Basics of Operating Systems: Definition – Generations of Operating systems – Types of Operating Systems: Mainframe, Desktop, Multiprocessor, Distributed, Clustered, Multiprogramming, Real time, Embedded and Time sharing.	4 Hrs
1.2	Operating System Components: Process Management component – Memory Management component - I/O Management component – File Management component - Protection System – Networking management component – Command interpreter	4 Hrs
1.3	Operating System Services: Process Execution – I/O operations – File manipulations – Communications – Error detection and recovery – Resource allocation – Accounting – System Protection - System Calls – System call Execution	4 Hrs
1.4	Operating System Structures: Simple structure, Layered, Monolithic, Microkernel Operating Systems – Concept of Virtual Machine – Booting	2 Hrs

UNIT – II PROCESS MANAGEMENT		16 Hrs
2.1	Processes: Definition – Process Relationship - Process states – Process State transitions - Process Control Block – Context switching – Threads – Concept of multithreads – Benefits of threads – Types of threads	4 Hrs
2.2	Process Scheduling: Definition – Scheduling objectives – Types of Schedulers – Scheduling criteria – CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) – Scheduling algorithms – Pre emptive and Non – pre emptive - FCFS – SJF – RR - Multiprocessor scheduling – Types - Performance evaluation of the scheduling.	5 Hrs
2.3	Inter-process Communication and Synchronization: Definition – Shared Memory System – Message passing – Critical section – Mutual Exclusion - Semaphores.	4 Hrs
2.4	Deadlocks: Definition – Deadlock characteristics – Deadlock Prevention – Deadlock Avoidance – Deadlock detection and Recovery.	3 Hrs
UNIT – III MEMORY MANAGEMENT		12 Hrs
3.1	Basic Memory Management : Definition – Logical and Physical address map – Memory allocation – Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction – Paging – Principle of operation – Page allocation – Hardware support for paging – Protection and sharing – Disadvantages of paging.	5 Hrs
3.2	Virtual Memory : Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault , Working Set , Dirty page/Dirty bit – Demand paging (Concepts only) – Page Replacement policies – Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU)	7 Hrs
UNIT – IV I/O AND FILE MANAGEMENT , SECURITY & PROTECTION		13Hrs
4.1	Disk Management: Disk Structure, Disk Scheduling and its algorithms, RAID TECHNOLOGY.	4 Hrs
4.2	File Management: File concept – File attributes – Name, Identifier, Type, Location, Size, Time, Date, user identification – File Operations - Directory Structure – Single level, Two level, Tree Structure – Disk space allocation methods– Contiguous, Linked, Indexed. Access Methods – Sequential, Random access – File system structure – Byte sequence, Record sequence and Tree-based – Disk formatting	6 Hrs
4.3	Security and Protection: Security threats – Security Policies and mechanisms – Authentications	3 Hrs
UNIT – V LINUX – A CASE STUDY		10 Hrs
5.1	Introduction – History of Linux – Features of Linux- Linux Architecture - Popular Flavors of Linux - FSF/GNU - Linux Desktop: GNOME-KDE.	6 Hrs
5.2	File System – ext2 – Virtual File System - Different types of files - File Management – File Security – 3 levels – Mounting file system – Unmounting	4 Hrs

TEXT BOOKS

Sl.No.	TITLE	AUTHOR	PUBLISHER	Edition
1	Operating System concepts	Abraham Siberschatz Galvin, Gagne	Wiley	9th Edition
2	Operating System Internal and Design Principles	William Stallings	Pearson Education	7 th Edition

REFERENCES

Sl.No	TITLE	AUTHOR	PUBLISHER	Year of Publishing/Edition
1	Operating system, Principals & Design	Pal Chaudhury	PHI Learning	First Edition
2	Operating System	William stalling	Pearson Education, New Delhi.	2003
3	Operating Systems	Deitel and Deitel	Pearson Education, New Delhi.	Third Edition, 2007
4	Operating System	Rohit Khurana ITLESE	Vikas Publishing Ltd	First Edition 2011



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

35233– C PROGRAMMING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(Implemented from the academic year 2016-2017 onwards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35233

Semester : III

Subject title : C PROGRAMMING

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester 15 Weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
C Programming	6 Hrs	90 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

TOPICS & ALLOCATION OF HOURS

Unit No.	Topics	No. of Hours
I	PROGRAM DEVELOPMENT AND INTRODUCTION TO C	15
II	DECISION MAKING, ARRAYS AND STRINGS	16
III	FUNCTIONS, STRUCTURES AND UNIONS	16
IV	POINTERS	17
V	FILE MANAGEMENT & PREPROCESSORS	16
TEST AND REVISION		10
TOTAL		90

Rationale

C' is the most widely used computer language, which is being taught as a core course. C is general purpose structural language that is powerful, efficient and compact, which combines features of high level language and low-level language. It is closer to both Man and Machine. Due to this inherent flexibility and tolerance it is suitable for different development environments. Due to these powerful features, C has not lost its importance and popularity in recently developed and advanced software industry. C can also be used for system level programming and it is still considered as first priority programming language. This course covers the basic concepts of C. This course will act as "Programming concept developer" for students. It will also act as "Backbone" for subjects like OOPS, Visual Basic, Windows Programming, JAVA etc.

OBJECTIVES

At the end of the Course, the students will be able to

- Define Program, Algorithm and flow chart
- List down and Explain various program development steps
- Write down algorithm and flow chart for simple problems.
- Describe the concepts of Constants, Variables, Data types and operators.
- Develop programs using input and output operations.
- Use of command line arguments.
- Explain compiler controlled directives.
- Understand the structure and usage of different looping and branching statements.
- Define arrays and string handling functions.
- Explain user-defined functions, structures and union.
- Define pointers and using the concept of Pointers.
- To understand the dynamic data structure and memory management.

DETAILED SYLLABUS

UNIT - I Program Development & Introduction to C		15Hrs
1.1	Program Algorithm & flow chart:- Program development cycle- Programming language levels & features. Algorithm – Properties & classification of Algorithm, flow chart – symbols, importance & advantage of flow chart.	3Hrs
1.2	Introduction C: - History of C – features of C structure of C program – Compiling, link & run a program. Diagrammatic representation of program execution process.	2Hrs

1.3	Variables, Constants & Data types:. C character set-Tokens-Constants- Key words – identifiers and Variables – Data types and storage – Data type Qualifiers – Declaration of Variables – Assigning values to variables- Declaring variables as constants-Declaration – Variables as volatile- Overflow & under flow of data	4Hrs
1.4	C operators:-Arithmetic, Logical, Assignment .Relational, Increment and Decrement, Conditional, Bitwise, Special Operator precedence and Associativity. C expressions – Arithmetic expressions – Evaluation of expressions- Type cast operator	4Hrs
1.5	.I/O statements: Formatted input, formatted output, Unformatted I/O statements	2Hrs
UNIT – II DECISION MAKING,ARRAYS and STRINGS		16 Hrs
2.1	Branching:- Introduction – Simple if statement – if –else – else-if ladder , nested if-else-Switch statement – go statement – Simple programs.	4Hrs
2.2	Looping statements:- While, do-while statements, for loop, break & continue statement – Simple programs	4Hrs
2.3	Arrays:- Declaration and initialization of One dimensional, Two dimensional and Character arrays – Accessing array elements – Programs using arrays	4Hrs
2.4	Strings :- Declaration and initialization of string variables, Reading String, Writing Strings – String handling functions (strlen(),strcat(),strcmp()) – String manipulation programs	4Hrs
UNIT – III FUNCTIONS, STRUCTURES AND UNIONS		16 Hrs
3.1	Built –in functions: -Math functions – Console I/O functions – Standard I/O functions – Character Oriented functions – Simple programs.	4Hrs
3.2	User defined functions:- Defining functions & Needs-, Scope and Life time of Variables, , Function call, return values, Storage classes, Category of function – Recursion – Simple programs	6Hrs
3.3	Structures and Unions:- Structure – Definition, initialization, arrays of structures, Arrays with in structures, structures within structures, Structures and functions – Unions – Structure of Union – Difference between Union and structure – Simple programs.	6Hrs
UNIT - IV POINTERS		17 Hrs

4.1	Pointers:- Definition – advantages of pointers – accessing the address of a variable through pointers - declaring and initializing pointers- pointers expressions, increment and scale factor- array of pointers- pointers and array - pointer and character strings –function arguments – pointers to functions – pointers and structures – programs using pointer.	12Hrs
4.2	Dynamic Memory Management:- introduction – dynamic memory allocation – allocating a block memory (MALLOC) – allocating multiple blocks of memory (CALLOC) –releasing the used space: free – altering the size of a block (REALLOC) – simple programs	5Hrs
UNIT –V FILE MANAGEMENT AND PREPROCESSORS		16 Hrs
5.1	File Management: Introduction-Defining and opening a file-closing a file-Input/ Output operations on files—Error handling during I/O operations –Random Access to files—Programs using files	9Hrs
5.2	Command line arguments: Introduction – argv and argc arguments – Programs using command Line Arguments –Programs	3Hrs
5.3	The preprocessor: Introduction – Macro Substitution, File inclusion, Compiler control directives.	4Hrs

Text book:

1. Programming in ANSI C 4E by Prof. E. BALAGURUSAMY, the TATA McGRAW – HILL publications.

REFERNCES

S.No	Title	Author	Publisher	Year of Publishing/ Edition
1.	Programming and Problem solving using C	ISRD Group, Lucknow	Tata Mc-GrawHill, NewDelhi	Sixth Reprint 2010
2.	Let us C	Yeswanth Kanetkar	BPB Publications	Fourth Revised
3.	A TextBook on C	E.Karthikeyan	PHI Private Limited, New Delhi	2008

4.	Programming in C	D.Ravichandran	New Age International Publishers, Chennai	FirstEdition1996 Reprint2011
5.	Computer Concepts and	Dr.S.S.Khandare	S.Chand & Company Ltd. New Delhi	FirstEdition2010
6.	Complete Knowledge in C	Sukhendu Dey, Debobrata Dutta	Narosa Publishing House, New Delhi	Reprint2010
7.	Programming in C	Reema Theraja	Oxford University Press	FirstEdition2011
8.	Practical C Programming	Steve Oualline	O'Reilly, Shroff	Eleventh Indian ReprintOct2010



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

**35234 – ELECTRICAL AND ELECTRONICS
ENGINEERING PRACTICAL**

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35234

Semester : III

Subject title : Electrical and Electronics Engineering Practical

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester 15 Weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
Electrical and Electronics Engineering Practical	4 Hrs	60 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

OBJECTIVES

On completion of the following practical contents the students must be able to

- Verify Power supply of SMPS
- Find the efficiency and voltage regulation of a single phase transformer
- Study the characteristics of PN junction diode and Zener Diode
- Function of Rectifier circuit
- Test the performance of Light devices
- Know about the function of a Transistor
- How to construct different logic functions using universal gates
- Realize the combinational circuits and sequential circuits

LAB EXERCISES

1	A	Checking of power supply in SMPS
	B	To determine Efficiency and Voltage Regulation of single phase transformer using direct loading method
2	A	Construct the circuit and draw the forward characteristics of PN junction Diode and find input resistance.
	B	Construct the circuit and draw the reverse characteristics of Zener Diode and find breakdown voltage.
3		Construct the circuit and draw the graph for different stages of Bridge rectifier with filter using CRO
4	A	Construct the circuit and draw the characteristics of LDR
	B	Construct the circuit and draw the VI characteristics of LED
5	A	Construct CE configuration circuit and draw the input characteristics and also find input resistance
	B	Construct CE configuration circuit and draw the output characteristics and also find output resistance .
6	A	Verify the truth tables of NAND,AND,NOR,OR,NOT,XOR using IC's
	B	Realization of basic gates using either NAND or NOR gate.
7		Construct and verify Half adder and Half Subtractor
8		Construct and verify the truth table of Full adder
9		Construct and verify the truth table of Full subtractor
10		Verify the truth tables of RS, D, T and JKFF
11		Construct and test the parity generator and checker function using IC 74180
12		Construct and test encoder and decoder circuit(IC 74138)
13		Construct and test the function of Multiplexer and De-ultiplexer(IC 74151)
14		Construct and test the 4 bit Ripple counter (IC7493)
15		Construct and test decade counter (IC 7490)

SCHEME OF VALUATION	
Writing any one Experiment (CIRCUIT DAIGRAM,TABULAR COLUMN, TRUTHTABLE/EQUATION/FORMULA)	30 Marks
Construction	30 Marks
Result	10 Marks
VIVA – VOCE	05 Marks
Total	75 Marks

EQUIPMENTS/COMPONENTS REQUIRED

EQUIPMENTS

S.No	Name of the Equipments	Range	Required Nos
1	Ammeter	(0-50) Ma	6
2	Voltmeter	(0-20) V,(0-1v)	6
3	Power supply	0-30V	6
4	Digital Trainer Kit		6
5	Bread Board		6
6	Fixed dual power Supply	0-15 V	2
7	Signal generator	1 MHz	2
8	CRO Dual Trace	30 MHz	6
9	Single Phase Transformer		

COMPONENTS

S.No	Name of the components	
1	Resistors	1150Ω, 1KΩ, 2.2KΩ,10KΩ,2 20Ω
2	Capacitor	10μF, 4.7μF
3	PN Diode	IN4007
4	Zener Diode	Z11.1
5	Transistor	SL100,CL100
6	IC7400, IC7402, IC7404, IC7408, IC7432, IC7486	
7	Ic 74180,IC 74153,IC 7476,IC 7474	
8	IC 7490,IC 7493,IC 7495	



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

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III SEMESTER

2015 –2016 onwards

35235 –LINUX PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35235

Semester : III

Subject title : Linux Practical

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester 15 Weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
Linux Practical	4Hrs	60Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

OBJECTIVES:

On completion of the following exercises, the students must be able to

- Login and logoff Procedures
- Use of General purpose commands
- Explain the use of simple filters and advanced filters.
- Know the details of process status
- Use Various communication Commands
- Search patterns
- Use of shell scripts
- Define the elements of the shell script
- Write shell script for various problems.

LAB EXERCISES

PART – A LINUX COMMANDS	
Write down the syntax and usage of the following exercise with all options. Check the commands with the system	
1	(a) Logon to LINUX and logoff. (b) Usage of directory management commands: ls, cd, pwd, mkdir, rmdir (c) Usage of File Management commands: cat, chmod, cp, mv, rm, more, file commands
2	Use the general purpose commnds: wc, od, lp, cal , date, who , tty ,ln
3	Using the simple filters: pr, head, tail, cut, paste, nl, sort
4	Advanced filters : Search for a pattern using grep, egrep & fgrep
5	To know the details of process status- pscommand , Process management commands: &,nohup, kill, nice
6	Communication Commands: news, write, mail, wall, calendar
7	Device pattern using meta character to match each of the following situation:- a. All two character filenames. b. All filenames consisting of two lowercase letters. c. All filenames ending with c. d. All filenames beginning with a c and ending with a digit. e. All filenames beginning with p and having at somewhere.
PART – B SHELL SCRIPTS	
1	Write a shell-script that accepts a numerical value N. Then display the decrementing value of N till it reaches 0.
2	Write a shell-script that takes three command line arguments. The first argument is the name of the destination file and the other two arguments are names of files to be placed in the destination file.
3	Write a Shell script to print contents of file from given line number to next given number of lines
4	a)Shell script to say Good morning/Afternoon/Evening as you log in to system b)Write a shell-script that print out date information in this order: time, day of the week, day number, year – that is like this. 21:18:00 IST Thu 4 Feb 2016
5	Write a shell-script that tells you its name and PID
6	Develop a Basic math Calculator using case statement
7	Write a shell-script that presents a multiple-choice question, gets the user's answer and report back whether the answer is right, wrong or not one of the choices.

8	<p>a) Write script to determine whether given file exist or not, file name is supplied as command line argument, also check for sufficient number of command line argument</p> <p>b) Write a shell-script that takes a command line argument and reports on whether it is a directory, a file or something else.</p>
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SCHEME OF VALUATION	
Commands in Part-A	10 Marks
Execution of Commands in Part-A	15 Marks
Program in Part-B	15 Marks
Execution of program in Part-B	20 Marks
Printed Output (Part –A)	5 Marks
Printed Output (Part –B)	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

35236 – C PROGRAMMING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : Diploma in Computer Engineering.

Subject Code : 35236

Semester : III

Subject title : C Programming Practical

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester 15 Weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
C Programming Practical	6Hrs	90 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

OBJECTIVES

At the end of the Course, the students will be able to

- Analyze the given problem.
- Think the logic to solve the given problem.
- Describe the concepts of constants, variables, data types and operators.
- Develop programs using input and output operations.
- Write programs using command line arguments.
- Write programs using compiler control directives.
- Write programs using different looping and branching statements.
- Write programs based on arrays.
- Write Programs using string handling functions.
- Write programs using user-defined functions, Structures and Union.
- Write programs using the concept of Pointers.

LAB EXERCISES

Part – A

1. Write a simple C program.
 - a. Print your name and address.
 - b. Find simple and compound interest
2. Write a C program to swap two variable's using(i)third variable and(ii) without using a third variable.
3. Write a program to convert a given number of days into months and days using integer arithmetic operators.
4. Write a program the use of variables in expression and their evaluation.
5. Write a program converts the given temperature in Fahrenheit to Celsius using preprocessor.
6. Write a program to find the largest number between given three numbers.
7. Write a program to perform following tasks
 - a. Find factorial of a number
 - b. Print prime numbers up N times.
8. Write a program to prepare the total marks for N students by reading the Reg.No, Name, Mark1 to Mark6 by using array of structures.
9. Write a program using the function power (a,b) to calculate the value of a raised to b.
10. Write a program to find the length of the given string using pointers.

Part – B

1. Read an integer number, find the number of digit and sum of all individual digits and also print the above number in reverse order.
2. Write a program to perform following tasks
 - a. Print Fibonacci series up to N terms and its sum.
 - b. Print whether a given year is leap or not.
3. Read a sentence through command line argument. Write a program to write out the string arguments to main in reverse order.
4. Write a program to arrange the given N names in alphabetical order.
5. Write a program to count the numbers and chars in the string.
6. Write a program that uses a function to sort an array of integers.
7. Write a program to calculate the subject wise and student wise totals and store them as a part of the structure.

8. Write a program to read 10 values to an array variable. Use pointers to locate and display each value.
9. Write a program that uses a table of integers whose size will be specified interactively at run time.
10. Write a program to store a character string in a block of memory space created by MALLOC and then modify the same to store a larger string.

SCHEME OF VALUATION	
Writing any one program from PART – A	10 Marks
Writing any one program from PART – B	15 Marks
Executing program (PART – A)	15 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	05 Marks
Result with printout (PART – B)	05 Marks
VIVA – VOCE	05 Marks
Total	75 Marks

Note: student: computer ratio in lab should be strictly 1:1

HARDWARE REQUIREMENT

- Desktop Computers – 36 Nos
- Laser Printer – 4 Nos

SOFTWARE REQUIREMNT

- C – Compiler with Editor



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN COMPUTER ENGINEERING

II YEAR

M- SCHEME

III SEMESTER

2015 –2016 onwards

30001- COMPUTER APPLICATIONS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

M- SCHEME

(to be implemented to the student Admitted from the Year 2015-2016 on wards)

Course Name : For All Branches
Subject Code : 30001
Semester : III
Subject title : COMPUTER APPLICATIONS PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Course	Instruction		Examination			Duration
			Max.			
	Hours/ week	Hours/ Semester	Continuous Assessment	Semester- End Examinations	Total	
COMPUTER APPLICATION S PRACTICAL	4 Hrs	60 Hrs	25	75	100	3 Hrs

RATIONALE:

The application of Computer knowledge is essential the students of all disciplines of Engineering in addition to their respective branch of study. The Computer Application Practical course facilitates the necessary knowledge and skills regarding creating, working and maintaining the documents and presentation of documents with audio visual effects in a computer and produces necessary skills in E- Learning and Chatting tools..

OBJECTIVES:

On completion of the following exercises, the students will be able to

- Use the GUI operating systems
- Familiarize and customize the desktop
- Use the different facilities available in the word processor
- Prepare Power Point presentation with different formats
- Expose E-learning tools and chatting tools
- Analyze the datasheet
- Create and manipulate the database
- Create different types of charts
- Prepare PowerPoint presentation
- Understand Internet concepts and usage of e-mail

GUIDELINES:

- All the experiments given in the list of experiments should be completed and all the experiments should include for the end semester practical examination.
- The computer systems should be 1:1 ratio for practical classes

SYLLABUS LAB EXERCISES SECTION – A

GRAPHICAL OPERATING SYSTEM

Introduction to GUI OS; Features and various versions of GUI OS & its use; Working with GUI OS; My Computer & Recycle bin ; Desktop, Icons and Explorer; Screen description & working styles of GUI OS; Dialog Boxes & Toolbars; Working with Files & Folders; simple operations like copy, delete, moving of files and folders from one drive to another, Shortcuts & Autostart; Accessories and Windows Settings using Control Panel- setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hard ware & Software program on your computer - Copying in CD/DVD settings – Recording Audio files.

Exercises

1. a. Installing screen saver and change the monitor resolution by 1280X960
b. Setting wall papers
c. Creating, moving, deleting and renaming a folder
d. Copy, paste and cut a folder/file
e. Displaying the properties for a file or folder
2. a. Restoring files and folders from Recycle bin
b. Creating short cuts for folder/file
c. Finding a file or folder by name
d. Selecting and moving two or more files/folders using mouse
e. Sorting folders/files.

WORD PROCESSING

Introduction to Word Processing – Examples- Creation of new documents, opening document, insert a document into another document. Page setup, margins, gutters, font properties, Alignment, page breaks, header footer deleting, moving, replace, editing text in document. Saving a document, spell checker.

Printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height width of row or column. Editing, deleting Rows, columns in table. Borders, shading, Templates, wizards, drawing objects, mail merge.

Exercises

3. Create the following table and perform the operations given below

DAYS	1	2	3	4	5	6	7	8
MON	← TEST →		A: JPP			CA	RDBMS	TUT
	B: RDBMS							
TUE	CA	OOP	CN	RDBMS	A: RDBMS			
	B: JPP							
WED	CN	RDBMS	OOP	RDBMS	COMMUNICATION		CN	CA
THU	OOP	A: JPP			CA	RDBMS	CN	OOP
		B: RDBMS						
FRI	COMMUNICATION		A: RDBMS		OOP	CN	RDBMS	CA
			B: JPP					
SAT	OOPS	RDBMS	CN	CA	-----			

4. Create a standard covering letter and use mail merge to generate the customized letters for applying to a job in various organizations. Also, create a database and generate labels for the applying organizations.
5. Create a news letter of three pages with two columns text. The first page contains some formatting bullets and numbers. Set the document background colour and add 'confidential' as the watermark. Give the document a title which should be displayed in the header. The header/ footer of the first page should be different from other two pages. Also, add author name and date/ time in the header. The footer should have the page number.

SPREADSHEET

Introduction to Analysis Package – Examples - Concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

Exercises

6. Create a result sheet containing Candidate's Register No., Name, Marks for six subjects. Calculate the total and result. The result must be calculated as below and failed candidates should be turned to red.

Result is Distinction if Total $\geq 70\%$

First Class if Total $\geq 60\%$ and $< 70\%$

Second Class if Total $\geq 50\%$ and $< 60\%$

Pass if Total $\geq 35\%$ and $< 50\%$

Fail otherwise

Create a separate table based on class by using auto filter feature.

7. Create a table of records with columns as Name and Donation Amount. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight the highest donation with blue color and lowest donation with red colour. The table should have a heading.

8. Create line and bar chart to highlight the sales of the company for three different periods for the following data.

SALES BAR CHART

Period	Product1	Product2	Product3	Total
JAN	35	40	50	125
FEB	46	56	40	142
MAR	70	50	40	160

SECTION – B

DATABASE

Introduction – Menus – Tool bar – Create – Edit – Save – Data types – Insert – Delete – Update – View – Sorting and filtering – Queries – Report – Page setup – Print.

Exercises

9. Create Database to maintain at least 10 addresses of your class mates with the following constraints

- Roll no. should be the primary key.
- Name should be not null

10. create a students table with the following fields: Sr.No, Reg. No, Name, Marks in 5 subjects. Calculate total and percentage of 10 students. Perform the following queries.

- To find the details of distinction student
- To find the details of first class students
- To find the details of second class students

11. Design a report for the above exercise to print the consolidated result sheet and mark card for the student.

PRESENTATION

Introduction - Opening new presentation, Parts of PowerPoint window – Opening -Saving and closing presentations - Features of PowerPoint, Background design, Word art, Clip art, Drawings,3D settings - Animations, Sound, Views, types of views - Inserting and deleting slides, arranging slides, slides show, rehearsal, setup show, custom show - Creating custom presentations, action setting, auto content wizard, working with auto content wizard

Exercises

12. Make a marketing presentation of any consumer product with at least 10 slides. Use different customized animation effects on pictures and clip art on any four of the ten slides.
13. Create a Presentation about our institution or any subject with different slide transition with sound effect.

INTERNET

Introduction – Getting acquainted with Internet Connection - Browsers – Website URL - Open a website – Net Browsing - Email: Creating E-mail id – Sending , receiving and deleting E-mail - Email with Attachments – CC and BCC - Chatting – Creating Group mail - Google docs – Search Engines – Searching topics .

Most Popular Social Networking Sites : History – Features – Services – Usage of Face book , Twitter and LinkedIn.

Transferring data through wifi / bluetooth among different devices.

Introduction to cybercrime – Software Piracy – Viruses – Antivirus Software

Exercises

14. Create an e-mail id and perform the following
- Write an e-mail inviting your friends to your Birthday Party.
 - Make your own signature and add it to the e-mail message.
 - Add a word attachment of the venue route
 - Send the e-mail to at least 5 of your friends.
15. Create a presentation on Google docs. Ask your friend to review it and comment on it. Use “Discussion” option for your discussions on the presentation.

Hardware and Software Requirements

Hardware Requirements:

- Computers – 36Nos
 - Intel Core i3 Processor
 - 500 GB Hard Disk, 2 MB RAM
 - 14” Monitor
- Projector – 1 Nos
- Laser Printer – 1 No
- Internet Connection – Minimum of 512 KB

Software Requirement

- Any GUI Operating System
- Open Source Software / MS- Office

1. SemesterEndExamination–75 Marks

Content	Max.Marks
Writing Procedure – One Question from Section A	15
Demonstration	15
Results with Printout	5
Writing Procedure – One Question from Section B	15
Demonstration	15
Results with Printout	5
Viva voce	5
Total	75MARK