



GOVERNMENT OF TAMILNADU

Curriculum & Syllabus

DIPLOMA IN COMPUTER ENGINEERING

2007 – 2008

K - SCHEME



**DIRECTORATE OF TECHNICAL EDUCATION
TAMILNADU**

Syllabus Committee Members

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ANNEXURE - I

DIPLOMA IN COMPUTER ENGINEERING CURRICULUM OUTLINE

III SEMESTER

S.NO	SUBJECT CODE	SUBJECT	HOURS PER WEEK			
			Theory	Tutorial	Practical	Total
1	15031	Basics of Electrical and Electronics Engineering	6	-	-	-
2	15032	C and Data Structures	6	-	-	-
3	15033	Operating Systems	6	1	-	-
4	15034	Electrical and Electronics Laboratory	-	-	6	6
5	15035	C and Data Structures Laboratory	-	-	6	6
6	15036	Operating Systems Laboratory	-	-	4	4
		TOTAL	18	1	16	35

IV SEMESTER

S.NO	SUBJECT CODE	SUBJECT	HOURS PER WEEK			
			Theory	Tutorial	Practical	Total
1	15041	Computer Architecture and Assembly Language Programming	6	1	-	-
2	15042	Internet Concepts and Web Designing	6	-	-	-
3	15043	Object Oriented Programming with Java	6	-	-	-
4	11011	English Communication Laboratory	-	-	4	4
5	15045	Web Designing Laboratory	-	-	6	6
6	15046	Java Programming Laboratory	-	-	6	6
		TOTAL	18	1	16	35

V SEMESTER

S.NO	SUBJECT CODE	SUBJECT	HOURS PER WEEK			
			Theory	Tutorial	Practical	Total
1	15051	Computer Networks and Security	6	1	-	7
2	15052	Relational Data Base Management Systems	6	-	-	6
3	Elective-I Theory					
	15071	.Net Programming	6	-	-	6
	15072	Embedded Systems	6	-	-	6
4	15054	Computer Networks and Security Laboratory	-	-	4	4
5	15055	Relational Data Base Management System Laboratory	-	-	6	6
6	Elective-I Laboratory					
	15073	.Net Programming Laboratory	-	-	6	6
	15074	Embedded Systems Laboratory	-	-	6	6
		TOTAL	18	1	16	35

VI SEMESTER

S.NO	SUBJECT CODE	SUBJECT	HOURS PER WEEK			
			Theory	Tutorial	Practical	Total
1	15061	PC Hardware and Servicing	6	-	-	6
2	15062	Mobile Computing	6	-	-	6
3	Elective-II Theory					
	15081	Software Engineering	6	1	-	7
	15082	Multimedia Systems	6	1	-	7
4	15064	PC Hardware and Servicing Laboratory	-	-	6	6
5	Elective-II Laboratory					
	15083	E-Publishing Laboratory	-	-	4	4
	15084	Multimedia Systems Laboratory	-	-	4	4
6	15066	Project Work and Entrepreneurship	-	-	6	6
		TOTAL	18	1	16	35

ANNEXURE-II
COMPUTER ENGINEERING
(COURSE No::1052)
SCHEME OF EXAMINATION
III SEMESTER

S.No	Subject Code	Subject	Hrs Per Week	Scheme of Exam				
				Duration of Exam Hours	Marks			Min Marks for Pass
					IA	BE	Total	
1	15031	Basics of Electrical and Electronics Engineering	6	3	25	75	100	40
2	15032	C and Data Structures	6	3	25	75	100	40
3	15033	Operating Systems	7	3	25	75	100	40
4	15034	Electrical and Electronics Laboratory	6	3	25	75	100	50
5	15035	C and Data Structures Laboratory	6	3	25	75	100	50
6	15036	Operating Systems Laboratory	4	3	25	75	100	50

IV SEMESTER

S.No	Subject Code	Subject	Hrs Per Week	Scheme of Exam				
				Duration of Exam Hours	Marks			Min Marks for Pass
					IA	BE	Total	
1	15041	Computer Architecture and Assembly Language Programming	7	3	25	75	100	40
2	15042	Internet Concepts and Web Designing	6	3	25	75	100	40
3	15043	Object Oriented Programming with Java	6	3	25	75	100	40
4	11011	English Communication Laboratory	4	3	25	75	100	50
5	15045	Web Designing Laboratory	6	3	25	75	100	50
6	15046	Java Programming Laboratory	6	3	25	75	100	50

V SEMESTER

S.No	Subject Code	Subject	Hrs Per Week	Scheme of Exam				
				Duration of Exam Hours	Marks			Min Marks for Pass
					IA	BE	Total	
1	15051	Computer Networks and Security	7	3	25	75	100	40
2	15052	Relational Data Base Management Systems	6	3	25	75	100	40
3	Elective-I Theory							
	15071	.Net Programming	6	3	25	75	100	40
	15072	Embedded Systems	6	3	25	75	100	40
4	15054	Computer Networks and Security Laboratory	4	3	25	75	100	50
5	15055	Relational Data Base Management System Laboratory	6	3	25	75	100	50
6	Elective-I Laboratory							
	15073	.Net Programming Laboratory	6	3	25	75	100	40
	15074	Embedded Systems Laboratory	6	3	25	75	100	40

VI SEMESTER

S.No	Subject Code	Subject	Hrs Per Week	Scheme of Exam				
				Duration of Exam Hours	Marks			Min Marks for Pass
					IA	BE	Total	
1	15061	PC Hardware and Servicing	6	3	25	75	100	40
2	15062	Mobile Computing	6	3	25	75	100	40
3	Elective-II Theory							
	15081	Software Engineering	7	3	25	75	100	40
	15082	Multimedia Systems	7	3	25	75	100	40
4	15064	PC Hardware and Servicing Laboratory	6	3	25	75	100	50
5	Elective-II Laboratory							
	15083	E-Publishing Laboratory	4	3	25	75	100	40
	15084	Multimedia Systems Laboratory	4	3	25	75	100	40
6	15066	Project Work and Entrepreneurship	6	3	25	75	100	50

15031**BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING****AIM:**

This subject gives the knowledge of fundamental concepts of basic electrical and electronics engineering and aims at providing the students with basic understanding of D.C and A.C fundamentals, A.C circuits, batteries, analog devices and digital electronics for effective functioning in the field of electronic service industry.

OBJECTIVES:

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

- Understand the basic essential terms in electricity.
- Define Ohm's Law..
- Know the concept of series and parallel circuits.
- Understand DC and AC fundamentals.
- Know the basic ideas about batteries.
- Understand the operation of D.C. generator and D.C machines.
- Understand the working principles of transformer circuits.
- Classify AC motors.
- Familiarize with semi conductor devices, rectifier circuits and its applications.
- Describe the basic applications of transistor.
- Know about OP amp and its applications.
- Use binary, octal and hexadecimal numbers.
- Describe the parity bit and its uses in error detection and correction.
- Define logic gates.
- Describe the significance of Boolean algebra in digital circuits.
- Understand the working principles of logical circuits
- Define flip-flops and describe behavior of various flip-flops.
- Differentiate asynchronous counters from synchronous counters.
- Draw and explain the circuit diagram of various types of shift registers.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	DC AND AC FUNDAMENTALS	18
II	ELECTRICAL MACHINES	18
III	ANALOG DEVICES	16
IV	BOOLEAN ALGEBRA AND LOGIC GATES	16
V	SEQUENTIAL LOGIC SYSTEM	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT- I DC AND AC FUNDAMENTALS

18 Hours

- 1.1 **DC Circuits** : Definition and units of Voltage, Current, Potential Difference, Power, Energy, Resistance, Conductance, Resistivity - Ohm's Law - Kirchhoff's law - Series circuits - Parallel circuits – Series Parallel Circuits – Simple problems on Ohm's law and series parallel circuits .
- 1.2 **AC Fundamentals:** Concepts of alternating voltage and current – Difference between AC and DC - Definition of cycle, frequency, time period, amplitude, instantaneous value, average value, rms value, maximum value, form factor and peak factor
- 1.3 **Batteries:** Classification of cells – Construction of Lead Acid Cell – Methods of charging - Care and Maintenance of Lead Acid Battery – Indications of a fully charged battery – Maintenance free batteries.
- 1.4 **Safety measures:** Electric shock – Prevention – Precautions against electric shock – Earthing - Need for earthing - Types of earthing.

UNIT - II ELECTRICAL MACHINES

18 Hours

- 2.1 **DC Machines** : Constructional details of DC machine – DC generator – Principle of working – emf equation –Types – Applications

DC Motors : Principle of working – back emf – Types – Application – Starting of motors using 3 point and 4 point starter.
- 2.2 **Single phase transformer:** Principle – Construction - emf equation of transformer - Efficiency - Losses in a transformer - Auto transformer – Instrument transformers (C.T and P.T)

- 2.3 **AC Motors:** Classification - Induction motor- construction – types - principle of operation- application – Need for starter – Starter used for starting an induction motor - Alternator- Working principle – construction - stepper motor: construction - Working Principle - applications

UNIT - III ANALOG DEVICES

16 Hours

- 3.1 **Semi conductor theory:-** Intrinsic and Extrinsic Semiconductors - N type and P type materials -majority and minority carriers - Semi conductor diode - PN junction - V I characteristics of PN Junction diode
- 3.2 **Rectifiers:** Working and Waveforms of Half wave - Full wave - Bridge rectifiers (without filters) – Differences.
- 3.3 **Special Diodes:** Working principle and V I characteristics of Zener diode - Applications of Zener diode - Regulator (series and shunt) - LED - LCD – Opto coupler
- 3.4 **Transistor:** Working Principle of NPN and PNP transistor - Transistor as a switch - Transistor working as an amplifier- common base - common collector- common emitter configuration - input and output characteristics.
- 3.5 **OP Amp :** Introduction– ideal characteristics of OP amp - OP amp applications - Adder- Subtractor - Integrator- differentiator – Multiplier - Divider

UNIT - IV BOOLEAN ALGEBRA AND LOGIC GATES

16 Hours

- 4.1 **Number representation:** Decimal, Binary, Octal and Hexa decimal number systems - Conversion of number from one number system to another without decimal points - BCD Codes and limitations – Conversion of BCD to decimal and vice versa – ASCII Codes - Error detection and Correction codes – Parity bit
- 4.2 **Logic gates:** Positive and Negative logic – Symbolic representation - Definition, truth table, symbol and logical equations of logic gates: AND – OR - NOT- NAND - NOR- EXOR - EXNOR (Only 2-inputs) – Universal gates.
- 4.3 **Logic Simplification :** Rules and laws of Boolean algebra – Demorgan's Theorem and proof - Simplification of logic functions using Boolean laws - Karnaugh's map Simplification (restricted to three variables) – Duality theorem
- 4.4 **Arithmetic circuits:** Half Adder and full adder- Truth table, Circuit diagram – Parallel binary adder – circuit diagram
- Half subtractor and Full subtractor - Truth table, Circuit diagram - Parity Generator and Parity checker circuit
- 4.5 **Combinational logic circuits:** Multiplexer - De multiplexer - Encoder- Decoder (Basic Circuits)

UNIT - V SEQUENTIAL LOGIC SYSTEM**16 Hours**

- 5.1 **Flip flops:** S-R, D, flip-flop – operation and truth table - Race Condition – JK flip flop – T flip flop – Edge Triggered Flip-flop - J-K Master Slave flip flop.
- 5.2 **Counters:** Asynchronous counter- 4 bit Asynchronous Counter – Mod n counter (3, 5, 7)- decade counter - Synchronous counter – 4 bit Synchronous binary counter
- 5.3 **Registers:** Functions – Serial –in – serial out, Serial – in – parallel out, Parallel – in – serial out, parallel – in – parallel out – 4 bit right shift and 4 bit left shift registers.

REFERENCE BOOKS:

S. No	TITLE	AUTHOR	PUBLISHER
1	Electrical Technology	B.L. Theraja	S.Chand and Co, New Delhi
2	Principles of Electrical Engineering	B.R. Gupta	S.Chand and Co, New Delhi
3.	Electronic Devices and Circuits – An introduction	Allen Mottershed	Prentice-Hall of India
4.	Digital Principles & Applications	Albert P.Malvino & Donald P.Leach	McGraw-Hill
5.	Principles of Electronics	V.K.Metha	S.Chand & Co.
6.	Digital Electronics Principles and Applications	Tokheim	Tata McGraw-Hill
7.	Digital Electronics	R.P. Jain	TMH, New Delhi

15031 BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

MODEL QUESTION PAPER -I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. State the equivalent resistance of two resistors r_1 and r_2 , which are connected in parallel.
2. Define the term “ Power”
3. State any one application of stepper motor.
4. What is a auto transformer?
5. What is intrinsic material?
6. Expand the terms “LED” and “LCD”
7. Convert the hexadecimal number ABCD into binary number.
8. What are the two outputs of a half-adder?
9. What is a flip-flop?
10. How many flip-flops are required to construct mod- 23 counter?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define Ohm’s Law. State any two applications of ohm’s law.
12. Compare series and shunt motors,
13. Tabulate the differences between LCD and LED.
14. With the help of NAND gate, construct AND, OR and NOT gate.
15. Draw the circuit diagram of decade counter.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

16. A. 1. Three resistors ($R_1=5$ ohms, $R_2=3$ ohms, $R_3= 2$ ohms) are connected in series with 10V supply. Find the voltage drop across each resistor. [5]
2. What is the need for earthing? What are the different types of earthing? Explain any one of them. [5]
(OR)
B. 1. List down the types of batteries, and explain the charging method of any one battery. [10]
17. A. 1. What is meant by “back emf” in a DC motor? Explain its significance. [5]
2. Derive the emf equation of a transformer. [5]

(OR)

- B. 1. Write down the construction, working principle and applications of induction motor. [10]
18. A. 1. Tabulate the differences between Half wave rectifier and Full wave rectifier. [5]
2. Draw adder and multiplier circuits using OP AMP and explain. [5]

(OR)

- B. 1. With a neat sketch, explain the input and output characteristics of common base transistor. [10]
19. A. 1. Simplify the following Boolean expression by using Karnaugh map [5]
- $$F(A,B,C) = ABC + A'BC + B'C'$$
2. With a neat diagram, explain the operation of a 4 x 1 Multiplexer. [5]

(OR)

- B. 1. Write down the truth table, logical equation, symbol for the following 2 input gates : (i) AND gate (ii) OR gate (iii) X – NOR gate (iv) NOR gate (v) NAND gate [10]
20. A. 1. With a neat diagram, explain the operation of a clocked J-K flip-flop. [5]
2. Draw the circuit diagram of a 4-bit right shift register and explain. [5]

(OR)

- B. 1. With a neat diagram, truth table and waveform, explain the operation of a 4-bit ripple counter. [10]

15031 BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Write down the units of current and voltage.
2. Define the term “ Form Factor”
3. Define the term “back emf”
4. State any one application of AC Motor.
5. What is N type material?
6. State any one application of OP-AMP.
7. Convert the binary number 1010101011 into Octal number.
8. How many NOR gates are required to construct a OR gate.
9. Define the term “Toggling”.
10. What is the other name of mod-10 counter.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. State any three precautions to avoid electric shock.
12. Write down the applications of Dc generator and DC motor.
13. Draw the circuit diagram of a full wave bridge rectifier.
14. Draw the circuit diagram of 4 x 1 multiplexer circuit.
15. What are the different types of shift registers? Define them.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

16. A. 1. Define the following terms: (i) Voltage (ii) Current (iii) Power (iv) Resistance and (v) Conductance. [5]
2. Briefly explain about the “ Care and maintenance of lead acid battery” [5]
- (OR)**
- B. 1. Compare series and parallel circuits of electrical resistance. [5]
2. What are maintenance free batteries? Briefly explain them. [5]
17. A. 1. Briefly explain about the classification of D.C. generators. [5]
2. What are the different types of losses in a transformer? Explain. [5]

(OR)

- B. 1. Explain the working principle of Stepper motor [10]
18. A. 1. Explain how the transistor acts as a switch. [5]
2. Explain any one applications of a Zener diode. [5]

(OR)

- B. 1. With a neat diagram, explain the VI characteristics of a PN junction diode. [10]
19. A. 1. Explain positive and Negative logic. [5]
2. State and Prove De-Morgan's Theorems. [5]

(OR)

- B. 1. With a truth table and circuit diagram, explain the operation of full adder circuit. [10]
20. A. 1. With a neat diagram, explain the operation of SR flip-flop. [5]
2. Draw the circuit diagram of a 4-bit synchronous binary counter and explain. [5]

(OR)

- B. 1. Explain the operation of a J-K master-slave flip-flop. How the racing is avoided in J-K master slave flip-flop, [10]

15032	C AND DATA STRUCTURES
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AIM:

The main aim of this subject is to develop the logic, ability to solve the problems efficiently using C Programming. Knowledge in a programming language is prerequisite to the study of most of computer science courses.

Data structures are the techniques of designing the basic algorithms for real-life projects. Understanding of data structures is essential and this facilitates the understanding of the language. The practice and assimilation of data structure techniques is essential for programming.

OBJECTIVES:

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

- Understand the background of C Programming.
- Understand the concept of keywords, constants, variables and data types.
- Classify different types of Operators and Expressions.
- Understand the various types of Control structures.
- Describe the usage of arrays, structures and unions.
- Discuss about the different types of functions.
- Define a string and discuss the various operations on strings.
- Understand the concept of pointers and pointer arithmetic.
- Discuss the relationship of pointers with arrays, functions and structures.
- Define Linear and non-linear data structures.
- List and discuss the different types of linear data structures.
- Define a tree and the different terms related with trees.
- Describe the different ways of traversing a binary tree.
- Discuss the various operations on Binary Search tree.
- Define graph terminologies and describe the different ways of traversing a graph.
- Write the algorithm for different types of sorting and searching.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
C AND DATA STRUCTURES	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	BASIC ELEMENTS OF “C” AND CONTROL STATEMENTS	18
II	STRINGS, FUNCTIONS, STRUCTURES AND UNIONS	16
III	POINTERS	16
IV	LINEAR DATA STRUCTURES	18
V	NON – LINEAR DATA STRUCTURES	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT - I BASIC ELEMENTS OF “C” AND CONTROL STATEMENTS 18 Hours

- 1.1 **Keywords, Constants, Variables and Data types:** Background of C – Features of C – Structure of a C Program – C Tokens - Character set – Keywords – Identifiers – Constants – Types - Variables – Declaration of a variable- Initialization of a variables – Data types – Data type modifiers -Comments – Header files.
- 1.2 **Operators and Expressions:** Introduction – Arithmetic, Increment, Decrement, Relational, Logical, Conditional, Assignment, Short hand assignment, Bitwise , Special operators – comma and Sizeof() - Hierarchy of operations – Assignment statement - Expressions – Integer, real and mixed expressions – Type conversion – Implicit and explicit conversions - printf() and scanf() functions – Escape characters - getchar() and putchar() functions – formatted and unformatted I/O functions.
- 1.3 **Control Statements:** Simple if statement – if-else, else-if-ladder statements – switch statement - Looping Statements – while, do _ while and for loops - – go to, continue and break statements
- 1.4 **Programs** using Operators and Control structures

UNIT - II ARRAYS, STRINGS, FUNCTIONS 16 HOURS

- 2.1 **Arrays :** Definition – Array element and subscript - Declaration – Initialization of one dimension array elements - Two dimensional arrays – initialization of elements.
- 2.2 **Strings:** Introduction – Declaring ad Initializing string variables - Reading strings - Writing strings – String handling functions – strlen() , strcpy() , strcmp() , strcat() and strrev() functions

Programs using string functions.
- 2.3 **Functions:** Declaration and definition of function – return statement - function call – passing arguments by call by value –Types of functions – Arrays and Functions -Scope and life time of variables – auto, extern, global, register - - recursive functions

Pre- defined functions : Character functions (ctype.h) – islower(), is upper(), isalpha(), to lower(), toupper() , is digit() - Math functions (math.h) – sin(), cos() , sqrt(), pow(), tan() , exp()

2.4 **Programs** using arrays, functions and pre-defined functions

UNIT - III . STRUCTURES AND UNIONS and POINTERS

16 Hours

- 3.1 **Structures and Unions:** Structure Definition – Variable declaration – initialization – Accessing and giving values to structures - Structures within structures Arrays of structures – Arrays within structures – Functions and Structures – Unions – Declaration – initialization.
- 3.2 **Pointers :** Introduction – Advantages of pointers – Accessing the address of a variable – Declaring and Initializing pointers – Accessing a variable through its pointer - Pointer Expressions
- 3.3 **Relation of pointers with other elements:** Pointers and Arrays – Pointes and functions – pointers and strings - Array of pointers to strings – Limitation of array of pointers to strings – pointers and structures .
- 3.4 **Dynamic memory allocation:** Advanatges – malloc(), calloc(), realloc(0 and free() functions
- 3.5 **Programs** using Structures, Unions and Pointers

UNIT - IV LINEAR DATA STRUCTURES

18 Hours

- 4.1 **Elementary data organization:** Data, Entity and Information - Primitive data types – Non primitive data Types – Data structure: Definition – Classification - Data structure operations.
- 4.2 **Linked Lists:** Introduction – Singly linked list - Representation – Array implementation – pointer implementation – Traversing and searching of a linked list – Memory allocation and Garbage collection – creat() getnode() and freenode() operations - insertion at front and middle position - deletion (front, end and if the value is given) –

Two-way lists – Implementation - Operations on two-way lists – traversing and Searching – Insertion and Deletion operation (at the front of the list only)
- 4.3 **Stacks:** Definition – Representation - Operation on stacks – Algorithms -Applications of stack: Evaluation of arithmetic expression – Conversion of infix to postfix expression - Evaluation of postfix expression – Algorithms for above applications.
- 4.4 **Queues:** Definition - Representation of Queue using arrays - Circular Queue , Dequeue , Priority Queue (Definition and Examples only)

UNIT - V NON LINEAR DATA STRUCTURES

16 Hours

- 5.1 **Trees:** Basic terminologies of trees – Node, Root, Parent , Child, Link, Sibling , Level, Height, Depth, Leaf , degree - Binary tree – Full binary tree and a complete binary tree - representation of binary tree – Linear representation - Advantages and disadvantages of linear representation - linked representation – traversing – Types - Traversal algorithms – Binary Search tree – inserting and searching items – Applications of Binary tree.

Types of Binary trees (Definition and examples only) : Expression tree - Heap tree – Threaded binary tree – Height balanced tree– Decision tree

- 5.2 **Graphs:** Definition - Graph terminologies – Directed and Undirected graph, Weighted graph, Adjacent Vertices, Self loop, Parallel edges, Path, Cycle, indegree, out degree, , complete graph – Connected graph - Representation of graph – Set representation, adjacency matrix representation - Linked representation – Comparison of representations
- 5.3 **Searching :** Introduction - Linear searching and Binary searching – Algorithms - examples
- 5.4 **Sorting :** Introduction – Types of sorting - Bubble sort – Selection sort – Insertion Sort – Quick Sort - Algorithms – Examples.

REFERENCE BOOKS

S No	TITLE	AUTHOR	PUBLISHER
1.	Programming in ANSI C	E. Balagurusamy	TMGH, New Delhi
2.	Programming with C	Byron Gottfried.	Schaum Series -TMGH
3.	Let us C	Yashavent Kanethar	BPB Publication, 2005, New Delhi
4.	Programming in C	Schaum Series	McGraw Hills Publishers
5.	Data Structures	Lipschutz	Schaum Series
6.	Introduction to Data structures	Bhagat Singh	TMGH, New Delhi
7.	Introduction to Data structures with applications.	Trembley and Sorenson	Mc Graw Hill

15032 C AND DATA STRUCTURES

MODEL QUESTION PAPER - I

PART – A (10 x 1= 10 Marks)

Answer all the questions :

1. State any two rules for naming a variable.
2. Write down the equivalent statement for the following conditional statement:
$$y = (x > 5 ? 3 : 4)$$
3. Define the term “Array”.
4. What are the four storage classes available in C?
5. Give the syntax of function definition.
6. Write down the general structure of malloc() function.
7. What is a primitive data type?
8. What are the two operations of stack?
9. Define the term “sibling”
10. What is indegree of a graph?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. State any three features of C language.
12. Write a C program to convert the given lowercase character into uppercase character.
13. Write down the output of the following program.

```
main()
{
int array[26], i;
for ( i = 0 ; i <= 25 ; i++)
{
array[i] = 'A' + i;
printf ( "\n%d %c", array[i], array[i] );
}
}
```
14. What is a binary search tree? Give an example.
15. Draw a graph and represent it through adjacency matrix.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Classify the types of operators based on the number of operands. [5]
Explain them.

2. Write a program to print the multiplication table of the number entered by the user. The table should get displayed in the following form. [5]

29 * 1 = 29

29 * 2 = 58

...

(OR)

- B. 1. Explain different types of looping statements used in C language with their syntax and example. [10]
17. A. 1 Write a "C" function to find the sum and average of N numbers. [5]
2 Explain the use of any four functions available in <string.h> header file. [5]

(OR)

- B. 1 Read two strings of different lengths. Write a "C" program to find the string, which has more number of characters. [10]
18. A. 1. Explain the use of "*" and "&" operators. [5]
2. Briefly explain about the functions used for dynamic memory allocation. [5]

(OR)

- B. 1. Write a "C" program to reverse the elements of an integer array using pointers. [10]
19. A. 1. What are different data structure operations? Define them. [5]
2. Explain any one applications of a stack. [5]

(OR)

- B. 1. Briefly explain about the algorithms for inserting and deleting nodes of a singly linked list. [10]
20. A. 1. Explain about the linked representation of a binary tree. [5]
2. Write down the algorithm for linear searching. [5]

(OR)

- B. 1. Write down the algorithm for insertion and Searching operations of a binary search tree. [10]

15032 C AND DATA STRUCTURES

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. What will be the value of d if d is a float after the operation $d = 3/6.0$?
2. What is typecasting?
3. What is the output of the following program?

```
main( )
{
int x = 10, y = 20 ;
if ( x == y ) ;
printf ( "\n%d %d", x, y ) ;
}
```

4. Define the term "Array".
5. What is a Structure?
6. Mention the two operators exclusively used with pointers?
7. Define the term " Recursion"
8. What is a Queue?
9. Draw a binary tree.
10. State any two types of sorting.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Write down the general structure of if-else-if ladder.
12. Twenty-five numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive and how many are negative.
13. State any three advantages of pointers.
14. Write down the algorithm for push and pop operation.
15. Differentiate directed graph from undirected graph. Give examples for each

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain the use of conditional operator with an example. [5]
2. Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary. [5]

(OR)

- B. 1. Explain the differences between break and continue statement with examples. [5]
2. Write a program to find the biggest number between given three numbers. [5]
17. A. 1. Write a "C" function to find the sum and average of N numbers. [5]
2. Explain the differences between function definition and function declaration. [5]
- (OR)**
- B. 1. What are the different types of functions? Explain with examples. [10]
18. A. 1. How will you create a structure variable? How the data are initialized to structure variable? Give an example. [5]
2. Write a C program to find the length of the given string using pointers. [5]
- (OR)**
- B. 1. Explain array of pointers to strings with an example program. Discuss the advantages and disadvantages of above method, [10]
19. A. 1. How the data structures are classified? Give examples for each of them. [5]
2. Write down the algorithm for traversing a linked list. [5]
- (OR)**
- B. 1. Give the algorithm for converting an infix expression into postfix expression. Illustrate your algorithm with an example. [10]
20. A. 1. Briefly explain about adjacency matrix with an example. [5]
2. Write down the algorithm for bubble sort. [5]
- (OR)**
- B. 1. What are the different types of tree traversals? Write down the algorithms for the above traversals. [10]

15033	OPERATING SYSTEMS
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AIM:

The operating system has consistent innovations and developments like other fields of computer science. The main aim of this course is to provide core knowledge of Operating system features, functions and techniques. Each and every operating function is discussed in detail.

OBJECTIVES:

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

- 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 interprocess communication and synchronization.
- Describe the two ways of interprocess communication namely shared memory and message passing.
- Discuss the usage of semaphore, locks and monitors in interprocess 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.
- List the history, features and draw backs of Linux system.
- Use some simple and important Linux Commands.
- Know the concepts of pipes, filters and redirection.
- Write simple shell scripts.
- Know the Linux system administration.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
OPERATING SYSTEMS	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	OVERVIEW OF OS AND PROCESSES	18
II	INTERPROCESS COMMUNICATION AND SYNCHRONIZATION	16
III	MEMORY MANAGEMENT	16
IV	I/O AND FILE MANAGEMENT	18
V	LINUX PROGRAMMING AND ADMINISTRATION	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT-I OVERVIEW OF OPERATING SYSTEMS AND PROCESSES

18 Hours

- 1.1 **Introduction::** Definition of OS – Types of OS – Main frame, Desktop, Multiprocessor, Distributed, Clustered, Real Time, Multi Programming, Multi processing, Time Sharing, Embedded Operating System – Functions of Operating Systems - Desirable Qualities of OS – Examples for OS.
- 1.2 **Process :** Definition – Processes and Programs - Implicit and Explicit tasking – Independent and Co-operation Process- Process relationship - Process States – Process state transitions- Process Control Block - Context switches – Threads – Necessity and advantage of threads - Types of threads - Systems Calls - Examples
- 1.3 **Process Scheduling :** Objectives – Types of Schedulers – Short, Long , Medium – Comparison between schedulers - Scheduling Criteria – Scheduling Algorithms – Types – Pre-emptive and Non – Pre emptive scheduling – FCFS, RR, SJF and Priority based Scheduling – Evaluation of Scheduling algorithms.

UNIT- II INTERPROCESS COMMUNICATION AND SYNCHRONIZATION

16 Hours

- 2.1 **Interprocess Communication:** Basic concepts - Shared Memory System, Message Passing – Direct versus Indirect Communication - Critical Sections – Race conditions, Mutual Exclusion.
- 2.2 **Semaphores:** Definition – WAIT(S) and SIGNAL(S) instructions – Algorithm for WAIT and SIGNAL operations – Locks – Monitors and Condition variables.
- 2.3 **Deadlocks:** Definition – Characteristics – A resource Allocation graph – Deadlock prevention – deadlock avoidance – Banker’s Algorithm - Deadlock Detection and Recovery

UNIT - III MEMORY MANAGEMENT

16 Hours

- 3.1 **Introduction:** Overlays and Swapping – Logical and Physical address space – Contiguous allocation methods – Single partition and multiple partition Systems
- 3.2 **Paging:** Principle of operation – Page allocation – Hardware support for paging – Paging address translation by direct mapping and associate mapping – Protection and sharing.- Advantages and disadvantages of paging.
- 3.3 **Segmentation:** Principle of operation – Address translation – Advantages and disadvantages of segmentation – Comparison between segmentation and Paging.
- 3.4 **Virtual Memory:** Necessity – Hardware and control structures – Locality of reference, Page fault, Working set, Dirty page/Dirty bit, Demand paging, Thrashing - Page replacement Policies – FIFO, LRU, NRU.

UNIT IV I/O AND FILE MANAGEMENT

18 Hours

- 4.1 **I/O Management:** I/O buffering – Single and Double Buffer schemes - Disk Organization
- 4.2 **File Management:** File Concepts – File descriptor- Access methods – Sequential, indexed and direct – File sharing – Protection - Access rights – File System structure – Byte Sequence, Record sequence and Tree-based – Recovery – Disk formatting.
- 4.3 **Secondary Storage Management:** File allocation methods – Contiguous Allocation – Non Contiguous allocation - Chained, Indexed allocation – free space management - Disk Scheduling – FCFS, SSTF, SCAN and C- SCAN - Disk Cache

UNIT V LINUX PROGRAMMING AND ADMINISTRATION

16 Hours

- 5.1 **Introduction :** History of Linux – Features of Linux - Drawbacks of Linux – Components of Linux - Memory Management Subsystems - Linux Process and Thread Management - File Management System - Device Drivers
- 5.2 **Linux Commands and Utilities :** cat, tail, cmp, diff, wc, sort , mkdir, cd, rmdir, pwd, cp, more , passwd, who, whoami, mv, chmod, kill, write, wall, merge , mail, news – pipes, filters and redirection utilities
- 5.3 **Shell Scripts:** Creating and executing simple shell programs – variables – special characters – comparison of expressions – iteration statements – conditional statements – functions.
- 5.4 **System Administration:** Installing Linux – Booting the system – Maintaining user accounts – File systems and Special Files – Backups and Restoration.

REFERENCE BOOKS

S.No	TITLE	AUTHOR	PUBLISHER
1.	Operating System	William Stallings	Prentice Hall of India, 4 th Edition, 2003.
2.	Operating System Concepts	Abraham Silberschatz, and James L.	Addision Wesley Pub Company
3.	Introduction to Operating Systems	Harvey M. Deital	Addision Wesley Publishing Company
4.	Operating Systems – Design and Implementation	Andrew S. Tanenbaum	Prentice Hall of India, New Delhi
5.	Operating Systems , Concepts and Design	Milan Milenkovie	TMGH, 2000, New Delhi
6.	Operating Systems – A Concept Based Approach	D.M. Dhamdhare	TMGH, 2002, New Delhi
7.	Linux - The Complete Reference	Richard Peterson	Tata McGraw Hill, New Delhi

15033 OPERATING SYSTEMS

MODEL QUESTION PAPER – I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. State the main advantage of multiprogramming operating system.
2. What is the purpose of system call?
3. Is it possible to have a deadlock involving only one single process?
4. What is interprocess communication?
5. Define the term frames.
6. What is segmentation?
7. What is the purpose of free space list?
8. State the purpose of disk cache.
9. State the difference between who and whoami command.
10. What is a shell script?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Describe about the Process State.
12. What are the methods used for handling the deadlock? Explain any one of them.
13. Explain swapping with a neat diagram.
14. What are the file access methods? Explain any one of them.
15. Write down the usage for following Linux commands:
i.) cat ii.) kill and iii.) mv

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

16. A. 1. What is a thread? Explain its advantages. [5]
2. Explain about the functions of operating system. [5]
(OR)
B. 1. What are the different types of schedulers? Briefly explain them. [10]
17. A. 1. Describe the methods to prevent the deadlock. [5]
2. What is semaphores? Explain WAIT and SIGNAL instructions. [5]

(OR)

- B. 1. Briefly explain about Banker's algorithm. [10]
18. A. 1. What is contiguous memory allocation? Explain with a neat diagram. [5]
2. Describe paging with an example. [5]
- (OR)**
- B. 1. Describe the following: [10]
i.) Virtual Memory
ii.) Thrashing
19. A. 1. What is buffer? Explain single and double buffer schemes. [5]
2. Describe disk formatting. [5]
- (OR)**
- B. 1. What are the file allocation methods? Explain Contiguous and indexed allocation in brief. [10]
20. A. 1. List down the drawbacks of Linux. [5]
2. Briefly explain about the Linux file system. [5]
- (OR)**
- B. 1. Write a shell script to find [10]
i.) Factorial of a given number N.
ii.) The sum of three numbers a, b and c.

15033 OPERATING SYSTEMS

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. What is a process?
2. Give any two examples for Operating systems.
3. What is a resource allocation graph?
4. Define the term Semaphores.
5. How many frames are needed for each page?
6. What is paging?
7. What is seek time?
8. Expand the terms: (i) FCFS and (ii) SSTF
9. State any two communication commands available in Linux system.
10. Write down the process termination command with an example.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are types of real time systems?
12. What are the methods to prevent a deadlock? Explain.
13. What is segmentation? Explain with example.
14. Describe about free-space management.
15. Mention any three important features of Linux.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

16. A.
 1. List down the desirable qualities of Operating Systems. [5]
 2. Explain the characteristics of the following operating systems [5]
 - (i) Batch Processing Systems and
 - (ii) Time Sharing Systems

(OR)

- B. 1. Consider the following set of processes, with the length of the processing time given in milliseconds. [10]

<i>Process</i>	<i>Processing Time</i>	<i>Priority</i>
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

- a) Draw four Gant charts illustrating the execution of these processes using FCFS, SJF, a non-priority (a smaller priority number implies a higher priority), and RR (quantum =1) scheduling.
- b) What is the turn around time of each process for each of the scheduling algorithms in part (a)?
- c) What is the waiting time of each process for each of the scheduling algorithms in part (a)?
- d) Which of the schedules in part (a) results in the minimal average waiting time (over all processes)?
17. A. 1. What are race conditions? How race conditions occur in operating system? [5]
2. Briefly explain the concept of Resource Allocation Graph. [5]
- (OR)**
- B. 1. Briefly explain any two methods for recovering deadlock. [10]
18. A. 1. How protection is achieved in paging? [5]
2. What is thrashing? Explain any one of the method to prevent thrashing [5]
- (OR)**
- B. 1. Explain page address translation by: (i) Direct mapping and (ii) Associative mapping. [10]
19. A. 1. Explain different ways used to achieve I/O buffering. [5]
2. List the ways of allocating storage, and give advantages of each. [5]
- (OR)**
- B. 1. Briefly explain the following scheduling algorithms: (i) FCFS (ii) SCAN. [10]
20. A. 1. Briefly explain the History of the Linux operating system. [5]
2. Write down a shell script to find the largest of two numbers X and Y. [5]
- (OR)**
- B. 1. Explain the following with respect to Linux system administration: [10]
- (i) Maintaining User Accounts and (ii) Backups and restoration.

15034	ELECTRICAL AND ELECTRONICS LABORATORY
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AIM:

The main aim of this subject is to enable to students to know the basic concepts of analog and digital electronics and gain familiarity with the available IC chips. This will form a broad base for studying digital system design, computer troubleshooting, microprocessors and further studies.

OBJECTIVES:

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

- Gain experience in handling of electronic equipments.
- Verify ohm's law and kirchoff's law.
- Test and draw the characteristics of PN junction diode.
- Study the reverse bias characterizes of zener diode.
- Realize the importance of common emitter configuration.
- Use Op-Amp for various applications.
- Construct and realize various logic gates using ICs.
- Prove NAND and NOR gates are Universal gates.
- Prove De-Morgans' theorem.
- Construct and verify the truth table of Arithmetic circuits.
- Design, implement and test the various flip-flops.
- Construct multiplexer, demultiplexer, decoder and encoder circuits.
- Design ripple Counters
- Design Asynchronous mod N counter.
- Design shift register circuits.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
ELECTRICAL AND ELECTRONICS LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Test the value of the resistance by using
 - (i) Analog and Digital multimeter
 - (ii) Color coding with and without tolerance value.
2. a) Measure current, voltage and resistance using
Various test meters – Ammeter, Voltmeter and multi meter.
b) Generate AC and DC signals using signal generator and power supply.
3. Verify Ohm's law and Kirchoff's law.
4. Draw the forward bias characteristics of a PN Junction diode and determine the forward resistance of the diode.
5. Draw the reverse bias characteristics of a Zener diode.
6. Draw the characteristics of Common Emitter Configuration and determine its input impedance, output impedance and current gain.
7. Construct the following circuits using Op-Amp IC 741
 - (i) Inverting Amplifier
 - (ii) Non – inverting Amplifier
 - (iii) Adder
 - (iv) Subtractor.
8. Construct and test half - wave and full - wave rectifier circuits.
9. Verify truth tables of logic gates using IC 7404, 7408, 7432, 7402, 7400 and 7486.
10. Realize the logic gates using Universal gates.
11. Realize the circuit to simplify the logic equation by using karnaugh map.
12. Verify De-Morgan's Theorems.
13. Construct Half adder and full adder circuits using ICs and verify their truth table.
14. Construct Half subtractor and full subtractor circuits using ICs and verify their truth table.
15. Verify the operation of a multiplexer and de-multiplexer using IC's

16. Verify the operation of a decoder and encoder circuits.
17. Implement and Test RS, JK, T and D flip-flops.
18. Construct and test 4-bit ripple counter and observe the output waveform.
19. Construct and test asynchronous decade counter and observe the output waveform.
20. Construct and test 4-bit shift registers.

EQUIPMENTS / COMPONENTS REQUIRED

EQUIPMENTS:

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

COMPONENTS

S.No	Name of the components	
1.	Resistors	150Ω, 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.	IC74161(Counter)	
8.	IC74153(MUX)	
9.	IC74139(DMUX)	

10.	IC7476 (Flip-Flop)	
11.	IC74194 (Shift Register)	

15035	C AND DATA STRUCTURES LABORATORY
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AIM:

The main aim of this laboratory is to provide the hands on experience on C programming and improve the practical set. The learner will be able to develop the logic for the given problem, recognize and understand the syntax and construction of C code, gain experience of C, know the steps involved in compiling, linking and debugging C code, feel more confident about writing the C functions, write some complex programs for implementing data structures.

The knowledge of 'C' language and data structures will be reinforced by practical exercises during the course of study. The course will help students to develop the capability of selecting a particular data structure.

OBJECTIVES:

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

- Compile C Programs.
- Write C programs using operators and expressions.
- Write C programs using control structures and loops.
- Understand the use of arrays
- Use of arrays and pointers.
- Implement functions.
- Know the difference between Structures and Unions.
- Implement linear data structure algorithms using C language.
- Implement non - linear data structure algorithms using C language.
- Write programs for traversing a binary tree.
- Write programs for searching and sorting.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
C AND DATA STRUCTURES LABORATORY	6	96	25	75	100

LAB EXERCISES

OPERATORS AND EXPRESSIONS

1. a). Write a program to convert the given temperature in degree centigrade to Fahrenheit and vice versa.
- b). Write a program to find the simple and compound interest for the amount (P) at the rate of interest (R) for the year N.
- c). Write a program to enter two numbers from the user and prints the sum, product, difference, and quotient of the two numbers.

DECISION MAKING STATEMENTS – I

2. a). Write a program to identify whether a number input from the keyboard is even or odd. If it is even, the program should display the message “Number is even”, else it should display “Number is odd”. (Using if-else)
- b). Write a program to display the student’s grade based on the following norms: (else – if ladder)

Marks	Grade
≥ 75	A
> 50 and < 75	B
> 25 and < 50	C
< 25	F

DECISION MAKING STATEMENTS – II

3. a). Write a program to find out whether a given number is a perfect number. The program should terminate if a negative integer is given as the input. A perfect number is a number whose factors other than itself add up to itself. Example: $6 = 1 + 2 + 3$, $28 = 1 + 2 + 4 + 7 + 14$
- b). Develop a simple calculator to accept two floating point numbers from the keyboard. Then display a menu to the user and let him/her select a mathematical operation to be performed on those two numbers. Then display the answer. A sample run of you program should be similar to the following: (Using switch statement)

```
Enter number 1: 20
Enter number 2: 12
Mathematical Operation
-----
1 - Add
2 - Subtract
3 - Multiply
4 - Divide
-----
Enter your preference: 2
Answer : 8.00
```

LOOPING STATEMENTS

4. a). Write a program to compute the sum of all integers between any given two numbers.
- b) Write a program to find and print the first 10 terms of the Fibonacci sequence. Assume the first two terms are 0 and 1.
- c) Write a program to count the number of positive numbers, number of negative numbers and number of zeros in the given N elements.

ARRAYS

5. a). Write a program to calculate and display the total and the average of 10 integer numbers.
- b) Read 3 subject marks of 4 students. Write a program to calculate and display the total marks of each student. Use a 2D (two-dimensional) array to store the marks

FUNCTIONS

6. a). Devise a function called min (x , y) that returns the smaller of two double values. Test the function with a simple data.
- b) Write a function to find the biggest number in a given array using function.
- c) Write a program to find the factorial of a given number using recursion.

STRINGS

7. a). Write a C program to find the number of vowels present in the string. [Assume your string contains both uppercase and lowercase characters]
- b) Write a program to find whether a given string is palindrome or not.
- c) Read a string, which consists of both lower case characters and upper case characters. Convert the lowercase character into upper case and vice versa. Display the new string.

STRUCTURES AND UNIONS

8. a). Write a program for nested structure, the two structures are declared within a single structure. The two inner structures are : "dob" (fields : dd, mm, yy) and "address" (st, cty) and the outer structure "Student" (fields : rollno, name).

Write a main program to get and display the details of N students.
- b) Write a Program to print the student name, rollno, marks using unions.

POINTERS- I

9. a). Write a program to swap two integer numbers using pointers.
- b) Read a string. Print the above string such that each line contains a single character. (Use pointers)
- c) Read an integer array consists of N elements. Print the elements in reverse order

using pointers.

POINTERS- II

10. a). Write a C program to read through an array of any type using pointers. Write a C program to scan through this array to find a particular value
- b) Using pointers, find the length of the string.
- c) Write a “C” program to concatenate two strings using pointers.

DATA STRUCTURES USING C

11. a). Write a C program to create a singly linked list . Make necessary assumptions.
- b) Write a C program to delete the first node that contains an integer data item of a single linked list.
12. Write a “C” program to perform operations in stack using array.
13. Write a “C” program to convert an infix expression into post fix expression.
14. Write a “C” program to evaluate a postfix expression.
15. Write a “C” program to perform operations in queue using array.
16. Write a “C” program to create a binary tree.
17. Write a “C” program for pre -order traversal of a binary tree.
18. Write a “C” Program for binary searching.
19. Write a “C” program to read 10 elements and sort the above numbers using bubble sort.
20. Write a “C” program to read 10 elements and sort the above numbers using quick sort.

REQUIREMENTS:

Software:

- C Compiler with editor

Hardware:

- Computer with Pentium IV / Dual core Processors. – 36 Nos
- Printer – 6 Nos.

15036	OPERATING SYSTEM LABORATORY
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AIM:

The main aim of this subject is to provide hands-on experience on Linux operating systems and good working knowledge to work in Linux environments. Theoretical aspects of operating system, were covered in theory course will be implemented through C language.

OBJECTIVES:

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

- Install and configure Linux operating system.
- Install and configure peripherals in Linux Operating System.
- Use File management commands in Linux
- Understand the commands used for manipulating directories.
- Know the way of giving permission to different users.
- Create and delete users.
- Change the passwords of different users.
- Write shell scripts for simple applications.
- Write C program for deadlock avoidance.
- Implement multithreading concept in C language.
- Implement FCFS Scheduling policy.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
OPEARTING SYSTEM LABORATORY	4	64	25	75	100

LAB EXERCISES

1. Execute the following commands and write down the results and use of each command : (i) man (ii) cd (iii) cd. (iv) cd.. (v) ls, ls – a (vi) pwd
2. a) Make your own subdirectories called uni and linu in your home directory. Then delete the sub directory called uni.
 b) Explore the file system, write what is there in /bin, /usr/bin, /sbin/tmp and /boot. Find and list the devices that are available in your system.
3. a). Create a file called intro.text that contains the word “hello I am the student of computer branch”. Now copy this file and paste to other directory.
 b) Change the permission of the above file to rwxrwxr-x. You can try different

possibilities to change its permissions. Find out what are the different commands available that can be used to change the permissions of a file/files.

- c) Display the name of all files in the home directory using *find*. Can you display the name of all files in the home directory that are bigger than 500 KB.
4.
 - a). Use *finger* or *who* to get a list of users on the machine
 - b) Add different users, set their passwords and define permissions. Check whether you are able to change the passwords of all users or not.
 - c) Delete the user, which just now you have created.
 5.
 - a) Try to access your account available at a remote machine. Download some file from that machine to your machine.
 - b) Create a *cron* job that sends you a message after every 5 minutes.
 - c) Write a message to inform all users that “ they should shut down their machine after completing the lab exercise.
 6. Write and execute the following programs in Linux using Shell script :
 - I. Factorial of a given number
 - (ii) Sum of odd / even numbers from M to N
 7. Write and execute the following programs in Linux using Shell script :
 - I. To find the greatest of given three numbers.
 - II. Find out the maximum and minimum number of the given series
 8. Write and execute the following programs in Linux using Shell script :
 - I. To reverse the given string and check whether it is PALINDROME or not.
 - II. To find the length of the given string.
 9. Develop a Calculator application using shell script
 10. Implement deadlock Avoidance Algorithm using C language.
 11. Implement multithreading concepts using C language.
 12. Given the list of processes, their CPU burst times and arrival times, display/print the Gant chart for FCFS. Compute and print the average waiting time and average turnaround time. Write a C program for the above task

Requirements:

Software: 1. Linux operating system 2. C Compiler with editor

Hardware: (1) Computer with Pentium IV / Dual core Processors. – 36 Nos
(2) Printer – 3 Nos.

15041	COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE PROGRAMMING
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AIM:

This subject aims to develop knowledge and skills in the area of organization of components of a computer. The course will enable the students to be familiar with computer hardware, standards, instruction set and assembly language programming. It deals with the architecture of major components of a computer and functioning of these different components.

OBJECTIVES:

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

- Understand the purpose of register transfer language.
- Describe the various micro-operations
- Classify instruction formats.
- Understand the functions of the major components of the CPU.
- Discuss the importance of pipelining and vector processing.
- Identify the need for I/O interface.
- Explain the input/output techniques. i.e., programmed I/O, interrupt – driven I/O and direct memory access.
- Explain I/O processor.
- Discuss about CPU - IOP communication.
- Define memory hierarchy.
- Describe the importance of cache memory, Associate memory and virtual memory.
- List the various components of the 8086 microprocessor.
- Define the various directives used in assembly language programs.
- Identify the instruction set of the 8086 microprocessor.
- List the arithmetic instructions.
- Differentiate packed numbers and unpacked numbers.
- Use string operations.and loops.
- Use comparison for implementing various comparison functions.
- Define interrupts.
- List the functions of interrupts 21H and 10H.
- Write assembly language programs with simple arithmetic, logical and shift operations.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE PROGRAMMING	6	16	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	REGISTER TRANSFER LOGIC AND CPU	16
II	INPUT-OUTPUT SYSTEM	16
III	MEMORY ORGANISATION	16
IV	PC ARCHITECTURE AND ARITHMATIC INSTRUCTIONS	18
V	SUBROUTINES, STRING AND BIT INSTRUCTIONS AND INTERRUPTS	18
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT I REGISTER TRANSFER LOGIC AND CPU

16 Hours

- 1.1 **Register Transfer Logic:** Register transfer language – register transfer – bus and memory transfer – Arithmetic micro operations – Logic micro operations – Shift micro operations – One stage of arithmetic and logic unit.
- 1.2 **Central processing unit:** Major components of CPU - general register organization –bus system, control word, ALU, examples of micro operations; Instruction format - Three address - Two Address - One - Zero Address instructions ; CISC characteristics, RISC characteristics
- 1.3 **Parallel Processing:** Throughput – multiple functional units - pipelining – introduction, arithmetic pipeline, instruction pipeline (concepts only) – Vector processing.
- 1.4 **Control Unit:** Structure of Control unit – Fetch , Indirect Execute, Interrupt and the Instruction cycle – Hardwired control – Micro-programmed Control.

UNIT II INPUT- OUTPUT SYSTEM

16 Hours

- 2.1 **I/O interface :** Need for I/O interface – Major functions of the I/O interface – I/O versus memory bus – isolated versus memory mapped I/O – Asynchronous data transfer – Strobe control, handshaking – Asynchronous serial transfer

2.2 **Modes of transfer** : Three possible modes; example for programmed I/O, interrupt initiated I/O; priority interrupt -daisy chain priority, parallel priority interrupt, priority encoder, Interrupt cycle, software routines, Initial and final operations; DMA -DMA controller, DMA transfer.

2.3 **I/O Processor** : I/O Programming – CPU - IOP communications.

UNIT III MEMORY ORGANISATION 16 Hours

3.1 **Memory organisation:** Memory hierarchy; Main memory, Auxiliary memory.

3.2 **Associative memory:** Hardware organisation, Match logic, Read operation, Write operation.

3.3 **Cache memory:** Need for cache memory, organisation of cache memory, operational principle of cache memory, different mapping techniques, cache initialization.

3.4 **Virtual memory:** Address space and memory space, address mapping, associative memory page table, page replacement.

UNIT IV PC ARCHITECTURE AND ARITHMETIC INSTRUCTIONS 18 Hours

4.1 **PC Architecture:** Block diagram of 8086 - Registers - Segment registers; Address-Effective address, Segment address, Physical address; Flag registers

4.2 **Assembly language Statements:** Types - Instructions, directives, macros, Statement format - Label, mnemonic, operand and comment fields - Pseudo operations.

4.3 **Instructions:** Data Transfer Instructions - Mov, XCHG – Arithmetic Instructions - ADD SUB , INC, DEC and NEG Instructions - MUL, IMUL, DIV, IDIV Instructions, CLC, STC and CMC Instructions. - Decimal Arithmetic: BCD representation-Packed and unpacked representation, Packed BCD to ASCII and ASCII to packed BCD conversion; DAA, DAS; Unpacked representation - ASCII and Unpacked pseudo-ops, AAA, AAS, AAM, AAD Instructions and their uses.

4.4 **JMP Instruction;** Unconditional JMP-Forward and Backward reference, Short operator for short jumps. Conditional Jumps: Conditional jump Instructions - CMP instruction, LOOP, LOOPZ, LOOPNZ instructions.

UNIT V SUBROUTINES, STRING AND BIT INSTRUCTIONS AND INTERRUPTS 18 Hours

5.1 **Subroutines and Procedures:** Stack and its initialization, CALL and RET instructions, PUSH and POP instructions - String operations: MOVS, CMPS, SCAS, STOS and LODS Instructions, Byte and Word options, the direction flag - CLD and STD Instructions - Repeat prefixes - REP, REPE (REPZ), REPNE (REPNZ), - XLAT instructions, Translation table - Bit operations: AND, OR, XOR and NOT Instructions, TEST Instruction, SHR, SHL, SAR and SAL Instructions

5.2 **Interrupts** : Introduction – Hardware & Software Interrupt (Definition) – Processing of an Interrupt - Dos Interrupts: 21h – Function Numbers – Examples - BIOS Interrupts: 10h – Screen Processing Functions - Examples;

5.3 **Writing Programs for the following:** Find the average of two values – Larger of two values – Print the alphabets from A to Z – Find the largest and smallest values - Character translation (upper to lower and vice versa).

REFERENCE BOOKS

SNo	TITLE	AUTHOR	PUBLISHER
1.	Computer System Architecture	Morris Mano.M.,	Prentice Hall of India, 3 rd Edition , 2001
2.	Computer Organisation and Architecture	William Stallings	<i>Prentice Hall of India ,2002</i>
3.	Assembly language and Programming	Peter Abel	<i>Prentice Hall of India</i>
4.	Fundamentals of Assembly Language Programming Using IBM PC	Detmer Richard.C	Galgotia Publications Ltd. Delhi

15041 COMPUTER ARCHITECTURE
AND
ASSEMBLY LANGUAGE PROGRAMMING

MODEL QUESTION PAPER - I

PART – A (10 x 1= 5 Marks)

Answer all the questions:

1. Give an example for three-address instruction format.
2. What is parallel processing?
3. State any two functions of memory bus.
4. Give any one functions of I/O interface.
5. What is hit ratio?.
6. List down any two page replacement algorithm.
7. What is a macro?
8. Give the syntax for XCHG instruction
9. List down the different types of stack operations.
10. Give any two BIOS interrupts.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Tabulate any three differences between RISC and CISC
12. What is handshaking? Explain
13. Give the hardware organization of Associative memory.
14. Write down the syntax of CMP instruction and explain.
15. What is Software Interrupt? Give examples

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain arithmetic micro operations with examples [5]
2. What is vector processing? Explain with a neat diagram. [5]

(OR)

- B. 1. Explain different types of instruction formats with examples [10]

- 17 A. 1. Compare and explain I/O versus memory bus. [5]
2. What is parallel priority interrupt? Explain [5]

(OR)

- B 1. With a neat block diagram, explain DMA Controller [10]

- 18 A. 1. Explain memory hierarchy with a neat diagram. [5]
2. What is virtual memory? Explain [5]
(OR)
- B. 1. Draw the block diagram and explain “n” cell match logic in associative memory. [10]
- 19 A. 1. What is pseudo operations? Explain [5]
2. Explain different arithmetic instructions with an example. [5]
(OR)
- B. 1. Explain different types of flag registers available in 8086 architecture [10]
- 20 A. 1. Explain different types of DOS interrupts with examples. [10]
(OR)
- B. 1. Write an assembly language program to print the alphabets from A to Z. [10]

15041 COMPUTER ARCHITECTURE
AND
ASSEMBLY LANGUAGE PROGRAMMING

MODEL QUESTION PAPER - II

PART – A (10 x 1= 5 Marks)

Answer all the questions:

1. What is a bus?
2. Give an example for one address instruction format.
3. What is memory mapped I/O.
4. Expand the term “DMA”.
5. Give any two examples for auxiliary memory.
6. What is cache memory?
7. Expand the term “BCD”.
8. Write down the syntax for CMP instruction.
9. Give any two string operations
10. Define the term Interrupt.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define the term “throughput”? Explain its significance
12. What is priority interrupt? Explain
13. State the differences between RAM and ROM.
14. Tabulate any three differences between IMUL and MUL instructions.
15. What is hardware interrupt? Give example

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Draw the block diagram and explain one stage of arithmetic and logic unit. [5]
2. Explain arithmetic pipeline with a neat diagram [5]
- (OR)**
- B. 1. Explain the principle and operation of general register organization with a neat diagram. [10]
- 17 A. 1. What is hand shaking? Explain with a neat diagram. [5]
2. Briefly explain about CPU – IOP Communications. [5]

(OR)

- B 1. With a neat block diagram, explain DMA controller and transfer. [10]
- 18 A. 1. What is auxiliary memory? Explain with an example. [5]
2. Explain the organization of associative memory with a neat diagram [5]
- (OR)**
- B. 1. Discuss different types of mapping techniques available in cache memory. [10]
- 19 A. 1. What is effective address? Explain with an example. [5]
2. Write the syntax and explain different types of ADD and SUB arithmetic instructions with an example. [5]
- (OR)**
- B. 1. Discuss in details about various loops and loop handling instructions with an example. [10]
- 20 A. 1. Explain any five string operations. [5]
2. What are the various BIOS interrupts? Explain them. [5]
- (OR)**
- B. 1. Write an assembly language program to convert an uppercase character to lowercase and vice versa. [10]

AIM:

The main aim of the subject is to introduce the whole range of web technologies starting from HTML, Java Script, JSP, XML and CSS. It also gives a brief description on Internet. Through the various examples the course will describe how to design specific page, dynamic web page, forms and frames.

OBJECTIVES:

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

- Understand two types of networking models.
- Understand the concept of packet switching.
- Understand how to access to the internet.
- List the services available on Internet.
- Classify internet application protocols.
- Understand the basic concepts of HTML.
- Describe how to control text attributes.
- Discuss how to work with images in HTML
- Describe links using ANCHOR tag.
- Define various types of lists.
- Describe the tags used for constructing tables, frames and forms.
- Define the use of some special tags.
- Use operators, loop constructs and functions of JavaScript.
- Define objects in JavaScript.
- Understand how to construct input and output boxes using Java Script .
- Discuss about events and Event Handlers in JavaScript.
- Differentiate server side scripting and client side scripting.
- List the advantages and disadvantages of JSP.
- Discuss about JSP elements and implicit objects.
- Write simple JSP scripts.
- Discuss the features of XML.
- Define XML components.
- Understand the usage of CSS.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
INTERNET CONCEPTS AND WEB DESIGN	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	THE INTERNET	16
II	HTML	18
III	INTRODUCTION TO JAVASCRIPT	18
IV	SERVER SIDE SCRIPTING (JSP)	16
V	XML AND CSS	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT- I THE INTERNET CONCEPTS

16 Hours

- 1.1 **Introduction:** Definition of Internet – History of Internet - Networking Models : OSI Networking Model – TCP/IP networking model - Packet Switching - Accessing the Internet : Dial-up connection – SLIP / PPP protocols ; Internet service providers – ISDN Service – Direct ISP Service through leased line – Modem - Cable Modem – Internet tools – Search Engines – web browser.
- 1.2 **Internet Protocols:** Internet Protocol (IP) – IP addresses – Types of Internet addressing - Transmission Control Protocol (TCP) - How does the Internet work - Intranet & Extranet - Internet Infrastructure
- 1.3 **Internet Applications and Application Protocols:** Applications of Internet – HTTP – SMTP – TFTP – RIP – IMAP – POP – IMAP Vs POP – FTP

UNIT- II HTML

18 Hours

- 2.1 **Introduction to HTML:** What is HTML - Basic Tags of HTML - HTML Tag - TITLE Tag - BODY Tag ; Formatting of Text : Headers - Formatting Tags: BOLD, ITALICS, UNDERLINE, PARAGRAPH, TT, STRIKETHROUGH, EM, BR and HR tags - PRE Tag - FONT Tag - Special Characters - Working with Images -META Tag .
- 2.2 **Advanced HTML:** Links - Anchor tag – Lists - Unordered Lists - Ordered Lists - Definition Lists; Tables - TABLE, TR and TD Tags - Cell Spacing and Cell Padding - Colspan and Rowspan; Frames: Frameset - FRAME Tag – Frame inside other frames - NOFRAMES Tag ; Forms : FORM and INPUT Tag - Text Box - Radio Button – Checkbox - SELECT Tag and Pull Down Lists : Hidden - Submit and Reset ; Some Special Tags:

COLGROUP - THREAD, TBODY, TFOOT - _blank, _self, _parent, _top – IFRAME – LABEL - Attribute for <SELECT> - TEXTAREA

UNIT- III CLIENT SIDE SCRIPTING (JAVASCRIPT)

18 Hours

- 3.1 JavaScript Basics : Need of scripting languages – Variables and Data Types : Declaring Variables – Life span of variables - Data Types - Operators : Assignment , comparison, computational and logical operators - Control Structures : Conditional Statements - Loop Statements : for, while, for in, break and continue statements
- 3.2 Object-Based Programming and Message boxes: Functions - Executing Deferred Scripts – objects : Document object, Predefined objects, Array object, History object , location object - Dialog Boxes - Alert Boxes - Confirm Boxes - Prompt Boxes
- 3.3 Javascript with HTML : Events - Event Handlers : onLoad and onUnload – onFocus and onBlur – onError - Forms : Forms Array – Form element properties – Example program.
- 3.4 Using JavaScript URLs – Client-side Image maps – Server Side Image Maps – Status bar – Cookies – Live Connect – Java Console – Java Script to Java – Java to JavaScript Communication.

UNIT- IV SERVER SIDE SCRIPTING (JSP)

16 Hours

- 4.1 **Introduction:** Client side scripting versus Server Side scripting – JSP Vs Javascript - Advantages and disadvantages of JSP – Client and server responsibilities - Installing and configuring server – JSP Architecture – Life cycle of a JSP page - JSP vs Servlets – JSP Vs ASP – List of JSP servers
- 4.2 **JSP Elements:** Comments – Directives: Page, Include and taglib directives – Scripting elements: Declarations - Scriptlets – expressions – Simple JSP page
- 4.3 **Implicit objects:** Request, response, pagecontext, application, out, config, page, session, exception – Scope: Application – Session – Request
- 4.4 **Writing Simple JSP programs:** Convert entered text into uppercase – Find the maximum of three numbers – Add two numbers.

UNIT- V XML and CSS

16 Hours

- 5.1 **Introduction:** Advantages – HTML Vs XML - Browsing and parsing XML – Creating a XML file – Data island – well formed XML document – XML components: elements – entities – comments – Processing instructions - Attributes
- 5.2 **DTD:** Declarations in DTD: Element, Attribute, Entity and Notation - Construction of an XML document XML Namespaces – Declaring namespaces - Default namespaces - XML schema – need and use of Schema – Building blocks – simple elements –Defining attributes – complex elements.
- 5.3 **CSS:** Introduction – Features – Syntax – External style sheet – internal style sheet – inline styles – multiple style sheet – Background – text – font – Border – outline – Margin – padding – list – table – Simple Examples using above properties.

REFERENCE BOOKS

S.No	TITLE	AUTHOR	PUBLISHER
1.	Internet and Web Design	Ramesh Bangia	Firewall Media
2.	Web Design	Jenkins	Wiley India
3.	HTML and Web designing	Kris Jama and Konrad King	Tata McGraw Hill Publishing Ltd
4.	Using HTML 4, XML and Java 1.2	Eric Ladd and Jin O' Donwell	Prentice Hall of India, New Delhi
5.	Web Technology and Design	C. Xavier	New Age International Publishers, New Delhi
6.	Java Server Pages	Ivan Bayross	Shroff publishers & Distributors Pvt Ltd, Delhi
7.	Teach yourself web Technologies	Ivon Bayross	BPB publications – 2002
8.	Web programming	Chris Bates	Wiley – Dreamtech India Pvt Ltd
9.	Web Technology A Developers Perspective	N.P. Goplan J.Akilandeswari	New Age International Publishers, New Delhi

15042 INTERNET CONCEPTS AND WEB DESIGN

MODEL QUESTION PAPER - I

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. Give any two internet service providers.
2. Expand the term HTTP
3. List any two formatting tags used in HTML.
4. What is dynamic web page?
5. State the needs of scripting languages.
6. What is cookies?
7. Give any two advantages of JSP.
8. What is JSP page?
9. How to declare namespace?.
10. What is style sheet?

PART – B (5 x 3 = 15 Marks)

Answer all the questions :

11. What is a protocol? Give examples
12. How to create table using HTML? Explain.
13. Explain break and continue statements with an example.
14. Write a JSP program to add given two numbers.
15. Tabulate differences between HTML and XML.

PART – B (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. How to create dial up connection? Explain [5]
2. Explain the installation procedure and working principles of a modem. [5]
- (OR)**
- B. 1. List the different types of internet protocols and explain any three internet protocols. [10]

- 17 A. 1. Explain different types of lists with an example HTML page. [5]
2. How to load an image in a HTML page? Explain with an example. [5]
(OR)
- B. 1. Explain the general structure of HTML page with an example program. [10]
- 18 A. 1. Explain different types of data types available in Java script. [5]
2. What is array of object? Explain [5]
(OR)
- B. 1. What is an Event? Explain different types of event handler with an example program. [10]
- 19 A. 1. Write a JSP program to read set of characters through keyboard and convert it in to uppercase letters. [5]
2. What is session object? Explain [5]
(OR)
- B. 1. Briefly explain JSP Architecture with neat diagram. [10]
- 20 A. 1. How to create XML file? Explain with an example. [5]
2. What is entity and notation? Explain [5]
(OR)
- B. 1. What is a style sheet? Explain different types of style sheet with an example. [10]

15042 INTERNET CONCEPTS AND WEB DESIGN

MODEL QUESTION PAPER - II

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. State the name of any two search engines.
2. State the function of web browser.
3. What is the correct HTML tag for inserting a line break?
4. State the purpose of <FRAME> and <FRAMESET> tag.
5. State any two events.
6. State the use of alert box.
7. List down any two JSP servers.
8. State any two differences between JSP and ASP.
9. State any two advantages of XML.
10. Which CSS property controls the text size?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are the different layers in the TCP/IP networking model?.
12. State the use of Meta tag.
13. Write down the general syntax of switch statement in JavaScript.
14. What are the types of directives in JSP? explain
15. What is the syntax of declaring an attribute in a DTD?

PART – B (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. What is an internet address? Explain. [5]
2. Compare Intranet with Extranet. [5]

(OR)

- B. 1. Briefly explain about the functions and features of Internet protocol and transmission Control protocol. [10]

- 17 A. 1. State any five tags used for formatting and define the function of each tag. [5]
2. Define the terms "Cell Spacing and Cell Padding" [5]

(OR)

- B. 1. What are the different types of lists? Explain them. [10]
- 18 A. 1. What are the different data types available in JavaScript? [5]
2. What are the different types of message boxes available in JavaScript? [5]
Explain any one of them with an example.
- (OR)**
- B. 1. Write a JavaScript code that converts the entered text into upper case. [10]
- 19 A. 1. List down the advantages and disadvantages of JSP. [5]
2. Briefly explain the life cycle of a JSP page. [5]
- (OR)**
- B. 1. What are implicit objects in JSP? Explain them. [10]
- 20 A. 1. How you will create an XML file? Explain with an example. [5]
2. What is DTD? Explain it with an example. [5]
- (OR)**
- B. 1. Briefly explain about the following : (i) External style sheet (ii) Internal Style Sheet and (iii) Multiple Style Sheet. [10]

AIM:

Today almost every branch of computer science is feeling presence of object - orientation. Object oriented technology is successfully incorporated in various fields of computer science. Since its arrival on the scene in 1995, the Java has been accepted as one of the primary programming language.

This subject is designed to give you exposure to basic concepts of object - oriented technology. This subject will help in learning to write programs in Java using object - oriented paradigm. Approach in this subject is to take Java as a language that is used as a primary tool in many different areas of programming work.

OBJECTIVES:

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

- Know the paradigms of programming languages.
- Understand the concepts of Object Oriented Programming.
- State the benefits and applications of Object Oriented Programming.
- Know the history of development of Java.
- Comprehend the features and tokens of Java.
- Explain about the control structures used in Java.
- Use of Arrays and Vectors in Java Program.
- Demonstrate the use of string and String Buffers.
- Define Class with the attributes and methods.
- Understand the need for interfaces.
- Implement Interfaces in classes.
- Create packages.
- Write simple Applets.
- List the types of AWT Components and types of exceptions.
- Handle the errors using exceptions.
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java.
- Define stream and list the types of streams.
- Know how Java supports networking.
- Know how database is connected with java using JDBC-ODBC connection.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours / Week	Hours / Semester	Assessment Marks		
			Internal	Board Exam	Total
OBJECT ORIENTED PROGRAMMING WITH JAVA	6	96	25	75	100

TOPIC AND ALLOCATION

UNIT	TOPIC	TIME (HRS.)
I	INTRODUCTION TO OOPS AND JAVA	18
II	CONTROL STRUCTURES, ARRAYS, VECTORS AND STRINGS	16
III	CLASSES, INTERFACES AND PACKAGES	18
IV	APPLETS, AWT CONTROLS AND EXCEPTION HANDLING	16
V	MULTITHREADS, STREAMS, NETWORKING AND DATABASE CONCEPTS	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT- I INTRODUCTION TO OOPS AND JAVA

18 Hours

- 1.1 **Introduction to Oops:** Paradigms of Programming Languages - Basic concepts of Object Oriented Programming – Objects and Classes – Data abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication – Benefits of OOP – Application of OOPs.
- 1.2 **Java :** History – Java features – Java Environment – JDK – API.
- 1.3 **Introduction to Java :** Types of java program – Creating and Executing a Java program – Java Tokens: Keywords, Character set, Identifiers, Literals, Separator – Java Virtual Machine (JVM) – Command Line Arguments – Comments in Java program.
- 1.4 **Elements:** Constants – Variables – Data types - Scope of variables – Type casting – Operators: Arithmetic - Logical – Bit wise operator – Increment and Decrement – Relational – Assignment – Conditional – Special operator – Expressions – Evaluation of expressions.

UNIT - II CONTROL STRUCTURES, ARRAYS, VECTORS AND STRINGS

16 Hours

- 2.1 **Decision making and Branching:** Simple if statement – if – else statement – Nesting if – else – else if Ladder – switch statement – Decision making and Looping: While loop – do – While loop - for loop – break – labelled loop – continue Statement.

2.2 **Arrays:** One Dimensional Array – Creating an array – Array processing – Multidimensional Array – Vectors – Wrapper classes

2.3 **Strings:** String Array – String Methods – String Buffer Class.

UNIT - III CLASSES, INTERFACES AND PACKAGES 18 Hours

3.1 **Class and objects:** Defining a class – Methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members – Nesting of Methods – this keyword – command line input

3.2 **Inheritance:** Defining a subclass – deriving a sub class – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance – Overriding methods – Final variables and methods – Final classes – Finalizer methods - Abstract methods and classes – Visibility Control: Public access, Private access, friend, protected. Interfaces: Multiple Inheritance - Defining interface – Extending interface - Implementing Interface - Accessing interface variables

3.3 **Packages:** Java API Packages – System Packages – Naming Conventions – Creating & Accessing a Packages – Adding Class to a Packages – Hiding Classes

UNIT - IV APPLETS, AWT CONTROLS AND EXCEPTION HANDLING 16 Hours

4.1 **Applets:** Introduction – Applet Life cycle – Creating & Executing an Applet – Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines – Rectangles – Polygon – Circles – Arcs – Line Graphs – Drawing Bar charts.

4.2 **AWT Components and Event Handlers:** Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels – TextComponent – ActionEvent – Buttons – CheckBoxes – ItemEvent - Choice – Scrollbars – Layout Managers- Input Events – Menus

4.3 **Exception Handling:** Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling – try blocks – throwing an exception – catching an exception – finally statement.

UNIT- V MULTITHREADS, STREAMS, NETWORKING & DATABASE CONCEPTS 16 Hours

5.1 **Multithreading:** Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization – Implementing runnable interface – Thread Scheduling.

5.2 **I/O Streams:** File – Streams – Advantages - The stream classes – Byte streams – Character streams.

5.3 **Networking:** Introduction – Manipulating URLs – Reading a file on a Web server – Establishing simple Client – Server - Interaction with Stream Socket, Datagram Socket.

5.4 **JDBC:** JDBC – ODBC Drivers – JDBC ODBC Bridges – Seven Steps to JDBC – Importing java SQL Packages – Loading & Registering the drivers – Establishing connection. Creating & Executing the statement.

REFERENCE BOOKS:

SNo	TITLE	AUTHOR	PUBLISHER
1,	Programming with Java	E. Balagurusamy	Tata McGrawhill Publishers , II Edition
2.	Java – The Complete Reference	Herbert Schildt	Tata McGrawhill Publishers , V Edition
2.	Java for you	Koparkar	TMH
3.	Java Programming Language	Ken Arnold , James Gosling	Addison wesley
4.	Introducing to Oops with Java	C Thomas WU. – 4 th Edition	Tata Mc-Graw Hill

15043 OBJECT ORIENTED PROGRAMMING WITH JAVA

MODEL QUESTION PAPER – I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Give any two benefits of OOPS.
2. What is a keyword?
3. List down any two math functions.
4. Tabulate any two differences between an array and vector.
5. List out the different types of visibility controls.
6. Give any two system packages available in Java.
7. Write down constructors present in the checkbox class.
8. What is an error?
9. What is multithreading?
10. What is the use of SQL package?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define “Type Casting”. Give an example
12. What is an array? How will you initialize one-dimensional array?
13. Tabulate the differences between overloading and overriding.
14. Write down the general syntax of parameter tag and explain.
15. What is thread Priority? Explain

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. List any five OOPS applications. [5]
2. What is JVM? Explain. [5]
- (OR)**
- B. 1. What is a data type? Explain different types of data types with an example. [10]
- 17 A. 1. With a control flow diagram, explain if and if-else statement with an example. [5]

2. Write a java program to create an Vector and perform the following operations [5]
- i. To add an element
 - ii. To insert an element at 2nd position
 - iii. To find element
- (OR)**
- B. 1. List and explain any five string functions with an example program.. [10]
- 18 A. 1. What is a static member? Explain with an example. [5]
2. Explain creating and accessing class members using object with an example. [5]
- (OR)**
- B. 1. What is inheritance? Explain any one type of inheritance with an example program. [10]
- 19 A. 1. List and explain any five graphics methods with an example program. [10]
- (OR)**
- B. 1. Write a java program to implement the following exception class [10]
- i. Arithmetic Exception
 - ii. Number Format Exception
 - iii. Array Index Out of Bounds Exception.
- 20 A. 1. What is an URL? Explain [5]
2. What are the steps used to establish JDBC – ODBC connection? Explain with general syntax. [5]
- (OR)**
- B. 1. Explain different types of JDBC – ODBC drivers. [10]

15043 OBJECT ORIENTED PROGRAMMING WITH JAVA

MODEL QUESTION PAPER – II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. What is a data abstraction?
2. What are the types of java program?
3. What is the value of X?
X=10>20? 5:6;
4. What is one-dimensional array?
5. Is it possible to create more than one object from a class?
6. What is a package?
7. List any two properties of label class.
8. List any two advantages of Exception handling
9. Give any one advantage of stream class.
10. What is the use of thread class?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What is a Byte code? Explain.
12. Differentiate between while and do while statement. Give example.
13. What is a class? Give an example
14. Write down the syntax and explain font class
15. Define the term “Thread Scheduling”.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A.
 1. How to create and execute Java program? Give example. [5]
 2. What are logical operators? Explain with examples. [5]

(OR)

 - B.
 1. Explain the basic characteristics of object oriented programming. [10]
- 17 A.
 1. Write a program to find the sum of array of “N” numbers. [5]
 2. Explain the term “String Buffer Class” [5]

(OR)

- B. 1. Explain different types of control statements available in object oriented programming with examples. [10]
- 18 A. 1. What is a constructor? Explain with an example. [5]
2. How to create and import a package? Explain with an example. [5]

(OR)

- B. 1. Explain different types of inheritance with examples. [10]
- 19 A. 1. Explain different types of methods and constructors present in the CheckBox Class. [5]
2. What is exception handling? Explain with an example. [5]

(OR)

- B. 1. Explain Applet life cycle with a neat diagram. [10]
- 20 A. 1. Write a program to print odd and even numbers using thread priority class. [5]
2. Explain implementation of runnable interface with an example [5]

(OR)

- B. 1. Briefly explain about the seven steps to establish JDBC connection. [10]

11011**ENGLISH COMMUNICATION LABORATORY****CURRICULUM OUTLINE**

The course on English Communication Practical will enable the learners develop their Communication skills in English, especially at a time when the Info-Tech Explosion on one side and the search for Communicational Exploration on the other have been taking the contemporary world by leaps and bounds.

Keeping in view the career requirements of the students at Diploma level, the course on English Communication Practical has been designed in such a way that it will enable the learners acquire the much needed proficiency in the art of Communication and this will go a long way in shaping and fine tuning the future career of the students.

OBJECTIVES:

1. To equip the learners with effective speaking and listening skills in English
2. To make them realize the communication potential of English language
3. To infuse in their minds the much-needed and all the more important 'CONFIDENCE'
4. To facilitate them to acquire a fairly acceptable skill in pronunciation
5. To train them to use language effectively to face interviews, group discussions and public speaking
6. To enable them to prepare their resume, curriculum vitae etc.,
7. To promote ethical values and inculcate organizational behaviour...

For achieving the objectives identified above, the following skills are to be developed to enhance the communicative potential of the students.

The Skills are:

- (i) Listening
- (ii) Reading and Pronunciation
- (iii) Speaking and Presentation
- (iv) Writing

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
ENGLISH COMMUNICATION PRACTICAL	4	64	25	75	100

TOPICS AND ALLOCATION

UNIT	INSTRUCTION	TIME (Hrs)
I	LISTENING	12
II	READING	12
III	SPEAKING	14
IV	WRITING	8
V	PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR	8
VI	PROJECT REPORT WRITING (OUTLINE)	2
	REVISION AND TESTS	8
	TOTAL	64

DETAILED SYLLABUS

UNIT I LISTENING

Listening to pre-recorded short episodes, conversations, passages, stories, (hard copy of the material and cassettes) news bulletin, speeches by famous personalities – Listening for general and specific information etc.,

NOTE: The exercises given to the students must be recorded in the Record Notebook.

UNIT II READING

Reading aloud – by students individually - reading rhymes – proverbs – passages on various topics of interest – Newspaper reading – Reading humorous passages – Anecdotes – Stories – tricky sounds (conditioners) – Reading manuals – Reading individual sentences with articulation, pronunciation, Tones, Punctuation, pauses etc...- Reading the titles of popular books, movies and poems.

NOTE: All the exercises given in Reading skills should be written in the Record Notebook.

UNIT III SPEAKING

- i. Self-introduction – introducing one self, one's family – one's friends and relatives, one's language – one's country etc...
- ii. Welcome Address, Vote of thanks
- iii. Extempore speeches.
- iv. Short speech on simple topics on simpler themes for about one minute.
- v. Role play – Group Discussion – Debate – Seminars – Machine Descriptions (depending upon branches) – Compering – Interviewing others by Asking Questions – Interview Techniques – Conversational Practice – Telephonic Conversation – Telephonic Interviews – How to establish conversation / dialogues – Entry Attempts/Admissions.

NOTE: Items taught in the Speaking skill should be written in the Record Notebook.

UNIT IV WRITING

- i. Writing Resume, preparing Curriculum Vitae.
- ii. Converting newspaper headlines into sentences.
- iii. Formation of Sentences – Using the table of Sentence-making and producing multiple sentences.
- iv. Framing Questions for the responses given
- v. Tips for better performance in interviews.
- vi. Describing Objects
- vii. Describing Situations.

NOTE: All the above topics must be taught to the students providing sufficient models and exercises and everything must be recorded in the Record Notebook.

UNIT V PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR:

Different kinds of Ethics – Ethics in different fields – Engineering Ethics – Senses of Engineering Ethics – Moral Values – Integrity & Loyalty – Work Ethics – Respect for others and authority – Empathy – Caring and Sharing – Honesty – Courage and Commitment – Valuing Time – Co-operation & Teamwork – Safety and Risk – Right Action – Professional ideals and virtues – Individual's Ambition – Conflict Resolution – Self-Confidence – Customs and Manners – General Behavior – Etiquettes to be followed – Professional Responsibility – Accountability – Leadership Qualities – Effective Communication skills.

UNIT VI PROJECT REPORT WRITING (Outline):

Significant features of Project Report Writing – Organization – Presentation – Use of impersonal Passives – Acknowledgements.

REFERENCES

UNIT I LISTENING:

Cassette with books:

- 1) Spoken English for you – Level I & Level II by Radha Krishna Pillai – Emerald Publishers.
- 2) Activity Sheets to be prepared.
- 3) BBC – Lingophone with Hard copy.
- 4) World Great Speeches – Book – Balaji's – Famous Speeches.

UNIT II READING:

- 1) Short story Books (Indian Writing – Panchathantra)
- 2) Reading Illustrated Books (Gokulam – Wisdom – Chandamama – Amarchitrakatha) must be subscribed.

UNIT III SPEAKING:

Books / materials related to speaking skill.

UNIT IV WRITING:

- 1) Internet Browsing and collecting information for C.V.
- 2) Book materials / Cassettes for writing skill.
- 3) Guided composition in English Language Teaching – Alexander L.G. Longman, 1971.
- 4) The Language Laboratory and Language Learning – Dahim Longman, London, 1967.

PROFESSIONAL ETHICS

REFERENCE BOOKS

1. Mike Martin and Roland Schinzinger, “Ethics in Engineering”, McGraw Hill, New York 1996.
2. Charles D. Fleddermann, “Engineering Ethics”, Pearson Education / Prentice Hall, New Jersey, 2004.
3. Charles E. Harris, Michael S. Protchard and Michael J Rabins, “Engineering Ethics” – Concepts and Cases”, Wordsworth Thompson Learning, United States, 2000.
4. Edmund G Seebauer and Robert L Barry, “Fundamentals of Ethics for scientists and Engineers”, Oxford University Press, Oxford, 2001.
5. G.E. Moore, “Elements of Ethics”, Temple University Press, Philadelphia, 1991.
6. J.D. Mabbott, Hutchinson, “An Introduction to Ethics” Hutchinson University Library, London, 1969.
7. May Mothersill, “Ethics”, The MacMillan, New York, 1965.
8. Raymond Bradley and Stephen Duguid, “Environmental Ethics”, Vol I & II, Simon Fraser University, Canada 1989.
9. Kevin W. Bowyer, “Ethics and Computing – Living Responsibility in a computerized World”, IEEE Computer Society Press, California, 1996.
10. Jayashree Suresh and B.S. Raghavan, “Professional Ethics”, S.Chand & Company Ltd., New Delhi, 2005
11. James V. McGlynn, Jules J. Toner, “Modern Ethical Theories”, The Bruce Publishing Company, Milwaukee, 1962.

ENGLISH COMMUNICATION LABORATORY

(Common to all branches)

LABORATORY REQUIREMENT

1. An echo-free room.
2. Public Address System
3. A pair of collar microphones with amplifiers and speakers
4. Headphone units – 30 Nos. with one control unit with a facility to play and record in cassettes.
5. Colour Television (minimum size – 61")
6. DVD/VCD Player with Home Theatre speakers
7. Clip Chart, white board.
8. Necessary furniture's and comfortable chairs

GUIDELINES

UNIT I LISTENING

- a. The students must have been trained on a minimum of 10 Passages / stories / speeches / episodes / news bulletin (about 200-250 words each) and **all other topics given in the syllabus** during their course of study.

In the examination a passage shall be played back for about 5 minutes from a pre-recorded cassette followed by 5 questions. Students may be allowed to take notes while listening and they shall answer the questions in writing and assessment shall be made depending upon their performance.

- b. The students must have been trained on a minimum of 10 dialogues during their course of study.

In the examination a dialogue (face-to-face conversation) running for about 5minutes shall be played back from a pre-recorded cassette (either Video or Audio) followed by 5 questions. The students may be allowed to take notes while listening and they shall answer the questions in writing. Assessment shall be made depending upon the performance of the students.

UNIT II READING

The Students should have been trained to read out / articulate at least 200 different types of sentences. They should also be trained to pronounce 200 words (monosyllabic, by-syllabic, tri-syllabic and polysyllabic words) and all other topics given in the syllabus. The words and sentences are to be chosen in such a way that the tongue is articulating

the sounds in the manner peculiar to the English Language. The students should also be trained to read aloud newspaper headings, proverbs, rhymes, poems, (use of) minimal pairs and other items identified in the syllabus.

The students should also be exposed to 44 sounds in English language and their symbols with examples. However questions need not be asked in this in the end examinations.

UNIT III SPEAKING

The students should have been trained on a minimum of 10 topics / role play / group discussion / debate / seminar and **other topics given in the syllabus**. The students must also be trained to introduce themselves and others. Each student must speak at least 10 sentences. The students must be given guidelines for making their presentation / speech effective.

UNIT IV WRITING

The students should be thoroughly trained in all the items identified in the syllabus under writing.

UNIT V PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR

Around 50 questions dealing with PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR are given in the syllabus. In the examination the students will be given 10 questions (selected out of 50 questions) and they have to answer all the 10 questions. This carries 20 marks.

Teachers are requested to refer the reference books given in the syllabus and help the students to find out the answers for all the 50 questions.

UNIT VI PROJECT REPORT WRITING (Outline)

Elaborate guidelines must be given to the students as to how to write a Project Report. They must be exposed to the salient features in writing the Project Report. The students will be expected to submit **outline of a Project Report** relevant to their branches of study in a separate folder and this will be assessed at the time of End Examination and marks will be awarded accordingly.

ENGLISH COMMUNICATION PRACTICAL

(Common to all branches)

SCHEME OF EXAMINATION

END EXAMINATION (75 Marks)

- 1) End examination will be conducted for duration of 3 Hrs. covering all the six units identified in the syllabus.
- 2) The examination should be conducted in such a manner that there must be enough evidence regarding the performance of the students and the distribution of marks for the academic audit.

INTERNAL ASSESSMENT (25 Marks)

- 1) Students will maintain a 150-page Record Notebook for all the activities done in the English Communication Lab., for which 20 marks will be allotted.
- 2) 5 marks will be awarded for attendance.

Annexure: A statement of allocation of marks.

Time and Marks Allocation for each unit

GROUP	UNIT	TIME	MARKS ALLOTTED
GROUP A (Written Test)	PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR (UNIT V)	30 Minutes	20
	WRITING (UNIT IV)	45 minutes	10
	LISTENING (UNIT I)	45 minutes	10
GROUP B (Oral Test)	READING (UNIT II)	30 minutes	10
	SPEAKING (UNIT III)	30 minutes	15
GROUP C (Report Submission)	PROJECT REPORT WRITING (UNIT VI)		10

GROUP A

1. PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR (20 Marks)

The students will be asked to write brief answers, for any 10 questions out of 15 questions. The examiners will select the questions from the question bank given in the syllabus. Each question carries 2 marks. It will be a written practical.

Annexure: A question bank of 50 questions.

2. WRITING (5 + 5 = 10 Marks)

Out of 7 items identified in the syllabus under **Writing skills**, the students are required to answer for any two items out of four (i.e. 2 out of 4 questions). Each item carries 5 marks. There must be different questions for different batches.

3. LISTENING (5 + 5 = 10 Marks)

The students will be assessed on --

a) Auditory Comprehension (5 marks)

A pre-recorded cassette on short episodes / passages / stories / news bulletin / speeches by famous personalities (not exceeding 5 min.) will be played back only once. The Students are required to listen to this play-back with utmost attention.

After that, a sheet of paper containing 5 questions on the topic (that was played back to the students) with adequate space under each question (for the students to write the answers) will be supplied. The students are expected to write the answers in the space provided for each question.

Time for this exercise for the response of the students will be approximately 10 minutes.

b) Audio Visual Comprehension (5 marks)

A face - to - face conversation (not exceeding 5 minutes) will be played through a video or audio system (only once). The students are required to listen to this conversation with full attention.

After that, a sheet of paper containing 5 questions on this exercise shall be given with adequate space under each question for the students to write the answer. Fill in the blanks type of questions may also be given to assess the **Listening skills** of the students. Time to be taken by the students for this exercise will be approximately 10 minutes.

The selection of topics such as short episodes/passages/stories/news bulletins /speeches / dialogues etc... is left to the discretion of the internal and external examiners.

GROUP B

1. READING (5 + 5 = 10 Marks)

- a) Each student will have to read aloud a passage of about 200 words. (5 Marks)
- b) The Students will also be required to read individual sentences, rhymes, poems, newspaper headings, proverbs (use of) minimal pairs etc... (5 Marks)

NOTE: While reading, the students will be assessed based on their performance in pronunciation, articulation, intonation, punctuation, pauses etc...

The examiner needs to have as many passages / exercises as required, proportionate to the number of batches. The passage / exercises will be the same one to all the students of a particular batch. But it should not be repeated for other batches, there should be different passages / exercises for different batches.

2. SPEAKING (15 Marks)

- a) Introducing one self / Introducing others and **all the other topics given in the syllabus** 5 Marks.
- b) Short speech on simple topics on simpler themes for about 2 minutes – 5 Marks.
- c) Assessing the performance of the students on any of the topics given in the syllabus in sub division V under **Speaking skills**. – 5 Marks.

NOTE: The topics identified in the syllabus for Presentation (Speaking skills) need to be written individually one by one by the examiners in separate papers or in separate cards.

The students will be allowed to choose a topic through lot system. They are expected to speak on the topic chosen by them for at least 2 minutes.

The selection of the topics is left to the discretion of the examiner.

NOTE: Reading and Speaking:

For assessing the performance of the students in Reading and Speaking skills in the End Examination, each batch of students may be divided into two groups (if there are 30 students in a batch, they may be divided into 15 + 15) and both groups may be assessed simultaneously, one group by the external examiner (for **Reading skills**) and another by the internal examiner (for **Speaking skills**) and then vice versa.

This process will enable the examiners to complete the practical on time i.e., in 3 Hrs. duration.

GROUP C

PROJECT REPORT WRITING (10 Marks)

The students will be expected to submit an **outline of a Project Report** relevant to their branches of study in a separate folder and this will be assessed at the time of End Examination and marks will be awarded accordingly.

Annexure

PROFESSIONAL ETHICS & ORGANIZATIONAL BEHAVIOUR

QUESTION BANK

- 1) What do we understand by ethics?
- 2) What are the universally accepted ethical principles?
- 3) What is meant by engineering ethics?
- 4) What is the need for engineering ethics?
- 5) Define work ethics.
- 6) What is integrity?
- 7) 'Commitment' – what does it mean?
- 8) What do you mean by empathy?
- 9) What is professional ethics?
- 10) What is the similarity between ethics and morals?
- 11) What are the responsibilities of engineers?
- 12) What are the rights of the engineers?
- 13) What are codes of conduct?
- 14) Explain briefly the importance of ethics in engineering profession.
- 15) How can an engineer orient himself towards his ethical responsibilities?
- 16) What are the priorities of an engineer in a situation wherein which conflicting values are involved?
- 17) How can an engineer implement ethics of his profession in a multi-cultural/multi-national environment?
- 18) What are the professional obligations of an engineer?
- 19) What should be the ethics that an engineer should adhere to in both pre and post employment scenarios?
- 20) What is the ethical way of handling retrenchment?
- 21) What are the various aspects of empathy?
- 22) What are the salient features of commitment?
- 23) What is team-work?
- 24) What do you mean by profession and professionalism?
- 25) What is meant by accountability?
- 26) What is environmental ethics?
- 27) What is computer ethics?
- 28) Define the term 'morals'.
- 29) What do you mean by 'values'?
- 30) What are the main qualities of work ethics?
- 31) What is altruism?

- 32) What is sharing?
- 33) What is caring?
- 34) What is honesty?
- 35) What is courage?
- 36) What is meant by valuing time?
- 37) What is co-operation?
- 38) What are the objectives of co-operation?
- 39) What is meant by commitment?
- 40) In what way the effective communication skills shape the careers of an engineer?
- 41) What is self-confidence?
- 42) What is morality and etiquette?
- 43) What are the different models of engineering ethics?
- 44) What are the most fundamental moral principles?
- 45) What are the moral responsibilities of an employee towards his employer?
- 46) What are the moral responsibilities of an employer towards his employees?
- 47) What are the moral responsibilities of an organization towards community?
- 48) What are the advantages of team-work?
- 49) What is loyalty?
- 50) What do you mean by professional rights?

Example Questions for Writing Skill

Staff Member may prepare similar type of questions for Class works & Examinations

WRITING

1.	Your friend has asked for your advice for buying a birthday present. Write a letter to him/her suggesting which points he/she one should keep in mind like interest, age, need etc. while buying a birthday present. You are Shanty /Shanta of 1048 D, Gulabi Bagh, Delhi.
2.	Children like to spend their pocket money on their favourite food items like chips, kurkures, hot dog, pizza and cold drinks. But they don't know that these things cause harm to their health. Write a paragraph describing the harmful effects of fast and junk food. Mention the health and other related problems caused by it in about 50 words.
3.	You have to take part in a debate on the theme 'Examinations affect Teaching and Learning in schools' Write down your arguments in favour or against the motion in about 125 to 150 words
4.	Recently you attended a fair of Eco clubs at Bal Bhawan where the students from different schools displayed eco friendly materials and ways to protect our earth through different models and charts. Write a report in about the fair in about 50-60 words.

5.	Your cousin is a brilliant student but he is not keeping good health because he avoids homemade food and is very fond of eating outside. Write a letter telling him/her about the harmful effects of junk food and advising him/her how to maintain good health in not more than 100 words. You are Arpil/Arpita of C-8 Lawrence Road, Delhi.
6.	Write a letter to the Principal of your school requesting him/her to introduce inter house activities like quiz programmes, debates, recitation, essay-writing, painting and sports explaining how it may be beneficial for all-round development of their personality. You are Vineet/Vineeta, the head boy/girl of New Modern School, Amritsar.
7.	You don't approve of the ways of people as they waste a lot of water in different activities. Even the taps in schools are not closed properly, thereby, wasting the valuable water due to negligence and carelessness. You wish to spread awareness among students about it. Write down your views appealing students of your school to conserve water and to save it for future in an article for school magazine in about 50-60 words.
8.	You recently visited the 'World Book Fair' organized at "Near your Locality " and found it quite an enriching experience. Write a report in about 50-60 words so as to encourage other students to visit it.

CEK 440 - ENGLISH COMMUNICATION PRACTICAL

MODEL QUESTION PAPER

TIME : 3 Hrs

Max.Marks : 100

GROUP A

Answer any ten of the following:-

(10 x 2 = 20)

- I
- 1) What is team work?
- 2) 'Commitment' – What does it mean?
- 3) What is code of conduct?
- 4) How can an engineer orient himself towards his ethical responsibilities?
- 5) What are the professional obligations of an engineer?
- 6) What is the ethical way of handling retrenchment?
- 7) What are the rights of the engineers?
- 8) What is environmental ethics?
- 9) What is sharing?
- 10) What are the objectives of co-operation?
- 11) What is morality and etiquette?
- 12) What is loyalty?
- 13) What are the moral responsibilities of an employee towards his employer?
- 14) What do you mean by professional rights?
- 15) What is altruism?

II (2 x 5 = 10)

- 1) Imagine you are applying for a job. Write a resume for the same.
- 2) Religious extremism, matter of concern: PM

III (2 x 5 = 10)

- 1) A short story to be played back (audio cassette).
- 2) A face to face communication to be played back (visual/audio)

GROUP B

I (2 x 5 = 10)

- 1) Read the following passage aloud -
A passage with tricky sounds to be given.
- 2) Read the following aloud -
A conversational passage to be given.

II (3 x 5 = 15)

- 1) Introduce yourself
- 2) Short speech - A religious fair
- 3) Any one of the topics given in the syllabus in sub-division v under **speaking skills**

GROUP C

Project Report – writing

10

The students will be expected to submit an **outline of a Project Report** relevant to their branches of study in a separate folder and this will be assessed at the time of End Examination.

ENGLISH COMMUNICATION PRACTICAL

Allocation & Statement of Marks

Duration : 3 Hrs.

Max. Marks : 100

Sl. No	Reg.No.	Name of the Candidate	Communication Lab.						Internal Assessment		Total
			GROUP A			GROUP B		GROUP C			
			PE & OB (20)	Writing (10)	Listening (10)	Reading (10)	Speaking (15)	Project Report Writing (10)	Record (20)	Attendance (5)	(100)

15045	WEB DESIGNING LABORATORY
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AIM:

The main aim of this practical subject is to design web pages using wide range of web technologies starting from HTML, Java Script, JSP, XML and CSS. Through the various examples this laboratory course will describe how to design specific page, dynamic web page, forms and frames.

OBJECTIVES:

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

- Create web pages using simple HTML tags
- Create web pages using advanced HTML tags.
- Create simple Java script codes.
- Design web pages using JSP and HTML codes.
- Create chat applications using JSP.
- Use of XML and CSS .

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
WEB TECHNOLOGY LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo. Also, write three HTML documents for the links. Include facilities for forward, backward and HOME.
2. Design a HTML page about your friends. List your friends. Each friend's name is a link. Prepare separate HTML documents for each friend and call them in the appropriate link.
3. Design a single page website for your polytechnic containing a description of the courses offered. It should also contain some general information about the university such as its history, the campus, its unique features and so on. The site should be colored and each section should have a different color.
4.
 - a.) Create a web page that provides links to five different websites.
 - b.) Design a web page that has 5 equal columns. The table should look the same in all screen resolutions.

5. Make out a brief bio-data of yours and code it as an HTML page. You can consider using tables to show your academic history.
6.
 - a.) Write a Java script code that converts the entered text to uppercase
 - b.) Write a Javascript code to validate the username and password. The username and password are stored in variables.
7. Write a Java Script code using frames and Events (When a cursor moves over an object it should display the specification of the object in another frame)
8.
 - a.) Write Javascript function that finds the maximum of three given numbers.
 - b.) Write HTML document with Javascript to count the number of vowels in a text typed in a TextArea..
9. Create a site containing banner ads at the top of the page. The ads are changed every 10 or 15 seconds.
10. Collect the definitions of 10 items in chemistry. These definitions are stored in two string arrays name[] and defn[]. Write a JSP which has these two arrays and supplies the definition on request. Write a HTML document which gets the user input of the name of the item and sends the request to the JSP.
11. Write a JSP code to manipulate cookies.
12. Write a JSP code to upload data from client side.
13. Create a JSP application using image map to give information about the institution.
14. Write a program to create the chatting application using Application and Session object.
15. Write a program to check how many users have visited a website. Use Application object.
16. Write a Code in Java Script to count number of times you move over a link or record.
17. Write a program to check whether a person will be permitted to open a particular page or not. Use permission checker component.
18. Write a program for incorporating entities in to XML document using an internal DTD.
19. Write a program using CSS to create a time table for the class.
20. Write a program using CSS to set the background colors, fonts and paragraphs.

REQUIREMENTS:

Software:

- Notepad or any one Editor
- Web Browser (Internet Explorer or any one web browser)
- Apache Tomcat 4.0.x or JRun 3.x

Hardware:

- Computer with Pentium IV / Dual core Processors – 36 Nos
- Printers - 6 Nos

15046	JAVA PROGRAMMING LABORATORY
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AIM:

This laboratory course is an attempt to upgrade and enhance your theoretical skills and provide the hands on experience on object-oriented programming. By the end of these practical sessions of this course, the students will be able to write programs using object oriented techniques.

OBJECTIVES:

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

- Compile and Interpret Java Programs
- Write programs using different operators and expressions.
- Write Java programs using sequential, conditional and Iterative statements.
- Handle arrays of fixed and variable size.
- Create vectors.
- Create classes and objects using Java.
- Implement constructors and constructor overloading.
- Solve problems using inheritance and Polymorphism.
- Create own package and interface.
- Create Applet programs.
- Handle exception arising in programs.
- Use GUI components in the programs.
- Use multithreading in programs.
- Use java in networking.
- Work with files.
- Connect databases with the program.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
JAVA PROGRAMMING LABORATORY	6	96	25	75	100

LAB EXERCISES

OPERATORS AND EXPRESSIONS

1. a). Write a Program to find the area of a rectangle.
- b) Write a program to find the result of following expressions (Assume a = 10, b = 5)
i) $(a \ll 2) + (b \gg 2)$ ii) $(a) \parallel (b > 0)$ iii) $(a + b * 100) / 10$ iv) $a \& b$
- c) Write a program to print the individual digits of a 3-digit number.

DECISION MAKING STATEMENTS

2. a). Write a program that asks the user to enter two integers, obtains the numbers from the user, and then prints the larger number followed by the words "**is larger.**" If the numbers are equal, print the message "**These numbers are equal.**"
- b) Write a program that reads an integer and determines and prints whether it is odd or even.
- c) Write a program to find the biggest number between the given three integer numbers.

LOOPING STATEMENTS

3. a). Write a program to find the sum of the digits of a given number.
- b) Write a program to find the first 15 terms of the Fibonacci sequence.
- c) Write a program to find the three digit Armstrong numbers.

ARRAYS

4. a). Write a program to read N numbers and find the largest and smallest numbers.
- b) Write a program for the multiplication of two matrices.

VECTORS

5. Write a program that accepts a shopping list of four items from the command line and stores them in a vector. Write a Menu based Program to perform the following operations using vector
 1. To add an item at a specific location in the list.
 2. To delete an item in the list.
 3. To print the contents of the vector.
 4. To delete all elements
 5. To add an item at the end of the vector.

STRINGS AND STRINGBUFFER

6. a) Write a program in Java to create a String object. Initialize this object with your name. Find the length of your name using the appropriate String method. Find whether the character 'a' is in your name or not; if yes find the number of times 'a' appears in your name. Print locations of occurrences of 'a'.

- b) i. Create a **StringBuffer** object and illustrate how to append characters. Display the capacity and length of the string buffer.
- ii. Create a **StringBuffer** object and illustrate how to insert characters at the beginning.
- iii. Create a **StringBuffer** object and illustrate the operations of the append() and reverse() methods.

CLASSES AND OBJECTS

- 7. a). Write a program to display total marks of 5 students using student class. Given the following attributes: Regno(int), Name(string), Marks in subjects(Integer Array), Total (int).
- b) Write a program in Java with class *Rectangle* with the data fields width, length, area and colour. The length, width and area are of double type and colour is of string type. The methods are get_length(), get_width(), get_colour() and find_area().

Create two objects of Rectangle and compare their area and colour. If the area and colour both are the same for the objects then display “ Matching Rectangles”, otherwise display “ Non-matching Rectangle”.

PASSING OBJECTS AS ARGUMENTS

- 8. Create a class to represent complex numbers. A complex number has the form real part + i * imaginary part. Provide constructor to enable an object of this class to be initialized when it is declared. Provide a no-argument constructor with default value in case no initializes are provided. Provide public methods for the following:
 - i) Addition of two complex numbers
 - ii) Subtraction of two complex numbers
 - iii) Printing complex numbers in the form (a,b) where a is the real part and b is the imaginary part.

(Pass objects as arguments)

INHERITANCE

- 9. Write a program to create a player class. Inherit the classes Cricket_player, Football_player and Hockey_player form player class.

INTERFACES

- 10. a). Write a program to show how a class implements two interfaces.
- b) Show through a program that fields in an interface are implicitly static and final and methods are automatically public.

PACKAGES

- 11. Write a program to create a package for Book details giving Book Name, Author Name, Price, year of publishing.

APPLETS AND AWT

12. A color can be created by specifying the red, green, blue values as integer parameters to the constructor of class Color. The values range from 0 to 255. Provide three horizontal scroll bars and ask the user to select the values of the colors by dragging the thumb in the scroll bar. Using the color selected, draw a rectangle.
13. Create an applet for simple calculator to perform Addition, Subtraction, Multiplication and Division using Button, label and Text field classes.
14. Draw a bar chart for the following details using Applets.

Subject	Tamil	English	Maths	Physics
Marks	78	85	98	56

EXCEPTION HANDLING

15. a) Write a Java program to catch more than two exceptions.
b) Write a Java program to create your own exception subclass that throws exception if the sum of two integers is greater than 99.

MULTITHREADING

16. Write a Java program for generating two threads, one for printing even numbers and other for printing odd numbers.
17. Write a Java program for producer and consumer problem using Thread.

NETWORKING

18. Write a program to transfer the file between client and server using TCP/IP

FILES

19. a) Write a program to create a text file using Byte stream classes
b) Write a program to copy a file to another file.

CONNECTING DATABASE

20. Write a Java Program to connect to a database created in MS-ACCESS using JDBC Concept. Perform basic operations of Selection, Insertion and deletion on the database.

REQUIREMENTS:

Software:

- JDK1.3 OR JDK1.4
- MS -ACCESS

Hardware:

- Computer with Pentium IV / Dual core Processors. – 36 Nos
- Printer – 3 Nos

15051	COMPUTER NETWORK AND SECURITY
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AIM:

The main aim of the subject is to deal with fundamental issues of computer network. The course is designed around the TCP/IP Model. Some of the important topics discussed in the course are: Data Encoding Techniques, MAC Protocols, Routing Techniques, Transport Services, Mechanism and Network Security.

OBJECTIVES:

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

- Understand the concept of data communication
- Discuss the advantages and disadvantages of different network topologies.
- Know different network classification based on different category.
- Define modulation and its types.
- Study about different network devices and their practical usages
- Understand the different layers of OSI and their functions
- Know the different physical layer architecture in detail and comparison of their characteristics.
- Compare different LAN protocols.
- Study about different data link layer architecture.
- Identify the error control and flow control mechanism used in Data Link Layer
- Study about ISDN concepts and its applications.
- Identify the protocols used in TCP /IP and compare with OSI model.
- Know the IP addressing and TCP/ IP protocols briefly.
- Understand about basic concepts of network security.
- Identify the attacks and threats.
- Study how to protect network through security methods.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
COMPUTER NETWORK AND SECURITY	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	DATA COMMUNICATIONS	18
II	OSI MODEL AND DATA LINK LAYER	16
III	LAN PROTOCOLS AND ISDN	18
IV	TCP / IP SUIT	16
V	INTRODUCTION TO NETWORK SECURITY	16
	REVISION TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT I DATA COMMUNICATIONS

18 Hours

- 1.1 **Data Communication** : Components of a data communication – Data flow: simplex – half duplex – full duplex; Networks – Network criteria – Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.
- 1.2 **Types of Networks (Geographical Based):** LAN – MAN – WAN
- 1.3 **Signals and Modulation:** Analog and Digital signals - Need for Modulation – Amplitude Modulation – Frequency Modulation – Pulse Modulation – Concepts only (no derivation).
- 1.4 **Transmission Media** : Classification of transmission media - Guided – Twisted pair – Coaxial – Fiber optics – Unguided – Radio waves –Infrared – LOS – VSAT – cabling and standards
- 1.5 **Network devices:** Features and concepts of Hubs – Bridges – Switches - Routers – Gateways

UNIT II OSI MODEL AND DATA LINK LAYER

16 Hours

- 2.1 **Network Models:** Protocol definition - standards - OSI Model – layered architecture – functions of all layers.
- 2.2 **Error detection & correction:** Types of errors – detection versus correction – CRC – Hardware implementation - parity check and checksum – Hamming code.
- 2.3 **Flow and Error control:** Introduction – ARQ – Stop & Wait ARQ – Features and disadvantages of stop-and-wait ARQ - Go- Back - N – ARQ – Selective repeat ARQ - Comparison of Flow control protocols

UNIT III LAN PROTOCOLS

18 Hours

- 3.1 **Character oriented Protocol** – BSC Frames – Bit oriented Protocol – HDLC – Transfer modes of HDLC – HDLC frame format - HDLC operation
- 3.2 **802.X Protocols** : Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) – Token ring (802.5) – Ethernet – type of Ethernet (Fast Ethernet, gigabit Ethernet) – Comparison between 802.3, 802.4 and 802.5
- 3.3 **FDDI** : Frame format – Advantages and disadvantages of FDDI.
- 3.4 **Switching** : Circuit– Packet– Message.
- 3.5 **ISDN** : Concepts – Services – Layers – Broad Band ISDN.

UNIT IV TCP/IP SUIT

16 Hours

- 4.1 **Overview of TCP / IP** : OSI & TCP/IP – Transport Layers Protocol – connection oriented and connectionless Services – Sockets - TCP & UDP.
- 4.2 **Network Layers Protocol** : – IP – Interior Gateway Protocols (IGMP, ICMP, ARP, RARP Concept only).
- 4.3 **IP Addressing** : Subnetting & Supernetting – Dotted Decimal Notation – IPv6 (concepts only)
- 4.4 **Application Layer Protocols**: FTP– Telnet – SMTP– HTTP – DNS – POP.

UNIT V INTRODUCTION TO NETWORK SECURITY

16 Hours

- 5.1 **Introduction to network security**: definition & basic concepts – Basic concepts of RAID levels (0,1 and 5).
- 5.2 **Types of attacks**: Access attacks –modification attacks – denial of service attacks.
- 5.3 **Hacker Techniques**: Historical Hacking techniques & open sharing – bad passwords – advanced techniques sniffing switches networks–Malicious code identification–viruses–Trojan horses–worms - SPAM.
- 5.4 **Threats**: Definition – Targets- Agents – Events
- 5.5 **Firewall** : Types –Developing firewalls
- 5.6 **VPN**: Definition – Benefits – Issues – VPN – Server– Authentication – System – VPN Protocol.

REFERENCE BOOKS:

S. No	TITLE	AUTHOR	PUBLISHER
1	Data Communication and networking	Behrouz A.Forouzan	Tata McGraw-Hill, New Delhi
2.	Computer Communication Networks	Achyut S. Godbole	Tata McGraw-Hill, New Delhi
3.	Data and Computer Communications	William Stallings	Prentice-Hall of India, Eighth Edition
4.	Computer Networks	Andrew S.Tanenbaum	Prentice-Hall of India, New Delhi
5.	Network Security A beginner's Guide	Eric Maiwald	Tata Mc Graw-Hill., Second Edition

15051 COMPUTER NETWORK AND SECURITY

MODEL QUESTION PAPER - I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Define WAN.
2. Give any one advantage of Bus Topology.
3. Name the protocol used in Application Layer.
4. List any two types of Errors.
5. What is the other name of IEEE 802.4 ?
6. Give any two services of ISDN.
7. Give the range of class A IP Address.
8. State the function of ARP.
9. Define RAID.
10. List down any two types of attacks.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are the network devices available? Explain any one of them.
12. Compare different flow control protocols.
13. Draw the frame format of HDLC and explain each field.
14. What is subnetting and supernetting?
15. Define VPN and state its Benefits.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Briefly explain about different types of Transmission media. [10]
(OR)
B. 1. With a neat diagram, explain various network topologies with its advantages and disadvantages. [10]
- 17 A. 1. Briefly explain about OSI Model with a neat diagram. [10]
(OR)
B. 1. Explain the following along with their operations: [10]
a) ARQ b) Selective Repeat ARQ

- 18 A. 1. Explain different types of Switching. [10]
(OR)
B. 1. Explain the concepts and PDU format of the following: [10]
a) CSMA/CD b) Token Bus
- 19 A. 1. Briefly explain about IP Addressing. [10]
(OR)
B. 1. Explain in detail about the functions of Interior Gateway Protocols. [10]
- 20 A. 1. Briefly explain about different hacking techniques. [10]
(OR)
B. 1. Define firewalls. How will you develop firewalls? Explain. [10]

15051 COMPUTER NETWORK AND SECURITY

MODEL QUESTION PAPER - I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Give one example of Simplex transfer mode.
2. List any two features of Network devices.
3. Define CRC.
4. What is Protocol?
5. Give the types of Ethernet.
6. State any two disadvantages of FDDI?
7. Give the usage of POP Protocol.
8. Give the difference between TCP and UDP.
9. Define worms.
10. List down any two benefits of VPN?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define Modulation. What is the need for Modulation?
12. Define Hamming code and its use.
13. What do you mean by Bit oriented Protocol?
14. Explain any one protocol in Application Layer.
15. Explain the RAID level 1.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. What are the various types of Networks? Briefly explain them. [5]
2. Briefly describe the operation of Switches. [5]
(OR)
B. 1. Define Signals and Modulation. Explain any two in detail. [10]
- 17 A. 1. How will you detect the errors and Correct it? [5]
2. Explain about Go back N error control. [5]
(OR)
B. 1. Explain in detail about OSI Layered architecture. [10]

- 18 A. 1. Explain Ethernet and its types. [10]
(OR)
B. 1. Briefly Explain about the services and layers of ISDN. [10]
- 19 A. 1. Compare OSI & TCP /IP Model. [5]
2. Explain Dotted Decimal Notation. [5]
(OR)
B. 1. Explain the following : [10]
1) ICMP 2) IGMP 3) IPv6
- 20 A. 1. Explain the various types of attacks. [5]
2. Define Threats. What are the events available in threats? [5]
(OR)
B. 1. Describe briefly about the issues and server authentication of VPN. [10]

AIM:

Database systems are required as the backbone of any information system, enterprise resource planning, research activities and other activity that require permanence of data storage. This subject provides the basic introduction to database system technologies.

This subject provides the basic conceptual background necessary to design and develop simple database systems. The major focus in this course is the Relational database model; however, it also discusses about the ER model. This course enables you to write good queries using a standard query language called SQL. This subject also includes concepts relating to various advanced database models, and concepts like database mining and warehousing.

OBJECTIVES:

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

- Understand the evolution of Database systems
- Define the different terminologies related with database.
- Know the components of a database system.
- Explain different data models.
- Get familiar with the different approaches of database system.
- Understand client/server technology.
- Discuss about relational data structure.
- State the use of E-R diagrams.
- Know the importance of normalization
- Understand data base administration.
- Get familiar with DBA tools.
- Know the concept of DDL and DML
- Know the basics of SQL
- Get familiar with the statements and functions of SQL
- Know the use of transaction control statements.
- Understand the importance of PL/SQL
- Know the PL/SQL objects.
- Know the importance of Database maintenance
- Get familiar with the Data warehousing
- Differentiate Data warehousing and Data Mart.
- Understand the concept of OLAP, MOLAP, ROLAP
- Explain data mining
- Explain commercial tools of data mining.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
RELATIONAL DATABASE MANAGEMENT SYSTEMS	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	BASIC CONCEPTS	16
II	CLIENT/SERVER TECHNOLOGY & RELATIONAL DATABASE APPROACH	16
III	STRUCTURED QUERY LANGUAGE	18
IV	PL/SQL	18
V	ENHANCED DATABASE MODELS	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT – I BASIC CONCEPTS OF DBMS

16 Hours

- 1.1 **Introduction:** Definition of Data, Data base and DBMS – Need for database – Advantages of database Systems - File based database systems – Disadvantages – Record based database systems - Data base characteristics
- 1.2 **Database terms :** Concurrency, Consistency, Data Availability, Reliability, Transparency, Data Integrity
- 1.3 **Components of a DBMS:** Database Engine – Data Dictionary – Query Processor – Report Writer – Forms Generator – Application Generator -Security
- 1.4 **Data abstraction:** Schema – Data independence- Architecture of a database system
- 1.5 **DBMS system architecture types:** Personal computer system – Centralized system – Client / Server system – Distributed system.
- 1.6 **Data models:** Relational – Hierarchical – Network.

UNIT – II CLIENT/SERVER TECHNOLOGY & RELATIONAL DATABASE APPROACH

16 Hours

- 2.1 **Client/server technology:** Client – server – distributed and co-operative processing – peer- to-peer processing – application components - transaction management

- 2.2 **Relational data structure:** Relation – Domains & Attributes – Keys – Extensions – Intensions – Data structures – Tables – Data Integrity – Manipulation views – managing data concurrency in a multi-user system - Data Security – Data Availability.
- 2.3 **Table:** Columns, Rows, Primary Key, Secondary Key, Foreign key
- 2.4 **E-R model:** Entities and attributes – Relationships – One to one –One to many - Many to one – Many to Many relationships – Normalizing the model.
- 2.5 **Normalization:** Introduction - 1NF - 2NF – 3NF - guidelines – Codd's Rules.
- 2.6 **Database Administration :** DBA Tasks – DBA Tools – User Privileges - Performance monitoring and tuning – query tracing - Backup and Recovery

UNIT - III STRUCTURED QUERY LANGUAGE

18 Hours

- 3.1 **Data Definition Language:** Statements - Data Manipulation Language – statements - Retrieval operations
- 3.2 **SQL Commands :** Selecting Columns from a table, Selecting Rows from a table - Built-in functions – Update Operations
- 3.3 **Queries :** Simple query – where clause – group by – order by clauses -sub queries – correlated sub-queries. Set Operations – Union, minus
- 3.4 **Constraints** – Alter table – table-level constraints.
- 3.5 **Base Table:** Indexes – types – simple – compound ; Join – types – simple – Equi-join, Non-equi join, self join, outer join
- 3.6 **Creating and using Views:** creating a view, querying a view of more than one table.
- 3.7 Working with Numbers : Displaying Numbers, Arithmetic Expressions
- 3.8 **Functions and Operators:** Number Functions - sin(), cos(), tan(), sqrt(), Aggregate functions –count(), avg() Conversion functions – to_char(), to_date(), NVL(), Date Functions – sysdate(), months_between(), add_moths(), Arithmetic, Logical and set Operators
- 3.9 **Transaction control statements:** Commit, rollback, savepoint
- 3.1 **Triggers:** Trigger definition – Trigger Events - Built-in Trigger – User defined Trigger – database triggers

UNIT IV PL/SQL

18 Hours

- 4.1 **Introduction :** variables – literals – data types – advantages of PL/SQL
- 4.2 **Control statements :** if ; iterative control – loop, while, for , goto ; exit when
- 4.3 **Cursors :** Types – implicit, explicit – parameterized cursors – cursor attributes
- 4.4 **Exceptions:** Types – internal , user-defined , handling exceptions – raise statement
- 4.5 **PL/SQL tables and records:** Declaring PL/SQL tables - referring PL/SQL tables, inserting and fetching rows using PL/SQL table, deleting rows; records - declaration of records - deleting records

- 4.6 **Sub programs:** Functions - procedures - in, out, inout parameters; purity functions - packages - package specification - advantages of packages - private and public items - cursors in packages.

UNIT – V ENHANCED DATABASE MODELS

16 Hours

- 5.1 **Data warehousing :** Definition - DSS and EIS (Definition) - Characteristics and functioning and architecture of Data Warehousing - Data marts - Data warehousing Life Cycle - data modeling (Multidimensional Database) for data warehousing - Building of data warehouse - OLAP, MOLAP, ROLAP - Data warehouse and views - Future open issue for data warehouse
- 5.2 **Data Mining :** What is data mining Technology - Relationship to Data warehousing - Association rules - Classification - Clustering - Approaches to data mining problems - Applications of Data mining problem - Commercial tools of data mining - Knowledge Discovery

REFERENCE BOOKS

S.No	TITLE	AUTHOR	PUBLISHER
1.	Database Management System	Date ,C.J.,	Galgotia Publications
2.	Fundamentals of Database System	Elmasri, R.A.,Navathe, Shyam B.	Narosa Publishing House.
3.	Post, Gerald V,	Database Management System	Tata McGraw-Hill, 2004
4.	An introduction to Database Systems	Bipin C Desai	Galgotia Publications (P) Ltd., 2005
5.	Database system concepts	Abraham Silberschatz, Henry F Korth and Sudharshan S	Mc Graw Hill Publishin Company Limited, 2004
6.	Database Management Systems	Raghu Ramakrishnan	Mc Graw Hill Publishin Company Limited, 2004

15052 RELATIONAL DATABASE MANAGEMENT SYSTEM

MODEL QUESTION PAPER – I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Define the term “Data”.
2. What is data Independence?
3. What is Primary Key?
4. Give any two codd’s rules.
5. How will you select rows from a table?
6. Give the format and use of NVL function.
7. What are the attributes of cursor?
8. Define Purity functions.
9. What is Data Mining Technology?
10. Define EIS.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are the characteristics of Database?
12. How will you monitor the performance and tune it?
13. What is the use of Transactional control statements?
14. How will you fetch rows using PL/SQL table?
15. Give the applications of Data mining Problem.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Briefly Explain Data Models and its types. [10]
(OR)
B. 1. Explain DBMS System Architecture and its types. [10]
- 17 A. 1. What is transaction Management? Explain. [5]
2. Explain the Relationships types. [5]
(OR)
B 1. Describe briefly about Database Administration. [10]

- 18 A. 1. Define Constraints. Explain table level constraints. [5]
2. How will you create and use views? [5]
(OR)
B. 1. How will you create User defined Trigger? Explain with suitable example. [10]
- 19 A. 1. How will you create and handle user defined exception? Explain with example. [10]
(OR)
B. 1. Explain the various control statements available in PL/SQL. [10]
- 20 A. 1. How will you Build Data ware house? [10]
(OR)
B. 1. Explain Clustering and Approaches to Data mining Problems. [10]

15052 RELATIONAL DATABASE MANAGEMENT SYSTEM

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions :

1. What is Data Integrity?
2. Define Data dictionary.
3. How will you Normalize the model?
4. List down the DBA tools.
5. What is the use of Union Operator?
6. Give the operations available in Data manipulation language.
7. Give the difference between implicit and explicit cursor.
8. Compare functions and procedures.
9. What do you mean by data modeling?
10. Give the relation ship of data mining to data ware housing.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Explain about File based Database Systems.
12. How will you trace the query?
13. Give the format of Where clause with example.
14. What do you mean by package specification?
15. What are the functions of Data ware housing?

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain the architecture of Database System. [10]
(OR)
B. 1. List the components of DBMS .Explain any 4 in detail. [10]
- 17 A. 1. Explain Co-operative processing and peer – to – peer processing. [10]
(OR)
B 1. Define Table along with its fields. Write a query to create a table from another table using foreign key and primary key. [10]

- 18 A. 1. Briefly Explain joints and its types with example. [10]
(OR)
B. 1. Explain Numeric functions and Aggregate functions with its format. [10]
- 19 A. 1. Define Records? How will you declare and delete a record? [5]
2. Explain about cursors in packages. [5]
(OR)
B. 1. Briefly explain about PL/SQL tables with suitable examples. [10]
- 20 A. 1. Briefly explain about knowledge discovery and Association rules. [10]
(OR)
B. 1. What are the future open issues for data warehouse? Explain. [10]

AIM:

.NET Framework is changing the way developers write applications. .NET Framework provides a number of components to create many types of applications including those for consoles, Windows, mobile units and the web. Using .NET framework the data can be made available anytime, anywhere and on any device.

This subject introduces the basics of .NET Framework. Writing applications on VB.Net is covered in this course. Concepts of developing web applications using ASP.NET are discussed. This course helps to use ADO.NET to write the applications to connect with the back end database. The subject also enables the users to know the concepts of XML and the XML web services.

OBJECTIVES:

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

- Introduce .NET framework.
- Gain knowledge in the concepts of the .NET framework as a whole and the technologies that constitute the framework.
- Get familiarize with CLR and .Net class library.
- Know the tokens of VB.NET.
- Understand windows programming.
- Create menus using windows programming.
- List the features of ADO.NET
- Explain the architecture of ADO.NET.
- Define Dataset.
- Understand the basics of Database programming using ADO.NET
- List down the features of ASP.NET.
- Understand the advantages of an ASP.NET application.
- Create web controls using ASP.NET.
- Learn about server controls and events in ASP.NET.
- Create a simple Web Service in ASP.NET.
- Create web forms.
- Define XML
- Know the importance of XML in web services.
- Use SOAP with the .NET framework.
- Create and Call a Web Service by Using Visual Studio .NET.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
ASP.NET PROGRAMMING	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	INTRODUCTION TO .NET FRAMEWORK	16
II	INTRODUCTION TO VB.NET	18
III	APPLICATION DEVELOPMENT ON .NET	16
IV	INTRODUCING ASP.NET	16
V	XML WEB SERVICES	18
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT – I INTRODUCTION TO .NET FRAMEWORK

16 Hours

- 1.1 **Introduction to .NET framework** : Managed Code and the CLR- Intermediate Language, Metadata and JIT Compilation - Automatic Memory Management.
- 1.2 **Language Concepts and the CLR**: Visual Studio .NET - Using the .NET Framework.
- 1.3 **The Framework Class Library** - .NET objects - ASP .NET - .NET web services – Windows Forms

UNIT - II INTRODUCTION TO VISUALBASIC.NET

18 Hours

- 2.1 **Elements** : Variables and constants – data types – declaration. Operators – types – precedence. Expressions. Program flow – Decision statements – if .. then, if..then..else, select..case– Loop statements – while..end while, do..loop, for..next, for..each..next.
- 2.2 **Types**: Value data types – Structures, Enumerations. Reference data types- Single-dimensional – Multi-dimensional arrays – jagged arrays – dynamic arrays
- 2.3 **Windows programming** – creating windows Forms – windows controls – Button, Check box, Combo box, Label, List box, Radio Button, Text box. Events – Click, close, Deactivate, Load, Mousemove, Mousedown, MouseUp.
- 2.4 **Menus and Dialog Boxes** – Creating menus – menu items – context menu - Using dialog boxes – showDialog() method.

UNIT - III APPLICATION DEVELOPMENT USING ADO .NET

16 Hours

- 3.1 **Features of ADO.NET.** Architecture of ADO.NET – ADO.NET providers – Connection – Command – Data Adapter – Dataset.
- 3.2 **Accessing Data with ADO.NET:** Connecting to Data Source, Accessing Data with Data set and Data Reader - Create an ADO.NET application - Using Stored Procedures.

UNIT - IV INTRODUCING ASP.NET

16 Hours

- 4.1 **ASP.NET Features:** Change the Home Directory in IIS - Add a Virtual Directory in IIS- Set a Default Document for IIS - Change Log File Properties for IIS - Stop, Start, or Pause a Web Site.
- 4.2 **Creating Web Controls:** Web Controls - HTML Controls, Using Intrinsic Controls, Using Input Validation Controls, Selecting Controls for Applications - Adding web controls to a Page.
- 4.3 **Creating Web Forms:** Server Controls - Types of Server Controls - Adding ASP.NET Code to a Page.

UNIT - V XML WEB SERVICES

18 Hours

- 5.1 **Overview of XML :** XML Serialization in the .NET Framework -SOAP Fundamentals- Using SOAP with the .NET Framework.
- 5.2 **Introduction to web services:** Web Services protocol and standards – WSDL Documents - Overview of UDDI - Calling a Web Service from a Browser - Calling a Web Service by Using a Proxy - Creating a simple web service - Creating and Calling a Web Service by Using Visual Studio .NET.

REFERENCE BOOKS

S.No	TITLE	AUTHOR	PUBLISHER
1.	Introduction to Visual basic.NET	NIIT	Prentice Hall of India,2005
2.	Introducing Microsoft .NET	David S. Platt	Microsoft Press”, Saarc Edition, 2001
3.	Introduction to Microsoft® ASP.NET Work Book	Microsoft	Microsoft Press
4.	Developing XML Web Services Using Microsoft® ASP.NET	Microsoft	Microsoft Press
5.	Designing Microsoft ASP.NET Applications	Douglas J. Reilly	Microsoft Press
6.	ASP.NET	Danny Ryan and Tommy Ryan	Hungry Minds Maran Graphics

15071 .NET PROGRAMMING

MODEL QUESTION PAPER - I

PART – A (5 x 1= 5 Marks)

Answer all the questions:

1. What is the use of JIT compilation?
2. What is CLR?
3. Define Jagged arrays
4. What is the use of Like operator?
5. What do you mean by Data Reader?
6. List the ADO.Net Providers.
7. Name the two set of web controls.
8. How will you start a web site?
9. Define UDDI.
10. What do you mean by SOAP?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What is meant by Automatic memory management?
12. Define variables. How will you declare it in VB.Net?
13. Define Data adapter and Data set.
14. How will you use web controls to a page in ASP.Net?
15. How will you call a web service from a web browser?

PART – C (5 x 10 = Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. How will you use visual studio.net and .net framework? [10]

(OR)

- B. 1. Briefly explain about .Net web services. [10]

- 17 A. 1. Explain various decision statements available in VB.Net. [10]

(OR)

- B. 1. Write a program in VB.Net to create a window form which consists of one text box and one button. Get the input from the user and display the output as number, alphabets, and special character as the user types and the result should be displayed after clicking the button. [10]

18 A. 1. How will you create an ADO.Net application? Explain with suitable examples. [10]

(OR)

B. 1. With a neat diagram explain the architecture of ADO.Net along with its features. [10]

19 A. 1. Define IIS. How will you change the home directory and add a virtual directory in IIS? Explain. [10]

(OR)

B. 1. Briefly explain about server controls and its types. [10]

20 A. 1. Explain Web services protocols and standards. [5]

2. How will you create a simple web service? [5]

(OR)

B. 1. Define XML .Explain how will you use SOAP with the .Net framework? [10]

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. What is Namespace?
2. Define Manifest.
3. How will you declare an integer constant in VB.Net?
4. What is Garbage collection?
5. What are the two fundamental objects in ADO.Net ?
6. Give the difference between data set and data reader.
7. How can we force all validation control to run?
8. List down the sequence in which ASP.Net events are processed.
9. Define WSDL.
10. What is XML?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What do you mean by window forms?
12. What are the events available in VB.Net?
13. Define ADO.Net Connection with its command.
14. Explain the use of intrinsic controls?
15. What are XML web services?

PART – C (5 x 10 = Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain briefly about the .NET Framework architecture with a neat diagram. [10]
(OR)
B. 1. Explain about Compilation and the MSIL. [10]
- 17 A. 1. List the types of Arrays in VB.NET and explain each of them with suitable examples [10]
(OR)
B. 1. Create a VB.NET application using Menus and context menu. [10]
- 18 A. 1. Describe about the ADO.Net Object Model [10]

(OR)

- B. 1. What are the life cycles of an ASP.NET Web Form? Explain [10]
- 19 A. 1. Tabulate the differences between ASP and ASP.NET? [5]
2. Briefly explain about the types of server controls. [5]

(OR)

- B. 1. What are major events in GLOBAL.ASAX file? [10]
- 20 A. 1. Describe about XML Web Service Architectures [5]
2. Briefly explain about web services protocol and standards [5]

(OR)

- B. 1. Explain about the Web Services Execution Model [10]

AIM:

Each day our lives become more dependent on “**Embedded systems**”, digital information technology that is embedded in our environment. This includes not only safety-critical applications such as automotive devices and controls, railways, aircraft, aerospace and medical devices, but also communications, “mobile-worlds” and “e-worlds”, the “smart” home, clothes, factories etc., All of these have wide – ranging impacts on society , including security, privacy and modes of working and living. More than 98% of processors applied today are in embedded systems, and or no longer visible to the customers as “computers” in the ordinary sense.

This subject provides the basic conceptual background necessary to design and develop simple embedded systems.

OBJECTIVES:

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

- Understand the recent trends in embedded systems.
- Explain about advanced RISC architecture (ARM) and 32-bit microcontroller.
- Explain about memory formats and instruction set of ARM processor.
- Explain about fundamentals of ARM7TDMI core.
- Explain the architecture overview about LPC2148 CPU.
- Draw the block diagram of system control block.
- Explain about the handling of on chip Analog to Digital conversion.
- Explain about the handling of on chip Digital to Analog conversion.
- Give detailed information about general purpose input and output (GPIO) logic levels of and Handling of GPIOs
- Explain information about serial communication UART, I2C, SPI and USB.
- Learn about and need of an OS in embedded systems.
- State advantages of RTOS.
- Learn about different operating systems available for Embedded Systems.
- Explain information about Kernal and multitasking.
- Explain Scheduling and Clock Ticks in RTOS
- Give brief idea about μ c / OS – II.
- Explain task management and Time management.
- Explain detailed information about Handling of OS in RTOS.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
EMBEDDED SYSTEMS	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	ARM - INTRODUCTION	16
II	LPC 2148 ARM CPU	18
III	LPC 2148 PERIPHERALS	16
IV	OPERATING SYSTEMS OVERVIEW	18
V	μ C / OS - II	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT – I ARM INTRODUCTION

16 Hours

Introduction – The ARM Architecture Overview – Instruction set Summary – Processor operating states – Memory formats – Memory Interface – Bus interface signals – Addressing signals – Address timing – Data Timed signals – Debug interface – Debug systems – Debug interface signals – ARM7TDMI Core and System state – About Embedded ICE – RT Logic – Instruction Set.

UNIT – II LPC2148ARM CPU

18 Hours

Introduction – Architectural overview – Memory mapping – Block Diagram – System Control Block functions: PLL – Power Control – Rest – VPB Divider – Wakeup Timer – Memory acceleration Module – Timer0 and Timer1 – PWM – RTC – Onchip ADC – Onchip DAC – Interrupts – Vector Interrupt Controller.

UNIT - III LPC2148 – PERIPHERALS

16 Hours

General purpose – Input/Output Ports (GPIO) – Universal Asynchronous Receiver/ Transmitter (UART) – I²C Interface – Multimaster and Multislave Communication – SPI interface – SSP Controller – USB 2.0 Device Controller.

UNIT IV OPERATING SYSTEMS OVERVIEW

18 Hours

Introduction OS – Functions of OS – Defining an RTOS – Differences in Embedded operating systems – Introduction to Kernel – Resources – Shared Resources – Defining a task – Task states – Multitasking – Scheduling and Scheduling algorithms – Context switching – Clock Tick – Timing of Task.

UNIT – V μ C / OS - II

16 Hours

Introduction – Features and Goals of μ C / OS – II – Requirements of μ C / OS – II – Support devices for μ C / OS – II – File structure in μ C / OS – II – Task management functions – Creating a task – Time management functions – OS Delay functions – Implementation of Scheduling and rescheduling.

REFERENCE BOOKS

S.No	TITLE	AUTHOR
1.	Embedded System Architecture	Tammy Noergaard
2.	ARM System Developer's Guide	Andrew N. Sloss
3.	ARM Architecture Reference Manual	David Seal
4.	ARM System-on-chip Architecture	Steve Furbe (Second Edition)
5.	MicroC / OS – II The Real Time Kernel	Jean J. Labrosse
6.	Real Time Concepts for Embedded Syatems	Qing Li and Caroline Yao
7.	Embedded / Real Time Systems: Concepts, Design & Programming	Dr. K.V.K.K. Prasad
8.	LPC2148 User Manual	

15072 EMBEDDED SYSTEMS

MODEL QUESTION PAPER – I

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. What is Bus?
2. State the use of Memory Interface.
3. Why Interrupts are used in CPU?
4. Define Memory mapping.
5. State the purpose of Input/Output ports.
6. Define SPI.
7. List the application of Embedded operating system.
8. What is the function of clock tick?
9. Define task.
10. Give any two features of μ C / OS – II.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define Instruction set.
12. What do you mean by Wake up Timer?
13. State the functions of UART.
14. Give the advantages of RTOS.
15. What do you mean by Scheduling?

PART – C (5 x 10 = Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- | | | | | |
|----|----|----|---|------|
| 16 | A. | 1. | Explain ARM architecture with a neat diagram. | [10] |
| | | | (OR) | |
| | B. | 1. | Explain processor operating states and memory formats. | [10] |
| 17 | A. | 1. | Define Interrupts and Vector Interrupt Controller. | [5] |
| | | 2. | Explain on chip ADC and on chip DAC. | [5] |
| | | | (OR) | |
| | B. | 1. | Describe the architecture of LPC2148ARM CPU. | [10] |
| 18 | A. | 1. | Explain Multimaster and Multislave communication. | [10] |
| | | | (OR) | |
| | B. | 1. | Describe briefly about USB 2.0 Device Controller. | [10] |
| 19 | A. | 1. | Define Kernel. Explain Resources and shared Resources. | [10] |
| | | | (OR) | |
| | B. | 1. | Explain in detail about scheduling and scheduling algorithms. | [10] |
| 20 | A. | 1. | How will you create a task and explain task management functions. | [10] |
| | | | (OR) | |
| | B. | 1. | Explain the implementation of scheduling and rescheduling. | [10] |

15072 EMBEDDED SYSTEMS

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. Give the classification of ARM Instruction set.
2. State any two debug interface signals.
3. What is the function of VPB divider?
4. Define PWM.
5. Expand the term GPIO.
6. Define Device Controller.
7. Define context switching.
8. What do you mean by Multitasking?
9. Why Delay functions are used?
10. List any two task management functions.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are the bus interface signals?
12. Define PWM.
13. What are the functions of SSP Controller?
14. Define task and its states.
15. What are the goals of μC / OS – II

PART – C (5 x 10 = Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain about Debug and ICE – RT logics. [5]
2. What are the different types of memory formats? Explain [5]
- (OR)**
- B. 1. With a neat block diagram, explain ARM architecture. [10]
- 17 A. 1. Draw the block diagram of System Control Block. [5]
2. Explain about the handling of onchip DAC. [5]

(OR)

- B. 1. Explain architecture overview about LPC2148 CPU. [10]
- 18 A. 1. Explain the features of GPIO. [5]
2. Briefly explain about I²C interface. [5]
- (OR)**
- B. 1. With diagrams, briefly explain about USB 2.0 device controller, [10]
- 19 A. 1. What are the different task states? Explain them. [5]
2. Explain about clock ticks in RTOS. [5]
- (OR)**
- B. 1. Explain different types of scheduling algorithms. [10]
- 20 A. 1. Explain about the support devices for μ C / OS – II. [5]
2. Briefly explain about time management features. [5]
- (OR)**
- B. 1. What do you mean by file structure in μ C / OS – II? Explain [10]

15054	COMPUTER NETWORK AND SECURITY LABORATORY
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AIM:

The main aim of the subject is to deal with fundamentals issues of computer network. The course is designed around TCP/IP modal. Some of the important topics discussed in the course are : LAN Protocols, TCP/IP Suit and Network Security.

OBJECTIVES:

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

- Enable to perform different cabling in a network.
- Enable and to Establish different network connection.
- Configure router for any topology.
- Establish security in a network.
- Use FTP and TELNET protocol.
- Enable to install and configure different protocol in client-server model

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
COMPUTER NETWORK AND SECURITY LABORATORY	4	64	25	75	100

LAB EXERCISES

1. Do the following Cabling works in a network
 - a) Cable Crimping
 - b) Standard Cabling
 - c) Cross Cabling
2. Establish a LAN connection using three systems using bus topology.
3. Establish Peer to Peer network connection using two systems in a LAN
4. Interface PCs using connectivity devices – Hub, router and switch.
5.
 - a) Configure IP Address in a system in LAN (TCP/IP Configuration)
 - b) Configure DNS to establish interconnection between systems
6.
 - a) Transfer files between systems in LAN using FTP Configuration
 - b) Login a system remotely using telnet protocol.

7.
 - a) Install and configure Network interface card in LAN system
 - b) Share a file and printer (remotely) between two system in a LAN
8. Establish security in a system using firewall configuration
9. Create and share the user rights by accessing server for a specific user groups
10. Install and configure the following
 - a) A DHCP server in windows with IP Address ranging from 192.168.1.1 to 192.168.1.100
 - b) Configure a DHCP Client
11. Transfer Files between wireless Communication.
12. Configure Mail server

The Following programs to be written in 'C'

13. Write a program that takes a Binary file as input and finds error check using different mechanism.
14. Write a Client program to download a file from HTTP server.
15. Write a program to Simulate Sliding Window Protocol

I Tools requirement

1. Crimping Tool – 06 Nos
2. Network Cables

II Equipment Requirement

1. Modem - 01 No
2. Laser Printer - 01 No
3. Hub - 01 No
4. Router - 01 No
5. Switch - 01 No

III System requirement

Pentium dual core computers – 36 Nos ,

IV Software Requirements

1. Windows 2000 OR 2003 OR Linux Server.
2. OS Windows XP With service Pack
3. Turbo "C"
4. Drivers Software

15055	RELATIONAL DATABASE MANAGEMENT SYSTEM LABORATORY
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AIM:

This laboratory will provide students the knowledge of Relational Database Management (RDBMS) using ORACLE. After completion, students will be able to create database according to their requirements along with the capabilities of modifying database, providing security with the help of access permissions etc.

OBJECTIVES:

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

- Know all SQL editor commands.
- Create and manipulate tables.
- Work with pre-defined functions.
- Use Transaction control operations
- Use cursor to manipulate the results of query
- Practice Exception handling techniques
- Join tables to get the desired results
- Use Visual Basic application to access and manipulate oracle tables.
- Write PL/SQL codes to implement simple applications.
- Use PL/SQL functions & procedures to build applications

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
RELATIONAL DATABASE MANAGEMENT SYSTEM LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Execute and test all the SQL Editor commands.
2. Work with the following conditions: Column formatting, alias and Column ordering.
3. Use indexing on a table –simple and compound indexes.
4. Work with the different categories of functions such as Math, Date, Aggregate and Conversion functions.

5.
 - a) Create a table to show the salary details of the employees.
 - b) Grant select and update privileges on above table to other users.
 - c) Grant all the privileges to some other users.
 - d) Revoke all the above granted permissions.

6.
 - a) Create a table student_master with the following field's name, Regno, dept and year with suitable data types. Use Select command to do the following.
 - b) Select the student's name column
 - c) Display the unique rows
 - d) Sort the table in alphabetical order
 - e) Select all the students of a particular department.

7.
 - a) Create a table sales_order with s_order_no and product_no as primary key. Set other fields to store client number, delivery address, delivery date, order status.
 - b) Add a new column for storing salesman number using ALTER command.
 - c) Set the s_order_no as foreign key as column constraint
 - d) Set the s_order_no as foreign key as table constraint

8. Develop a Visual Basic Application with suitable Labels & TextBoxes for the columns of a Table . Add Command Buttons to perform the following: Display Records, Previous, Next, First and Last. Use the ODBC driver to connect the Application with the oracle

9. Develop a Visual Basic Form with suitable Labels & TextBoxes for the columns of a Table . Add Command Buttons to perform the following: Insert record, Delete record, Update record, Locate Record

10.
 - a) Create a table student with their elective paper as one field.
 - b) create another table staff with the subject names they have handled and number of times handled.
 - c) Construct a English sentence to display the rows in the staff table.
 - d) Use sub-queries to display the information about student's name and staff names where both have same subject names.
 - e) Display the subject name, staff names where same subject is handled by more than one staff.
 - f) Display the student, subject name where the subject is not at all handled any staff in the staff table.

11.
 - a) Create a sales_order table and client_master table with suitable fields.
 - b) Find the total number of quantity ordered for a particular product.
 - c) Display the rows of the table in the sales order date wise,

- d) Join the two tables and display the product number, product name, where the order_no in the sales_order table and order_no in client_master are equal.
 - e) Join the sales_order table to itself and display the order number, client number and salesman number where client has been serviced by more than one salesman.
12. a) Create table sales_order_details with the s_order_no as primary key and with the following fields: product_no, description, qty_ordered, qty_dispatched, product_rate, profit_percent, sell_price, supplier_name
- b) Select each row and compute $\text{sell_price} \times .50$ and $\text{sell_price} \times 1.50$ for each row selected.
 - c) Select product_no, profit_percent, sell_price where profit_per is not between 10 and 20 both inclusive.
 - d) Select product_no, description, profit_percent, sell_price where profit_percent is not between 20 and 30.
 - e) Select the supplier_name and product_no where suppliemame has 'r' or 'h' as second character.
13. a) Create a table client_master with the following fields client_no, name, address 1 , address2,city, state, pincode, remarks, bal_due with suitable data types. Create another table supplier_table from client_master. Select all the fields and rename client_no with supplier_no and name with supplier_name.
- b) Insert data into client_master.
 - c) Insert data into supplier_master from client_master.
 - d) Delete the selected row in the client_master.
14. Write a PL/SQL code to display the employee details for an employee.
15. Write a PL/SQL code to calculate EB bill for the given units using if statement.
16. Write a PL/SQL block to handle built-in exception like No_DATA_FOUND, TOO_MANY_ROWS.
17. Write a PL/SQL block to create and handle user defined exception.
18. Write a PL/SQL block to use procedure and function and get the result.
19. Write a PL/SQL trigger to update the records while deleting the one record in another table.
- 20 . Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to update the employee salaries.

HARDWARE REQUIRED

1. A Server with Oracle 8i or higher (Oracle 10g is preferred)
2. 36 computers networked and configured with TCP/IP.

SOFTWARE REQUIRED

1. SQL *PLUS
2. Microsoft Visual Basic 6.0

15073	. NET PROGRAMMING LABORATORY
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AIM:

This laboratory course is an attempt to upgrade and enhance theoretical skills and provide the hands on experience on .net programming. By the end of these practical sessions of this course, the students will be able to write programs using VB.NET and ASP.Net technologies.

OBJECTIVES

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

- Develop and execute simple programs using VB.NET
- Understand the concepts of event handlers.
- Know the usage of various VB.Net controls
- Create VB.NET applications using menus.
- Access SQL database by using ADO.NET
- Use web controls.
- Create web pages using ASP.NET and web services.
- Develop XML database handling methodologies

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
ASP.NET PROGRAMMING LABORATORY	6	96	25	75	100

LAB EXERCISES – VB.NET

1. Accept a character from console and check the case of the character.
2. Write a program to accept any character from keyboard and display whether it is vowel or not.
3. Write a VB.Net program to accept a string and convert the case of the characters.
4. Develop a menu based VB.Net application to implement a text editor with cut, copy, paste, save and close operations.
5. Write a program to implement a calculator with memory and recall operations.
6. Develop a Form in VB.NET to pick a date from Calendar control and display the day, month, year details in separate text boxes.
7. Develop a VB.Net application to perform timer based quiz of 10 questions.

8. Develop a VB.Net application using the File, Direcory and Directory controls to implement a common dialog box.
9. Develop a database application to store the details of students using ADO.NET
10. Develop a database application using ADO.NET to insert,modify, update and delete operations.
11. Develop a VB.Net application using Datagrid to display records.
12. Develop a VB.Net application using Datagrid to add, edit and modify records.

ASP.NET

13. Create a simple ASP.NET page to Output Text with a form, two HTML text boxes, an HTML button, and an HTML element. Create an event procedure for the button.
- 14.. Create a web controls to a page with three different controls to the ASP.NET page for reserving rooms in hotel. The three controls are a button control, a label control, and a drop-down list control.
15. Create a application for Accessing a SQL Database by Using ADO.NET by connecting to the SQL Server database and call a stored procedure. You then display the data in a Repeater control.
16. Create a web services application for calling a Web service for a hotel named full. And you will call another Web service for a hotel named Empty, and then retrieve information regarding room availability. The Web service for the Full hotel is named Hotel_Full.dll. The Web service for the Empty hotel is named Hotel_Empty.dll. There are five methods in each service.

1. Reserve takes room types and start and end dates and returns a Boolean value that indicates whether a room is available.

```
<WebMethod(>public Function Reserve (
    strRoomType1 As String, strRoomType2 As String,
    dtmStartDate As Date, dtmEndDate As Date) As Boolean
```
2. Price returns a double value that is the cost of the rent for one day

```
<WebMethod(>public Function Price(
    strRoomType1 As String) As Double
```
3. **Description** returns a string that describes the hotel.

```
<WebMethod(>public Function Description() As String
```
4. **Room** returns a string that describes the rooms of the hotel.

```
<WebMethod(>public Function Room() As String
```
5. **Food** returns a string that describes the food available at the hotel.

```
<WebMethod(>public Function Food() As String.
```

Software Required: (1) Net Frame Work (ii) . VB,NET (iii) ASP.NET

Hardware Required: Computer with Pentium IV / Dual core Processors. – 36 Nos

AIM:

This laboratory will provide students the knowledge of writing assembly language programs using ARM and will also have a hands on exercises based on RTOS. After completion, students will be able to write assembly language programs for interfacing with stepper motor and temperature sensor.

OBJECTIVES:

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

- Write simple assembly language programs.
- Write programs for character based LCD interface.
- Interfacing with temperature sensor and stepper motor.
- Implement problems based on RTOS.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
EMBEDDED SYSTEM LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Write a Simple Assembly Programs for a) Addition b) Subtraction c) Multiplication and d) Division
2. Write Programs for a) Bit digital Output – LED interface b) 8 bit Digital inputs (Switch interface)
3. Write programs for a) 4 x 4 Matrix keyboard Interface b) Buzzer interface c) Relay interface
4. Write a program for character based LCD interface.
5. Write a program for Analog to Digital Conversion (Onchip ADC)
6. Write Programs for I²C Device interface : a) Serial EEPROM b) Seven Segment LED Display Interface c) Real Time Clock.
7. Interface with Teperature Sensor
8. Stepper Motor Interface.

HANDS ON EXERCISES BASED ON RTOS

9. Write a simple program with two separate LED Blinking tasks.
10. Implement Priority Scheduling and OS Time Dealy Functions by writing 3 different UART Transmitting Tasks.
11. Implement OS Real Time Multitasking by writing a multitasking program with the tasks
 - a) Interface RTC and Display on LCD First Line Continuously.
 - b) Interface ADC and Display on LCD Second Line Continuously.
12. Implement OS Real Time multitasking by implementing three tasks.
 - a) Read the Key input and display on Seven Segment LED.
 - b) Read the ADC Analog Input and Plot the Corresponding signal on a graphical LCD.
 - c) Generate a PWM signal with X on Time and Y off Time.
13. Interface a Stepper motor and Control the speed of rotation by implementing RTOS delay functions.

15061	PC HARDWARE AND SERVICING
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AIM:

A computer engineer should be able to install and maintain keyboard, printer, mouse, monitor etc along with the computer system. This course provides the necessary knowledge and skills regarding working, construction and interfacing aspects of peripherals. The students will get to know how various peripherals communicate with central processing unit of the computer system and pattern their respective operations. This subject provide the required background of computer installation, maintenance and testing of peripheral with micro computers

OBJECTIVES:

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

- Know the evolution of Personal Computer from PC through Pentium, and Laptop.
- Know and explain the major components that make up the system unit.
- Know the data process and store them in meaningful information.
- Explain about the principle of operations of Keyboard, mouse and Displays.
- Understand the components of media system.
- Know the Basics, working principle, specification, and modern technology of different types of drives.
- Know specification of I/O Ports of all I/O devices like serial, parallel, USB – Game port, Blue tooth and IP Connectors
- Know technology of high quality multiple color graphic output devices like Dot matrix, Inkjet, Laser and computer system.
- Acquire information about the modern devices like digital camera, scanners, web camera, and Biometric devices like Thump Scanner, Iris Scanner, and speech synthesizer.
- Understand the operation of internetworking devices like Modem, router and firewall.
- Know the aspects related to room preparation, air conditioning, flooring and ceiling and clean Power and Supply.
- Understand the common problems in the computer system and the peripherals
- Trouble shoots the problems in Personal computers.
- Troubles shoot the problems in Computer peripherals.
- Use of different troubleshooting tools.
- Explain diagnostic Software.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
PC HARDWARE AND SERVICING	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	INSIDE THE PC	16
II	MEMORY AND DAUGHTER BOARDS	18
III	DISK DRIVES	16
IV	I/O DEVICES AND POWER SUPPLY	18
V	TROUBLE SHOOTING PC	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT – I INSIDE THE PC

16 Hours

- 1.1 **Introduction:** Evolution of Computer – Block diagram of Pentium - Inside the Pentium – Parts - Mother board, chipset, expansion slots, memory, Power supply, drives and connectors
- 1.2 **Systems:** Desktop, Lap Top, Specification and features - Comparison table. Server system – IBM server families, Sun Server, Intel processor etc - Workstation.
- 1.3 **Mother Board:** Evolution – Different forms of mother boards - Riser Architectures. Intel, AMD and VIA motherboards.
- 1.4 **Chipsets:** Introduction – 945 chipset.
- 1.5 **Bus Standards:** Introduction – ISA Bus – PCI Bus – PCI Express, USB, High speed Bus, – Pin details and Architecture.
- 1.6 **Bios-setup:** Standard CMOS setup, Advanced BIOS setup, Power management, Advanced chipset features, PC Bios communication – upgrading BIOS, Flash, BIOS - setup.
- 1.7 **Processors:** Introduction – Pentium IV, Hyper threading, dual core technology , Core2Duo technology — AMD Series, Athlon 2000, Xeon processor. Comparison tables. Pentium Pin details, Itanium Processor - Pentium packaging styles.

UNIT II MEMORY AND DAUGHTER BOARDS

18 HOURS

- 2.1 **Memory:** Introduction - Main memory – Evolution - DRAM – EDO RAM - SDRAM – DDR RAM versions – IT RAM – Direct RDRAM – Memory Chips (SIMM, DIMM, RIMM)- Extended – Expanded – Cache - Virtual Memory- Causes of false memory errors.
- 2.2 **Graphic Cards:** Introduction - Definition and Layout of Components in Graphics card – Graphics Processor – Video memory – Memory Chart – RAMDAC – Driver Software – 3D – Video capture card installation.
- 2.3 **Sound Cards:** Introduction - Definition of Various Components – Connectivity – Standards – A3D – EAX – MIDI – General MIDI – PCI Audio – USB Sound – MP3 – SDMI.
- 2.4 **Displays:** Introduction – CRT – Anatomy – Resolution – refresh rate – interlacing – Digital CRT's – Panel Displays – Introduction – LCD Principles – Plasma Displays – TFT displays.
- 2.5 **Display adapter:** Introduction - VGA and SVGA cards, flickering, Demagnetizing and precautions .
- 2.6 **Keyboard, and Mouse and barcode scanner:** Introduction – Keyboard , wireless Keyboard – Signals – operation - troubleshooting - Mouse types, connectors , Serial mouse, PS/2 mouse and Optical mouse operation – Signals – Installation – barcode scanner - opeartion.

UNIT III DISK DRIVES

16 Hours

- 3.1 **Hard Disk:** Introduction – Construction – Working Principle - Specification of IDE, EIDE, Ultra ATA, Serial ATA, SCSI, Disk Array controller, solid state drive. HDD Installation – Partition – Formatting. Troubleshooting hard disk drives; problem diagnosis, typical problems and troubleshooting; Hard disk drive, components, Head Actuator mechanism Head positioning of a voice coil base system.
- 3.2 **CD/DVD ROM:** Introduction – Basics, Working principle – various formats (Books) – CD-R, CD-RW, DVD: Introduction – Formats – Technology – DVD-ROM, DVD Video, DVD Audio – Recordable formats – DVD-R, DVD-RW, DVD-RAM
- 3.3 **Special type of drives:** Zip drive, Memory stick, USB-flash drive, IPod Dock version and installation.
- 3.4 **I/O Ports:** Serial – Parallel – USB – Game Port – Blue tooth interface, IR connector, Signal specification problems with interfaces.

UNIT IV I/O DEVICES AND POWER SUPPLY

18 Hours

- 4.1 **Printers:** Introduction – Types of printers – Dot Matrix – Inkjet – Laser - Operation – Construction – Features – Troubleshooting Dot matrix, Inkjet and laser printer problems.
- 4.2 **Modem and Router:** Modem - Introduction – Operation – Types – Installation – Router - introduction.

- 4.3 **Scanners:** Introduction – operation – Scan Resolution - Color Scanners – Scan modes – File formats - Simple problems and troubleshooting.
- 4.4 **Digital Camera:** Introduction – Operation – Features.
- 4.5 **Web Camera, Biometric devices:** Thump scanner, Iris scanner, speech synthesizer - operation and installation - Trouble shooting.
- 4.6 **SMPS:** Principles of Operation – Block Diagram – AT & ATX Power Supply, connector specifications and protection.

UNIT V TROUBLE SHOOTING PC

16 Hours

- 5.1 **Room Preparation and Power supply:** Location – Pollution – Air-conditioning – Power Supply – Voltage Regulators – Servo Stabilizers – UPS, Surge suppressors and spike isolators.
- 5.2 **Installation practice:** Routine checks - Preventive maintenance - problem causes, peripheral and general precautions.
- 5.3 **Faults elimination process:** Dead system spurious problem - security failures - heartbeats and multiple faults - Systematic trouble shooting - Symptoms observation – analysis - Fault diagnosis and fault rectification.
- 5.4 **POST:** Definition – IPL hardware – POST Test sequence – beep codes and error messages.
- 5.5 **Diagnostic Software and Viruses:** Computer Viruses – Precautions – Anti-virus Software – identify the signature of viruses – Firewalls and latest diagnostic softwares.

REFERENCE BOOKS

S No	TITLE	AUTHOR	PUBLISHER
1.	IBM PC and CLONES	B.Govindrajalu	Tata McGrawhill Publishers
2.	Computer Installation and Servicing	D.Balasubramanian	Tata McGraw Hill , 2005
3.	Computer Installation and Troubleshooting	M.Radhakrishnan	ISTE- Learning Materials 2001
4.	The complete PC upgrade and Maintenance	Mark Minasi	BPB Publication
5.	Inside the PC	Peter Norton	Tech Media
6.	Troubleshooting, Maintaining and Repairing PCs	Stephen J Bigelow	Tata MCGraw Hill Pub 2001
7.	Basic Refrigeration and Air-Conditioning	Ananthanayanan P.N	Tata McGrawhill Publishers

15061 PC HARDWARE AND SERVICING

MODEL QUESTION PAPER - I

PART – A (10 x 1 = 10 Marks)

Answer all the Questions:

1. What is a bus controller?
2. Which connector is used to connect the card to the monitor?
3. Expand the term "SATA"
4. What is the function of DSP?.
5. Expand the term "POST"
6. Name any two motherboards.
7. What is Bios?
8. What is TIFF?
9. Give any two important features of SIMM.
10. What is Computer Virus?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. What are the demerits of Xeon Processor?
12. Define the term "Resolution". Explain its significance
13. State the advantages and disadvantages of Compact disks.
14. What do you meant by s partitioning and formatting?
15. Briefly explain about POST Test Sequence.

PART – C (5 X 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Give the specifications and features of Laptop and Desktop systems. [5]
2. Compare AMD Series, Athlon 2000 and Xeon processor [5]
(OR)
B. 1. With a neat block diagram explain the architecture 945 Chipset. [10]
- 17 A. 1. Explain the different types of memory chips with neat diagram. [5]
2. List and explain the working principles of mouse signals. [5]
(OR)
B. 1. Draw the block diagram and explain the operation of the CRT. [10]

- 18 A. 1. Explain the construction and working principle of CD ROM. [5]
2. State the features of Zip drive and USB drive. [5]
(OR)
B. 1. Briefly explain about the principle of operation of a Hard disk drive. [10]
- 19 A. 1. Briefly explain the basic principle of operation of a scanner. [5]
2. Briefly explain about the features and operation of a digital camera. [5]
(OR)
B. 1. Draw the block diagram of ATX power supply connection and explain its operation. [10]
- 20 A. 1. Explain the purpose of Surge suppressors and spike isolators. [5]
2. What is IPL Hardware? Explain. [5]
(OR)
B. 1. Draw the block diagram of UPS and explain its operation [10]

15061 PC HARDWARE AND SERVICING

MODEL QUESTION PAPER - II

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. What do you mean by PCI?
2. Expand the term USB.
3. Write down the expansion of FSB?
4. Write the uses of key lock?
5. State any one advantage of DVD drive.
6. How much cache memory that can be handled by Pentium 4 ?
7. What is modem?
8. Which command is used to format a floppy diskette?
9. What is the use of VGA?
10. What is Firmware?

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Differentiate AMD and Pentium IV processor.
12. Write any three input and output devices.
13. State the features of SATA Hard disk drives,
14. What is ATX power supply? State its features
15. What is a firewall? Briefly explain them.

PART – C (5 X 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. What are the different forms of motherboards? Briefly explain about them. [5]
2. What is riser architecture? Explain briefly [5]
- (OR)**
- B. 1. Briefly discuss about the features of hyperthreading and dual core technologies. [10]
- 17 A. 1. What are the different types of RAMs? State the features of each type. [5]
2. Explain the working principles of wireless keyboard. [5]

(OR)

- B. 1. Draw the block diagram and explain the operation of the plasma and TFT display.. [10]
- 18 A. 1. Explain the construction and working principle of DVD ROM. [5]
2. State the features of ipod and memory stick. . [5]
- (OR)**
- B. 1. Briefly explain about the problems faced in Hard disk drive and write about the troubleshooting of Hard disk drive. [10]
- 19 A. 1. Briefly explain the basic principle of operation of a laser printer. [5]
2. How will you install a modem? Explain the steps. [5]
- (OR)**
- B. 1. Write down the procedure for troubleshooting a dot matrix printer. [10]
- 20 A. 1. Draw the block diagram of UPS and explain briefly. [5]
2. What is a computer virus? What are the various steps to be followed for virus detection? [5]
- (OR)**
- B. 1. Briefly discuss about the preparation of room for computer Centre. [10]

15062	MOBILE COMPUTING
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AIM:

The main aim of this subject is to deal with fundamental issues of mobile computing. Some of the important topics discussed in the course are: Wireless Communication Fundamentals, Wireless LAN, Bluetooth technology and Wireless Application protocols.

OBJECTIVES:

- Know the basics of wireless communications
- Discuss different types multiplexing.
- Explain four basic multiple access versions of Medium access control.
- Describe services and architecture of GSM in Telecommunication systems.
- Know the concept of Wireless LAN
- Describe IEEE 802.11 architecture.
- Explain HIPERLAN and its architecture.
- Define Bluetooth.
- Explain Bluetooth protocol architecture.
- Explain the importance of Bluetooth security.
- Study Mobile Network Layer and its configuration.
- Explain Dynamic Host Configuration Protocol.
- Differentiate different routing techniques.
- Describe Mobile Transport layer and its configuration.
- Narrate the architecture of Wireless Application Protocol.
- List down the advantages of WAP.
- Explain Wireless Markup Language.
- Describe about WMLScript.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
MOBILE COMPUTING	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	WIRELESS COMMUNICATION FUNDAMENTALS	18
II	WIRELESS LOCAL AREA NETWORK	16
III	BLUETOOTH TECHNOLOGY	16
IV	MOBILE NETWORK LAYER	18
V	WIRELESS APPLICATION PROTOCOL	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS 18 Hours

- 1.1 **Introduction:** History of cellular mobile communication – Important terminologies – Mobile computing Environment – Architecture of mobile computing – Functions of mobile computing – Mobile and wireless devices.
- 1.2 **Multiplexing:** Space division multiplexing – Frequency division multiplexing – Time division multiplexing – Code division multiplexing.
- 1.3 **Medium Access Control:** SDMA – FDMA - TDMA – CDMA – features – comparison of SDMA, FDMA, TDMA and CDMA techniques.
- 1.4 **Telecommunication Systems :** GSM – Mobile services – System Architecture – GPRS – architecture
- 1.5 **Cellular Wireless Networks :** Overview of cellular system – operation of cellular system – Adjacent Channel Interference – Methods of reducing ACI – Frequency reuse concept – Diversity technique – Improving coverage and capacity in cellular systems.

UNIT II WIRELESS LOCAL AREA NETWORK 16 Hours

- 2.1 **Wireless network:** Definition – Advantages and Disadvantages of LAN - Applications of WLAN – infrared versus radio transmission – WLAN technologies - examples.
- 2.2 **IEEE 802.11:** Introduction – Comparison of IEEE 802 and OSI model – System Architecture – Protocol Architecture – Physical Layer – MAC frames – MAC Management: Synchronization – power management – Roaming.
- 2.3 **HIPERLAN:** Introduction – Protocol Architecture.

UNIT III BLUETOOTH TECHNOLOGY 16 Hours

- 3.1 **Bluetooth:** Introduction – Bluetooth Radio: Vertical Antenna – Dipole Antenna – Antenna parameters – Ad hoc network – Bluetooth device address – Bluetooth connection mode relationship.

- 3.2 **Bluetooth Protocol Architecture:** Blue tooth protocol stack - Bluetooth Core Protocols - Cable replacement protocols - Adopted protocols - Usage models and profiles.
- 3.3 **Bluetooth Security :** Link-level security - Architecture Overview - Security level of Services - Security Manager - Advantages of Bluetooth – Comparison of wireless LAN and Bluetooth technology.

UNIT IV MOBILE NETWORK LAYER

18 Hours

- 4.1 **Mobile IP** – Overview – Terminologies related to Mobile IP – IP packet delivery – Agent advertisement and solicitation – Registration – Tunneling and Encapsulation – Optimizations – Reverse Tunneling – Ipv6.
- 4.2 **Dynamic Host Configuration protocol:** History – Applications of DHCP – DHCP Protocol : Significance and importance of DHCP
- 4.3 **Routing :** Introduction – Routing types: Least cost – Adaptive – Non Adaptive routing – DSDV and DSR protocols
- 4.4 **Transport Layer :** Traditional TCP - Congestion control – Slow start – Fast retransmit/fast recovery – Classical TCP improvements: Indirect TCP – Snooping TCP – Mobile TCP

UNIT V WIRELESS APPLICATION PROTOCOL

16 Hours

- 5.1 **WAP :** Introduction – Main Objectives – Integration of WAP components – Stack arrangement with WAP – WAP network – Protocol stack of WAP - WAP client architecture - WAP network architecture
- 5.2 **WAP (2.0):** Advantages – Main architectural components of WAP 2.0 – WAP Programming model – Uses of WAP 2.0 additional services.

REFERENCE BOOKS

S.No	TITLE	AUTHOR	PUBLISHER
1.	Mobile Communications	Jochen Schiller	Pearson Education, New Delhi.
2.	Wireless Communication of Networks	William Stallings	PHI
3.	BlueTooth Demystified	Nathan J.Muller	Tata McGraw - Hill Publication, New Delhi.

15062 MOBILE COMPUTING

MODEL QUESTION PAPER - I

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. What is multiplexing?
2. What is the use of SDMA?
3. What is the expansion of PDA?
4. Which transmission technology can not penetrate walls or other obstacles?
5. In Bluetooth core protocols, which protocol is used to query about device information, services and characteristics of the services?
6. State any one applications of DHCP.
7. What is WAP?
8. List any two basic features of WML.
9. List any four TCP supported by Mobile Transport layer
10. List any two advantages of Snooping TCP.

PART – B (5x 3 = 15 Marks)

Answer all the questions:

11. List any four mobile and wireless devices.
12. Name the two basic transmission technologies used to setup Wireless LAN.
13. What is the purpose of OBEX protocol in Bluetooth?
14. Which attributes are used to define the security level of a service?
15. What are the basic objectives of WAP forum?

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Compare different types of medium access control techniques. [5]
2. Briefly explain about “Improving coverage and capacity in cellular systems”. [5]

(OR)

- B. 1. With a neat diagram, explain the architecture GPRS in detail. [10]

- 17 A. 1. Compare infrared and radio transmission [5]
2. Explain about HIPERLAN protocol architecture. [5]

(OR)

- B. 1. Discuss in detail about MAC frames. [10]

- 18 A. 1. What are antenna parameters? Explain them. [5]
2. Compare wireless LAN and Bluetooth technology. [5]
(OR)
B. 1. Briefly explain about security manager in Bluetooth. [10]
- 19 A. 1. Explain about Tunneling and encapsulation in Mobile Network Layer. [5]
2. Explain the term "Congestion control" in transport layer. [5]
(OR)
B. 1. Briefly explain about the different types of routing. [10]
- 20 A. 1. List the main objectives and advantages of WAP. [5]
2. Explain about the main architectural components of WAP 2.0. [5]
(OR)
B. 1. Explain about the protocol stack of WAP with a neat diagram. [10]

15062 MOBILE COMPUTING

MODEL QUESTION PAPER - II

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. The space between the interference ranges is called -----
2. Expand the term CSMA / CD .
3. Physical layer is divided in to -----, -----
4. Write down the four functional groups of MAC management
5. Name the two cable replacement protocols in Bluetooth.
6. Bluetooth operates in -----
7. What are the two problems in DSR protocols.
8. Detection of congestion is called -----
9. Write two advantages of WAP.
10. Name the scripting language used in WAP.

PART – B (5x 3 = 15 Marks)

Answer all the questions:

1. Give the functions of mobile computing.
2. What are the applications of WLAN?
3. Give any three differences between WLAN and Bluetooth technology.
4. What is routing? Give the types of routing.
5. What are the uses of WAP2.0 services?

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Describe about the architecture of mobile computing. [5]
2. Explain the features of medium access control. [5]
(OR)
B. 1. Discuss in detail about cellular systems. [10]
- 17 A. 1. Explain about hyper LAN protocol architecture. [5]
2. Describe about the MAC frames with a neat diagram. [5]
(OR)
B. 1. Explain in detail about IEEE 802.11 network. [10]

- 18 A. 1. Explain Bluetooth device address. [5]
2. Explain security levels in Bluetooth. [5]
(OR)
B. 1. Explain in detail about Bluetooth protocol architecture? [10]
- 19 A. 1. Describe about DHCP protocol. [5]
2. Explain tunneling and encapsulation in mobile IP. [5]
(OR)
B. 1. Explain in detail about transport layer. [10]
- 20 A. 1. Explain about the architectural components of WAP2.0. [5]
2. Describe about WAP programming model. [5]
(OR)
B. 1. Explain the client network architecture of WAP with neat diagram. [10]

15081	SOFTWARE ENGINEERING
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AIM:

The aim of this subject is to make the learner efficiently work as software engineer. S/he should be well acquainted with all the phases of Software Development Life Cycle and software testing. The learner should be able to apply the concepts learned for developing software applications.

OBJECTIVES:

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

- Define Software Engineering
- Understand the evolution and characteristics of Software Engineering
- Explain different software development models.
- Learn about the phases of software development cycle.
- Understand the significance of requirement analysis
- Know various tools and techniques used for requirement analysis.
- Understand architectural and modular design
- Understand the different types of project metrics
- Understand different software estimation techniques
- Describe CASE.
- Explain about software maintenance
- Need for software maintenance
- Identify and manage risks
- Know the different scheduling methods.
- Define the basic terms used in testing terminology.
- Describe black box and white box testing
- Describe some testing tools.
- Understand the concepts of Software quality and quality assurance
- Know the concepts of software reliability and software quality standards
- Define software re-engineering.
- Differentiate forward engineering from re-engineering

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
SOFTWARE ENGINEERING	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	INTRODUCTION TO SOFTWARE ENGINEERING	18
II	SOFTWARE DESIGN AND PLANNING	16
III	SOFTWARE MAINTENANCE AND RISK MANAGEMENT	16
IV	SOFTWARE TESTING	18
V	SOFTWARE RELIABILITY AND QUALITY ASSURANCE	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT- I INTRODUCTION TO SOFTWARE ENGINEERING 18 Hours

- 1.1 **Basics of Software Engineering** : Need for software Engineering – Definition – Software Evolution – Impact of Software Engineering – Software Characteristics – Software Myths – Program versus Software Products – Benefits of Software Engineering
- 1.2 **Software Development Life cycle:** Requirement Analysis – Design – Coding-Testing Testing – Maintenance.
- 1.3 **Software Development Life Cycle Models:** Introduction -- Code and Fix model - Waterfall Model – Prototyping model – Spiral Model – Iterative Enhancement model - RAD model – Advantages and Disadvantages of above models – Comparison of various models.
- 1.4 **Software Requirement Analysis** : Requirements engineering – Types of requirements – Software requirements specification (SRS) – Problems in SRS – Requirements gathering tools – Analysis tools – Data flow diagram – data dictionary – ER diagram

UNIT- II SOFTWARE DESIGN AND PLANNING 16 Hours

- 2.1 **Software Design** : Definition of software design – Objectives of software design – Process of software design – Architectural design – Modular design – Structure chart – Coupling and Cohesion – different types – Interface design – Design of human computer interface
- 2.2 **Software Planning:** Software metrics - Definition – Types of metrics – product and project metrics – function point and feature point metrics – Software project estimation – steps for estimation – Reason for poor and inaccurate estimation – project estimation guidelines – Models for estimation – COCOMO Model – Automated tools for estimation.
- 2.3 **CASE** : CASE and its scope – Architecture of CASE environment – Building blocks for CASE – CASE support in software Life cycle – Objectives of CASE – Characteristics of CASE tools – List of CASE tools – Categories, advantages and advantages of CASE tools.

UNIT- III SOFTWARE MAINTENANCE AND RISK MANAGEMENT

16 Hours

- 3.1 **Software Maintenance:** Software as an evolution entity – Software configuration management activities – Change control process – Software version control – Software configuration management – Need for maintenance – Categories of maintenance – Maintenance cost – factors affecting the effort – Modelling maintenance effort
- 3.2 **Risk management :** Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management – Risk avoidance – Risk detection – Risk control – Risk recovery – Sources of risks – Types of risks
- 3.3 **Project scheduling :** Introduction – Factors affecting the task set for the project – scheduling methods – Work breakdown structure – Flow graph – Gant chart - PERT

UNIT - IV SOFTWARE TESTING

18 Hours

- 4.1 **Software Testing :** Introduction to testing – Testing principles – Testing objectives – Test Oracles - Basic terms used in testing – Fault – Error – Failure - Test cases – Black box and white box testing – Advantages and disadvantages of above testing – Methods for Block box testing strategies – Methods for white box testing strategies – Testing activities – Test plan.
- 4.2 **Levels of testing:** Unit testing - Integration testing – System testing – types.
- 4.3 **Software Testing strategies:** Static testing strategies – Formal technical reviews – Code walkthrough – Code inspection - Debugging – Definition – Characteristics of bugs – Life cycle of a Debugging task – Debugging approaches.
- 4.4 **Testing Tools:** Different categories of tools – Examples for commercial software testing tool.

UNIT V SOFTWARE RELIABILITY AND QUALITY ASSURANCE

16 Hours

- 5.1 **Software Quality Assurance :** Verification and validation – SQA - SQA objectives and goals – SQA plan - Definition of software quality – Classification of software qualities - Software quality attributes – Important qualities of software products - Importance of software quality – SEI – CMM - Five levels - ISO 9000 – Need for ISO Certification – Benefits of ISO 9000 certification – Limitation of ISO 900 certification – Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO 9126
- 5.2 **Software Reliability :** Definition – Reliability terminologies – Classification of failures – Reliability metrics – Reliability growth modeling - Reliability measurement process
- 5.3 **Reverse Software Engineering:** Definition – purpose - Reverse engineering Reverse engineering process – Reverse engineering tasks – Characteristics and application areas of reverse engineering – Software re-engineering – Principle – Re- engineering process – Difference between forward engineering and re-engineering.

REFERENCE BOOKS:

S. No	TITLE	AUTHOR	PUBLISHER
1	Software Engineering	Ian Sommerville	Pearson Education
2	Software Engineering – A practioner’s Approach	Roger S. Pressman	McGraw-Hill International Edition
3.	Software Engineering	Sajan Mathew	S. Chand & Company Ltd
4.	Integrated approach to Software Engineering	Pankaj Jalote	Narosa Publishing House, 2004
5.	Software Engineering fundamentals	Ali Behforooz and Fredick J Hudson	Oxford University press, 2005
6.	Software Testing techniques	Bories Beizer	Dream Tech Press, 2004

15081 SOFTWARE ENGINEERING

MODEL QUESTION PAPER - I

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. What is DFD?
2. Expand the term : COCOMO
3. What is a PERT?
4. Name the mechanism, which is used to check the correctness of the output of the program for the test cases.
5. What is SEI – CMM?
6. Define the term “Risk”
7. State any two benefits of software Engineering.
8. List any one disadvantages of CASE tools.
9. Name any two software testing tools
10. State any two characteristics of bugs.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Distinguish between program and software products.
12. State the differences between water-fall model and spiral model.
13. Define the term “Coupling” and explain.
14. What do you mean by project scheduling?
15. Define the terms: (i) Fault and (ii) Error.

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A. 1. Explain the characteristics of good software. [5]
2. What is data dictionary? Where it is used? Illustrate with some examples. [5]
- (OR)**
- B. 1. State the different phases of the software development life cycle? Explain them. [10]

- 17 A. 1. State the advantages and disadvantages of function point and feature point metrics [5]
2. Explain about the categories of CASE tools. [5]
(OR)
B. 1. Briefly explain about the various types of cohesion. [10]
- 18 A. 1. Describe the various categories of software maintenance. [5]
2. What are the types of risks? Explain them. [5]
(OR)
B. 1. Explain three types of Scheduling methods with neat diagrams. [10]
- 19 A. 1. What do you understand by the term system testing? What are the different kinds of system testing that are usually performed on large software products? [5]
2. Define the term "Debugging". Explain various debugging techniques available. [5]
(OR)
B. 1. Briefly explain black box and white box testing. Give examples and advantages of each testing method. [10]
- 20 A. 1. Write down the need and benefits of ISO 9000 certification. [5]
2. Briefly explain any five characteristics of reverse engineering. [5]
(OR)
B. 1. Explain different types of Reliability Growth Model. [10]

15081 SOFTWARE ENGINEERING

MODEL QUESTION PAPER - II

PART – A (10 x 1= 10 Marks)

Answer all the questions:

1. The process of building a software product is _____
2. Write a component in spiral model
3. Drive the list of CASE tools
4. What is COCOMO 81 ?
5. What are the types of risks?
6. What is Gant Chart?
7. Define big bang approach?
8. What is Debugging?
9. Define validation and verification?
10. Code re-engineering is one of the _____ process

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define software myths.
12. Define the terms: Coupling and Cohesion
13. What is software configuration management?
14. Differentiate black box testing from white box testing.
15. What are the necessary criteria for setting ISO 9000 certification for software industry?

PART – C (5 x 10 = 50 Marks)

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

- 16 A.
 1. Describe about software development life cycle with circuit diagram [5]
 2. Briefly explain about the characteristics of software. [5]

(OR)

 - B.
 1. Explain about the software requirements specification [10]
- 17 A.
 1. Briefly explain about various types of software metrics. [5]

2. Define project estimation guidelines. [5]
(OR)
- B. 1. Give short notes on [10]
(i) Characteristic of CASE tools
(ii) Architecture of CASE environment
(iii) Architecture of CASE tools
- 18 A. 1. Explain about risk management. [5]
2. Define modeling maintenance effort [5]
(OR)
- B. 1. Describe about project scheduling. [10]
- 19 A. 1. Briefly explain about various software testing strategies. [5]
2. Define test oracles. [5]
(OR)
- B. 1. Explain in detail about any two levels of testing. [10]
- 20 A. 1. Explain about Software reliability terminologies. [5]
2. Difference forward engineering and re-engineering. [5]
(OR)
- B. 1. What is software quality? Write down the difference between the software quality and software products with an example. [10]

15082	MULTIMEDIA SYSTEMS
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AIM:

Multimedia is a new concept emerged in the recent times. Now this technology is being widely used in web pages, motion pictures and interactive presentations, animation etc. Multimedia has made a significant impact in training/education, business presentations, public information access etc. This course intends to introduce and expose multimedia technology and various factors and features of authoring software. It will also help in making the internet application richer in content and presentation

OBJECTIVES:

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

- Know the overall idea of Multimedia
- Define color combination
- Create drawing and animate the drawing
- Know the idea of systems
- Identify the Components of multimedia
- Edit Text, Database, Spreadsheets
- List the basic software tools.
- Use of multimedia authoring tools.
- Know about Fonts, Character sets, HTML document, Symbols and icons
- Explain about the tools for web
- Know about sound, file formats
- Edit sound, Audio Recording and Tracking of sounds
- Differentiate Analog versus Digital Video
- Design of web pages
- Explain the responsibility of multimedia development team.
- Understand multimedia development process.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
MULTIMEDIA SYSTEMS	6	96	25	75	100

TOPICS AND ALLOCATION

UNIT	TOPIC	TIME (Hrs)
I	INTRODUCTION TO MULTIMEDIA	15
II	MULTIMEDIA HARDWARE AND SOFTWARE	18
III	MULTIMEDIA BUILDING BLOCKS	18
IV	MULTIMEDIA AND THE INTERNET	17
V	DESIGNING OF PROJECTS	16
	REVISION, TEST	12
	TOTAL	96

DETAILED SYLLABUS

UNIT I INTRODUCTION TO MULTIMEDIA

15 Hours

- 1.1 **Introduction** : Definitions - Brief history of Multimedia; its market; content and copyright –public Domain, establishment of Copyright, fair use, multimedia copyright issues; resources for multimedia developers – Uses of multimedia - Making multimedia : Stages of a project
- 1.2 **Image** : Image representation - image characterization - light perception - Eye physiology - Visual phenomena - monochrome vision model - color vision model - Color Matching - Colorimetry concepts - color spaces - video color spaces
- 1.3 **Product and Evolution**: Types of products -briefing, reference, database, education and training, Kiosk, entertainment and games; evaluation - the user's perspective, the developer's perspective, strategies for new developers

UNIT II MULTIMEDIA HARDWARE AND SOFTWARE

18 Hours

- 2.1 **Hardware**: Macintosh Versus Windows Platform – Connections – SCSI – IDE – EIDE – ULTRA – IDE – ATA – ULTRA - ATA - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices
- 2.2 **Basic Software Tools** : Text Editing - Word Processing - OCR Software - Painting and Drawing Tools - 3D Modeling and Animation Tools - Image Editing - Sound Editing – Animation – Video - Digital Movie tools - Movie Editors - Compressing Movie Files
- 2.3 **Making instant Multimedia** : Linking Multimedia Object – office suites- word processors – spread sheets – databases – presentation tools – power point
- 2.4 **Multimedia authoring tools**: Types of authoring tools – card and page based authoring tools – Icon based authoring tools – Time based authoring tools.

UNIT III MULTIMEDIA BUILDING BLOCKS

18 Hours

- 3.1 **Text** : Fonts – Designing – Choosing -Menus for Navigation - Buttons for Interaction - Fields for Readings - HTML Documents - Symbols and Icons – Animating - Fonts Foundries - Managing Fonts - Character sets and Alphabets - Mapping Text – Fontographer - Hypermedia Structures – Hypertext tools
- 3.2 **Sound** : Power of sound - Multimedia System Sound - MIDI Versus Digital Audio - Preparing Digital Audio Files - Making MIDI Audio - Audio File Formats - Sound for the World Wide Web – Adding Sound to Your Multimedia Project - Toward Professional Sound - The Red Book Standard - Space Considerations - Production Tips - Audio Recording - Keeping Track of Your Sounds - Testing and Evaluation
- 3.3 **Images** : Plan Your Approach - Organize Your Tools - Multiple Monitors - Making Still Images - Bitmaps – Vector Drawing - 3D Drawing and Rendering – Color - Understanding Natural Light and color – color Palettes - Images File Formats – Windows Formats
- 3.4 **Video** : Using Video Analog Versus Digital – Obtaining Video Clips - How Video Works - Broadcast Video Standards – NTSC – PAL – SECAM – HDTV -Integrating Computers and Television - Video Overlay Systems – Differences Between Computer and Television Video – Working with Text and Titles - Shooting and Editing Video - Video Tips - Shooting Platform – Lighting - Chroma Key or Blue Screen – Composition - Taking Care of Your Tapes - Recording Formats - S-VHS Video - Component(YUV) - Component Digital - Composite Digital - Video Hardware Resolutions - Consumer-Grade Equipment - Editing with Consumer VCRs - Digital Video – Video Compression – Optimizing Video Files for CD-ROM.

UNIT IV MULTIMEDIA AND THE INTERNET

17 Hours

- 4.1 **Introduction:** The Bandwidth Bottleneck - Internet Services - MIME-Types - World Wide Web and HTML - Dynamic Web Pages and XML - Multimedia on the Web.
- 4.2 **Tools for the World Wide Web** : Web Servers - Web Browsers - Web Page Makers and Site Builders - Plug ins and Delivery Vehicles - Text – Images –Sound - Animation, Video and Presentation - Beyond HTML - 3D Worlds
- 4.3 **Designing for the World Wide Web** : Working on the Web - Workspace - Nibbling - HTML and Multimedia - Text for the Web - Making Columns of Text - Flowing Text Around Images – Images for the Web GIF and PNG Images - JPEG Images - Using Photoshop – Backgrounds - Clickable Buttons - Image Maps - Sound for the Web - Animation for the Web -Plug ins and Players.

UNIT V DESIGNING OF PROJECTS

16 Hours

- 5.1 **Multimedia File Handling** : Compression & De compression - Data & file formats standards - Digital voice, Audio, video – Video image and Animation - Full motion video - storage and retrieval Technologies
- 5.2 **Multimedia Development Team:** Team approach - sponsor - client- Customer - Project manager - Project designer - other key personnel - subject matter expert -

programmer - Editor - copywriter - Graphic artist - support team - marketing and sales support - assembling a Multimedia production team - sizing a Multimedia team - small or one person project - average team project - big project

- 5.3 **The Multimedia development process** : Multimedia development issues - multimedia project - structured Multimedia development - Multimedia project timing - sample project - costing a Multimedia project - cost modeling- other costing issues

REFERENCE BOOKS:

S. No	TITLE	AUTHOR	PUBLISHER
1.	Multimedia making it work	Tay Vaughan	Tata McGrawHill, Delhi
2.	Multimedia – Technology and applications	David Hillman	Galgotia Publications, Delhi

15082 MULTIMEDIA SYSTEMS

MODEL QUESTION PAPER - I

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. _____ is the software programs for delivering and developing multimedia products.
2. Expand the term “IDE”
3. _____ are the mathematical tables that define the color of a pixel displayed on the screen.
4. _____ images may contain 24 bits of color depth.
5. Give one example for audio storage device .
6. What is nibbling?
7. Define the term “ Image maps”
8. What do you mean by decompression
9. State any two communication devices.
10. State any two image file formats.

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Define the term “Multimedia”. State the uses of multimedia.
12. How you will compress movie files? Explain
13. What are the differences Between Computer and Television Video
14. Explain the terms “Plug ins and Players”
15. Briefly explain about cost modeling.

PART – C (5 X 10 = 50 Marks)

- 16 A.
 1. Briefly explain the history of multimedia. [5]
 2. What are the different stages of a multimedia project? Define them. [5]

(OR)

 - B. 1. What are the different types of multimedia products? Briefly explain them. [10]
- 17 A.
 1. Compare Macintosh and Windows platforms. [5]
 2. How you will make instant multimedia? [5]

(OR)

 - B. 1. Explain about card and page based authoring tools. [10]

- 18 A. 1. Compare analog versus digital video. [5]
2. Explain the steps to add a sound to the multimedia project. [5]
(OR)
B. 1. Briefly explain about the different techniques used for video compression. [10]
- 19 A. 1. How does communication bandwidth affects the selection and format of multimedia content? [5]
2. Briefly explain about Plug ins and delivery vehicles. [5]
(OR)
B. 1. Explain the following: (i) Text for the web and (ii) Sound for the web. [10]
- 20 A. 1. Explain the procedure for costing of multimedia project. [5]
2. Write short notes on “Multimedia development Issues” [5]
(OR)
B. 1. Explain about the multimedia development team with the responsibility of each member. [10]

15082 MULTIMEDIA SYSTEMS

MODEL QUESTION PAPER - I

PART – A (10 x 1 = 10 Marks)

Answer all the questions:

1. Define Multi media system
2. What are the different stages of a multimedia project
3. What is SCSI?
4. What is OCR?
5. State any two Broadcast Video Standards
6. State any two audio file formats.
7. Which tag is used to add sound in HTML?
8. Define the Compression?
9. State the function of project Manager.
10. Define the term “ Decompression”

PART – B (5 x 3 = 15 Marks)

Answer all the questions:

11. Discuss on multimedia copyright issues
12. What is 3D modeling? List out any two advantages of 3D modeling.
13. What are different tape Recording Formats ? Explain.
14. Explain about Dynamic Web Pages and XML
15. List out the members of multimedia team.

PART – C (5 X 10 = 50 Marks)

- 16 A. 1. Briefly explain the benefit of multimedia. [5]
2. Explain the monochrome vision model with example [5]
- (OR)**
- B. 1. Briefly explain about the types of multimedia products? [10]
- 17 A. 1. Explain any five basic software tools used in multimedia? [5]
2. Briefly explain the applications of multimedia systems. [5]

(OR)

- B. 1. Describe in detail about Icon based authoring tools and time based authoring tools. [10]
- 18 A. 1. Explain the different image tools used in multimedia? [5]
2. How to prepare digital audio file? [5]

(OR)

- B. 1. Write in detail about fonts, character sets, HTML document, symbols and icons. [10]
- 19 A. 1. Briefly explain about "Image Maps". [5]
2. Briefly explain about "World Wide Web and HTML" [5]

(OR)

- B. 1. Briefly explain about the various tools used for World wide web. [10]
- 20 A. 1. Briefly explain about multimedia development process. [5]
2. Write short notes on "Multimedia development Issues". [5]

(OR)

- B. 1. Explain the responsibility of multimedia development team. [10]

15064	PC HARDWARE AND SERVICING LABORATORY
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AIM:

The course aims at making the students familiar with various parts of computers and how to assemble them, and different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer software installation and maintenance to make him diagnose software faults.

This subject also gives the knowledge and competency to diagnose the problems in computer hardware and peripherals and also gives the knowledge for trouble shooting for systematic repair and maintenance of computers and computer peripherals.

OBJECTIVES:

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

- Know the various indicators, switches and connectors used in Pentium.
- Familiarize the layout of SMPS, motherboard and various Disk Drives.
- Configure Bios set up options.
- Install various secondary storage Devices with memory partition and Formatting.
- Know the various types of printer installation and to handle the troubleshooting ability.
- Acquire the practical knowledge about the installation of various communication and entertainment devices.
- Handle the audio/video devices, interfacing with PC.
- Setup Video-conference System..
- Assemble PC system and checking the working condition.
- Identify the problems in Pentium systems, software installation and rectification also.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
PC HARDWARE AND SERVICING LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Identification of System Layout:
 - a.) Front panel indicators and switches
 - b.) Front side and rear side connectors
2. Familiarize the computer system Layout : Making positions of SMPS, Motherboard, FDD, HDD, CD, DVD and add on cards.
3. BIOS set up: Configuring bios setup program and practicing the trouble shooting of typical problems using BIOS utility.
4.
 - a.) Install Hard Disk.
 - b.) Configure CMOS-Setup
 - c.) Partition HDD using FDISK
 - d.) Format Hard Disk.
 - e.) Master /Slave / IDE Devices.
- 5..
 - a.) Install and Configure a CD-Writer and a DVD writer.
 - b.) Recording a Blank CD and DVD.
6. Printer Installation and Servicing:
 - a.) Head Cleaning
 - b.) Install and configure Dot matrix printer and Laser printer
 - c.) Troubleshoot the above printers.
 - d.) Check and connect the data cable connectivity
7. Modem and TV Tuner card Installation:
 - a.) Install and configure Internal and External Modem
 - b.) Install and Configure TV tuner card.
8.
 - a.) NIC, Router Installation
 - b.) Installing NIC, router and Modem for XP / Linux environment.
 - c.) Configuring using device drivers
 - d.) Diagnosis and trouble shooting.
9.
 - a.) Install audio/video devices – microphone, speaker and head set and Digital camera.
 - b.) Trouble shoot the audio-video devices.

10. a.) Install and configure Scanner . Trouble shoot the problems..
 b.) Install and configure Web cam.
11. a.) Identify the problems in Pentium System with add on Cards.
 b.) Identify problems with software installation using drivers available in the motherboard CD.
12. Practice with scan disk, disk cleanup, disk De-fragmenter, Virus Detecting and Rectifying Software
13. Practice with back up and restoring data in a network server using external storage Device
14. Assemble a Pentium (II/III/IV) system with add on cards and check the working condition of the system.
15. Windows XP- Operating system Installation.
16. Install and Set up Dish connection to system.
17. Identify the connectors using wireless devices.
18. Interfacing the cell phone with system.

PC HARDWARE AND SERVICING LABORATORY

HARDWARE REQUIREMENTS

- Computer with Pentium processors with add on cards – 30 Nos
- Hard disk drive – 6 Nos
- CD Drive -- 6 Nos
- DVD Writer -- 6 Nos
- Blank CD's (CDROM & R/W CD) - 50 Nos
- Blank DVD - 50 Nos
- Head cleaning CD
- Dot matrix Printer - 6 Nos
- Laser Printer - 6 Nos
- External Modem (56 kbps and latest model) - 2 Nos
- TV Tuner card (Internal or External) - 2 Nos
- NIC and Router - 2 Nos
- Stereo Speaker with Microphone (headset) - 6 Nos
- Digital Camera - 2 Nos
- Web Camera - 2 Nos
- Scanner - 2 Nos
- Blue tooth device and cell phone - 2 Nos
- Dish - 1 No
- CPU Trainer Module - 2 Nos
- Tool kit and socket, cable (cat 6)

SOFTWARE REQUIREMENTS

- Windows XP operating system
- Linux operating system
- Disk Manager (for the purpose of partition and format)
- Norton or E-Trust Antivirus software
- Scandisk
- DVD Writer S/W
- CD Burning S/W (Ahead Nero or latest S/W)

15083**E- PUBLISHING LABORATORY****AIM:**

This course will enable the students to familiarize with the features and use of application packages such as Corel Draw, Photoshop, Adobe indesigner and Adobe illustrator. This subject will develop skills in handling the above packages to develop software for e-publishing.

OBJECTIVES:

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

- Learn all tools and options in CorelDraw.
- Create designs like Bit Notice, Notebook Wrapper, Invitation and Calendar in CorelDraw.
- Learn all tools and options in PhotoShop.
- Create designs using layers, tools, text effects and filters in PhotoShop.
- Learn to use character styles, paragraph styles, text effects and text frame in Adobe Indesign.
- Create master page, multipage document and monthly calender in Adobe Indesign.
- Create designs and paint them with gradient, patterns and brushes in Adobe Illustrator.
- Learn to use multiple layers in Adobe Illustrator.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
E- PUBLISHING LABORATORY	6	96	25	75	100

LAB EXERCISES**CORELDRAW**

1. Create a Bit Notice with specified height and width with various text styles.
2. Create a design using all basic tools and make changes using shape tool.
3. Create a notebook wrapper design using fountain filling and pattern filling tools.
4. Create an invitation using arrange menu commands like transformations, align and distribute, and order.
5. Create a calendar with the help of Grid Tool, Power clip and Import commands.

PHOTO SHOP

6. Create a design by using the various Selection Tools, cutting and pasting the images.
7. Using multiple layers, create a design with the use of masking various images.
8. Create a design by the use of text tools and apply text effects.
9. Change the color of an image by the use of selective coloring method.
10. Create a design by applying the various filtering effects.

ADOBE INDESIGN

11. Create a simple layout and master page by using master page palette and character styles.
12. Create a multipage document by using character, paragraph, autoflow and text wrap commands.
13. Create a stylish monthly calender sheet by using table and its formatting commands.
14. Create a open page using character styles, paragraph styles, text effects, text frame and page numbering.

ADOBE ILLUSTRATOR

15. Create a design by using basic shapes, combining and painting objects.
16. Create a design and paint it with gradient, patterns and brushes.
17. Create a design using pen and brush tools effectively and create a symbol from an object or combined objects.
18. Create a design using multiple layers. Use the commands in layer palette like create layers, rearrange, lock, group, move, copy and paste layers from one file to another file and merge layers.

HARDWARE REQUIREMENTS

- Pentium IV/Dual Core Computers with High Configuration 36 Nos
- Laser printers 2 Nos
- Scanner 2 Nos

SOFTWARE REQUIREMENTS

CORELDRAW PHOTOSHOP ADOBE INDESIGN ADOBE ILLUSTRATOR

15084	MULTIMEDIA SYSTEMS LABORATORY
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AIM:

This subject will help the students to acquire the practical foundation of Multimedia Systems. It includes concepts relating to editing of audio and video. This course also describes major details about the software tools used for multimedia applications. Thus, this subject will develop the knowledge and skill to develop web pages.

OBJECTIVES:

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

- Know over all view of 3D studio max
- Know the application and limitation of 3D studio max
- Know about the flash
- Know the application of Flash
- List the various animating logos
- Know about the page maker
- Know the application and limitation of page maker
- Know the various tools available for drawing
- Know about the photo shop
- Know the application and limitation of photo shop
- Know the special effect tools
- Know over all view of ad premier
- Know the editing of Analog & Digital formats
- Know about the Cell phone software

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
MULTIMEDIA SYSTEMS LABORATORY	6	96	25	75	100

LAB EXERCISES

1. Publish Picture on paper using color printer
2. Record the Audio and apply different effects to it
3. Merge the voice and music
4. Record the video from the outside source and compressing it. Use various recording format
5. Mixing the audio and video.
- 6 a. Develop advertisement in flash for 15 secs.
b. Design a company logo with animations for 10 secs.
7. Design a cartoon for 15 secs
8. Design a movie clip for 15 secs
- 9 a . Design a 3D animation picture.
b. Edit a movie.
10. Convert V C D to D V D.
11. Convert a text in . Doc format to P D F format.
12. Video and Audio format conversion.
13. Create photo album using Scanner
14. Create photo album using Cell phone
15. Create Video album using Cell phone

SOFTWARE REQUIREMENTS

3D Max , Flash, Animating software, U-lead suite, Adobe Audio Video software
CD writing software, Page maker, cell phone software.

HARD WARE REQUIREMENTS

1. Computer system with multimedia & Hard ware configuration Recommended for installing and running the above software
2. Handy cam for video recording with D V D recording facilities
3. Digital camera
4. Camera cell phone
5. Photo quality color printer and Color Scanner
6. Video capturing card

15066**PROJECT WORK AND ENTREPRENEURSHIP****(PROJECT WORK NORMS AS PER THE LATEST REGULATIONS ONLY)****AIM:**

Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students

The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.

OBJECTIVES:

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Develop software packages or applications to implement the actual needs of the community.
- Get exposure on industrial environment and its work ethics.
- Understand what is entrepreneurship and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.
- Expose students to the field of computing and to gain experience in software design.
- Understand the facts and importance of environmental management.
- Understand and gain knowledge about disaster management.

SCHEME OF INSTRUCTION AND EXAMINATION

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
PROJECT WORK AND ENTREPRENEURSHIP	6	96	25	75	100

Minimum Marks for Pass is 50 out of which minimum 35 marks should be obtained out of 75 marks in the board Examination alone.

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of assessment	Max. Marks
First Review	6 th week	10
Second Review	10 th week	10
Attendance	Entire semester	5
Total		25

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Marks for Report Preparation, Demo, Viva-voce	45
Marks for answers of 15 questions which is to be set by the external examiner from the given question bank consisting of questions in the following three topics Entrepreneurship, Disaster Management and Environmental Management. Out of fifteen questions five questions to appear from each of the above topics i.e. 5 questions x 3 topics = 15 questions 15 questions x 2marks = 30 Marks	30
Total	75

SUGGESTIVE AREAS OF PROJECT WORK:

- Database Management Systems
- Computer Networks
- Software Engineering and Software Development
- Web page Designing
- Digital Image Processing
- Computer Graphics and Animation
- Multimedia Systems
- Artificial Intelligence
- Internet and e-commerce
- Computer Security and Cryptography
- Computer hardware and embedded systems
- Computer aided engineering and design
- Improving existing systems / equipments.
- Any other related area found worth.

DETAILED SYLLABUS

ENTREPRENEURSHIP, ENVIRONMENTAL & DISASTER MANAGEMENT

1. ENTREPRENEURSHIP

- 1.1 Introduction – Entrepreneur – types -Characteristics & attributes of Entrepreneur – Expectations of entrepreneurship – Contributions of an entrepreneur - Identifying problems and opportunities. - Why do Entrepreneurs fail
- 1.2 Types of Industries - Importance of SSI – Assistance offered – Governmental and Non-Governmental organizations – Identifying prospects of various Small scale industries in your area with resources and other infrastructural facilities available.
- 1.3 Starting a SSI – various stages – product – ownership – locality – points related to building, water and electricity – financial assistance – raw materials – machineries – human resource – efficient manufacturing techniques – marketing - Technical, Financial, Marketing, Personnel and Management Feasibility study and report - concessions and incentives offered by agencies.
- 1.4 Industrial Zones – industrial Estates - Pollution Control – industries with pollution problem - Marketing assistance
- 1.5 Acquiring common services – repairing – testing facilities – training institutions – suppliers of applied technology.

2. ENVIRONMENTAL MANAGEMENT

- 2.1 Introduction – Environmental Ethics – Assessment of Socio Economic Impact – Environmental Audit – Mitigation of adverse impact on Environment – Importance of Pollution Control – Types of Industries and Industrial Pollution.
- 2.2 Solid waste management – Characteristics of Industrial wastes – Methods of Collection, transfer and disposal of solid wastes – Converting waste to energy – Hazardous waste management Treatment technologies.
- 2.3 Waste water management – Characteristics of Industrial effluents – Treatment and disposal methods – Pollution of water sources and effects on human health.
- 2.4 Air pollution management – Sources and effects – Dispersion of air pollutants – Air pollution control methods – Air quality management.
- 2.5 Noise pollution management – Effects of noise on people – Noise control methods.

3. DISASTER MANAGEMENT

- 3.1 Introduction – Disasters due to natural calamities such as Earthquake, Rain, Flood, Hurricane, Cyclones etc – Man made Disasters – Crisis due to fires, accidents, strikes etc – Loss of property and life..
- 3.2 Disaster Mitigation measures – Causes for major disasters – Risk Identification – Hazard Zones – Selection of sites for Industries and residential buildings – Minimum distances from Sea – Orientation of Buildings – Stability of Structures – Fire escapes in buildings - Cyclone shelters – Warning systems.

- 3.3 Disaster Management – Preparedness, Response, Recovery – Arrangements to be made in the industries / factories and buildings – Mobilization of Emergency Services - Search and Rescue operations – First Aids – Transportation of affected people – Hospital facilities – Fire fighting arrangements – Communication systems – Restoration of Power supply – Getting assistance of neighbors / Other organizations in Recovery and Rebuilding works – Financial commitments – Compensations to be paid – Insurances – Rehabilitation.

LIST OF QUESTIONS

1. ENTREPRENEURSHIP

- 1 What is entrepreneurship? Explain.
- 2 Who is a successful entrepreneur? Why?
- 3 List the various stages of decisions an entrepreneur has to make before reaching the goal of his project.
- 4 List the types of industries.
- 5 Define - Small scale industry.
- 6 What are the qualities of an entrepreneur?
- 7 What are the expectations of entrepreneurship?
- 8 What are the various SSI that can flourish in your district?
- 9 Identify the infrastructural needs for an industry.
- 10 Identify the natural resources available in your area for starting a SSI.
- 11 What are the various agencies involved in the establishment and development of various SSI?
- 12 What are the roles of District Industries Centre?
- 13 Name some of the agencies funding SSI.
- 14 What are the various concessions and incentives available for a SSI?
- 15 List the points to be considered with relation to building, water and electricity before a SSI is started.
- 16 List the points to be considered with relation to human resource before a SSI is started.
- 17 Name some consumer products with wide demand that can be manufactured by a SSI?
- 18 Identify the non-qualified industries that may not be given financial assistance and concessions.
- 19 What is feasibility study?
- 20 What is the importance of SSI?
- 21 List some industries identified as pollution-free industries.
- 22 List some industries identified as industries with pollution problem.

- 23 What is an industrial zone?
- 24 What is an industrial estate?
- 25 What are the facilities available in an industrial estate?
- 26 Identify the various training agencies associated with SSI.
- 27 What is applied technology?
- 28 From whom you shall get applied technology for starting a SSI?
- 29 From where you shall get repairing and testing facilities?
- 30 What are the various training agencies available for acquiring SSI training?
- 31 List the governmental agencies from whom you shall get financial assistance for a SSI.
- 32 What are the steps involved in preparing a feasibility report.
- 33 What are the factors to be considered regarding raw materials for a SSI?
- 34 Name some SSI that may not need raw materials.
- 35 Differentiate various classifications of industries.
- 36 What is a LSI?
- 37 What are the features of a SSI?
- 38 Name some products that may not need electricity for production.
- 39 What are the factors to be considered for starting a SSI?
- 40 What are the advantages of becoming an entrepreneur?
- 41 If you opt to be an entrepreneur what are the steps you would take to become a successful entrepreneur.
- 42 What are the facilities available for a new SSI in an industrial estate?
- 43 List the various government departments that would be associated with a SSI.
- 44 Why do entrepreneurs fail?
- 45 What are the types of entrepreneurs?

2. ENVIRONMENTAL MANAGEMENT

1. What is the responsibility of an Engineer-in-charge of an Industry with respect to Public Health?
2. Define Environmental Ethic.
3. How Industries play their role in polluting the environment?
4. What is the necessity of pollution control? What are all the different organizations you know, which deal with pollution control?
5. List out the different types of pollutions caused by a Chemical / Textile / Leather / Automobile / Cement factory.
6. What is meant by Hazardous waste?

7. Define Industrial waste management.
8. Differentiate between garbage, rubbish, refuse and trash based on their composition and source.
9. Explain briefly how the quantity of solid waste generated in an industry could be reduced.
10. What are the objectives of treatments of solid wastes before disposal?
11. What are the different methods of disposal of solid wastes?
12. Explain how the principle of recycling could be applied in the process of waste minimization.
13. Define the term 'Environmental Waste Audit'.
14. List and discuss the factors pertinent to the selection of landfill site.
15. Explain the purpose of daily cover in a sanitary landfill and state the minimum desirable depth of daily cover.
16. Describe any two methods of converting waste into energy.
17. What actions, a local body such as a municipality could take when the agency appointed for collecting and disposing the solid wastes fails to do the work continuously for number of days?
18. Write a note on Characteristics of hazardous waste.
19. What is the difference between municipal and industrial effluent ?
20. List few of the undesirable parameters / pollutants anticipated in the effluents from oil refinery industry / thermal power plants / textile industries / woolen mills / dye industries / electroplating industries / cement plants / leather industries (any two may be asked)
21. Explain briefly the process of Equalization and Neutralization of waste water of varying characteristics discharged from an Industry.
22. Explain briefly the Physical treatments "Sedimentation" and "Floatation" processes in the waste water treatment.
23. Explain briefly when and how chemical / biological treatments are given to the waste water.
24. List the four common advanced waste water treatment processes and the pollutants they remove.
25. Describe refractory organics and the method used to remove them from the effluent.
26. Explain biological nitrification and de-nitrification.
27. Describe the basic approaches to land treatment of Industrial Effluent.
28. Describe the locations for the ultimate disposal of sludge and the treatment steps needed prior to ultimate disposal.
29. List any five Industries, which act as the major sources for Hazardous Air Pollutants.

30. List out the names of any three hazardous air pollutants and their effects on human health.
31. Explain the influence of moisture, temperature and sunlight on the severity of air pollution effects on materials.
32. Differentiate between acute and chronic health effects from Air pollution.
33. Define the term Acid rain and explain how it occurs.
34. Discuss briefly the causes for global warming and its consequences
35. Suggest suitable Air pollution control devices for a few pollutants and sources.
36. Explain how evaporative emissions and exhaust emissions are commonly controlled.
37. What are the harmful elements present in the automobile smokes? How their presence could be controlled?
38. What is the Advantage of Ozone layer in the atmosphere? State few reasons for its destruction.
39. Explain the mechanism by which hearing damage occurs.
40. List any five effects of noise other than hearing damage.
41. Explain why impulsive noise is more dangerous than steady state noise.
42. Explain briefly the Source – Path – Receiver concept of Noise control.
43. Where silencers or mufflers are used ? Explain how they reduce the noise.
44. Describe two techniques to protect the receiver from hearing loss when design / redress for noise control fail.
45. What are the problems faced by the people residing along the side of a railway track and near to an Airport? What provisions could be made in their houses to reduce the problem?

3. DISASTER MANAGEMENT

1. What is meant by Disaster Management? What are the different stages of Disaster management?
2. Differentiate Natural Disasters and Man made Disasters with examples.
3. Describe the necessity of Risk identification and Assessment Surveys while planning a project.
4. What is Disasters recovery and what does it mean to an Industry?
5. What are the factors to be considered while planning the rebuilding works after a major disaster due to flood / cyclone / earthquake? (Any one may be asked)
6. List out the public emergency services available in the state, which could be approached for help during a natural disaster.
7. Specify the role played by an Engineer in the process of Disaster management.
8. What is the cause for Earthquakes? How they are measured? Which parts of India are more vulnerable for frequent earthquakes?

9. What was the cause for the Tsunami 2004 which inflicted heavy loss to life and property along the coast of Tamilnadu ? Specify its epicenter and magnitude.
10. Specify the Earthquake Hazard Zones in which the following towns of Tamilnadu lie: (a) Chennai (b) Nagapattinam (c) Coimbatore (d) Madurai (e) Salem.
11. Which parts of India are experiencing frequent natural calamities such as (a) heavy rain fall (b) huge losses due to floods (c) severe cyclones
12. Define basic wind speed. What will be the peak wind speed in (a) Very high damage risk zone – A, (b) High damage risk zone, (c) Low damage risk zone.
13. Specify the minimum distance from the Sea shore and minimum height above the mean sea level, desirable for the location of buildings.
14. Explain how the topography of the site plays a role in the disasters caused by floods and cyclones.
15. Explain how the shape and orientation of buildings could reduce the damages due to cyclones.
16. What is a cyclone shelter ? When and where it is provided ? What are its requirements ?
17. What Precautionary measures have to be taken by the authorities before opening a dam for discharging the excess water into a canal/river ?
18. What are the causes for fire accidents ? Specify the remedial measures to be taken in buildings to avoid fire accidents.
19. What is a fire escape in multistoried buildings ? What are its requirements ?
20. How the inmates of a multistory building are to be evacuated in the event of a fire/Chemical spill/Toxic Air Situation/ Terrorist attack, (any one may be asked).
21. Describe different fire fighting arrangements to be provided in an Industry.
22. Explain the necessity of disaster warning systems in Industries.
23. Explain how rescue operations have to be carried out in the case of collapse of buildings due to earthquake / blast / Cyclone / flood.
24. What are the necessary steps to be taken to avoid dangerous epidemics after a flood disaster?
25. What relief works that have to be carried out to save the lives of workers when the factory area is suddenly affected by a dangerous gas leak / sudden flooding ?
26. What are the difficulties faced by an Industry when there is a sudden power failure? How such a situation could be managed?
27. What are the difficulties faced by the Management when there is a group clash between the workers? How such a situation could be managed?
28. What will be the problems faced by the management of an Industry when a worker dies because of the failure of a mechanical device due to poor maintenance? How to manage such a situation ?

29. What precautionary measures have to be taken to avoid accidents to labourers in the Industry in a workshop / during handling of dangerous Chemicals / during construction of buildings / during the building maintenance works.
30. Explain the necessity of medical care facilities in an Industry / Project site.
31. Explain the necessity of proper training to the employees of Industries dealing with hazardous products, to act during disasters.
32. What type of disaster is expected in coal mines, cotton mills, Oil refineries, ship yards and gas plants?
33. What is meant by Emergency Plan Rehearsal? What are the advantages of such Rehearsals?
34. What action you will take when your employees could not reach the factory site because of continuous strike by Public Transport workers?
35. What immediate actions you will initiate when the quarters of your factory workers are suddenly flooded due to the breach in a nearby lake / dam, during heavy rain?
36. What steps you will take to avoid a break down when the workers union of your Industry have given a strike notice?
37. List out few possible crisis in an organization caused by its workers? What could be the part of the middle level officials in managing such crisis?
38. What types of warning systems are available to alert the people in the case of predicted disasters, such as floods, cyclone etc.
39. Explain the necessity of Team work in the crisis management in an Industry / Local body.
40. What factors are to be considered while fixing compensation to the workers in the case of severe accidents causing disability / death to them?
41. Explain the legal / financial problems the management has to face if safety measures taken by them are found to be inadequate.
42. Describe the importance of insurance to men and machinery of an Industry dealing with dangerous jobs.
43. What precautions have to be taken while storing explosives in a match/ fire crackers factory?
44. What are the arrangements required for emergency rescue works in the case of Atomic Power Plants?
45. Why residential quarters are not constructed nearer to Atomic Power Plants?

DIPLOMA IN COMPUTER ENGINEERING EQUIVALENT PAPERS – K SCHEME

III SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	5031	Electronics Circuits and Microprocessors	15031	Basics of Electrical and Electronics Engineering
2.	4033	C++ Programming	-----	No Equivalent
3.	5033	System Programming	15033	Operating Systems
4.	5034	Electronic Circuits and Microprocessors Lab	15034	Electrical and Electronics Engineering Lab
5.	4036	C++ Programming Lab	-----	No Equivalent
6.	5036	Software Lab	-----	No equivalent

IV SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	5041	Assembly Language Programming	15041	Computer Architecture and Assembly Language programming
2.	5042	Data Structures and Algorithms	15032	C and Data Structures
3.	5043	Computer Architecture	15041	Computer Architecture and Assembly Language programming
4.	5044	Assembly language Programming Lab	-----	No equivalent
5.	5045	Data Structures Lab	15035	C and Data Structures Lab
6.	5046	Visual Basic Programming Lab	-----	No Equivalent

V SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	5051	Networks and Administration	15051	Computer Networks and Security
2.	5052	Relational Database Management Systems	15052	Relational Database Management Systems
3.	5071	Elective Theory – I Java Programming	15043	OOPS with Java Programming
3	5072	Elective Theory – I Visual C++ Programming	-----	No equivalent
3.	5073	Elective Theory – I Computer Graphics	-----	No equivalent
4.	5054	Networks and Administration Lab	15054	Computer Networks and Security Lab
5.	5055	Relational Database Management System Lab	15055	Relational Database Management System Lab
6.	5074	Elective Practical – I Java Programming Lab	15046	Java Programming Lab
6.	5075	Elective Practical – I Visual C++ Programming Lab	-----	No equivalent
6.	5076	Elective Practical – I Computer Graphics Lab	-----	No equivalent

VI SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	5061	Computer Installation and Servicing	15061	PC Hardware and Servicing
2.	5062	Principles of Modern Communication Systems		No equivalent
3.	5081	Elective Theory – II Web Technology	15042	Internet concepts and Web Designing
3	5082	Elective Theory – II Multimedia	15082	Multimedia Systems
3.	5083	Elective Theory – II Linux programming and Administration	-----	No equivalent
4.	5064	Computer Installation and Servicing Lab	15064	PC Hardware and Servicing
5.	5084	Elective Practical – II Web Technology Lab	15045	Web Designing Lab
5.	5085	Elective Practical – II Multimedia Lab	15084	Multimedia Systems Lab
5.	5086	Elective Practical – II Linux programming and Administration Lab	-----	No equivalent
6.	5066	Project work and Entrepreneurship	15066	Project work and Entrepreneurship

DIPLOMA IN INFORMATION TECHNOLOGY

EQUIVALENT PAPERS – K SCHEME

III SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	5031	Electronics Circuits and Microprocessors	15031	Basics of Electrical and Electronics Engineering
2.	4033	C++ Programming	-----	No Equivalent
3.	5033	System Programming	15033	Operating Systems
4.	5034	Electronic Circuits and Microprocessors Lab	15034	Electrical and Electronics Engineering Lab
5.	4036	C++ Programming Lab	-----	No Equivalent
6.	5036	Software Lab	-----	No equivalent

IV SEMESTER

S.No	Subject Code J Scheme	Name of subject J scheme	Subject Code K Scheme	Name of subject K scheme
1	4641	Computer Graphics	-----	No equivalent
2.	5042	Data Structures and Algorithms	15032	C and Data Structures
3.	4643	Management Information Systems	14641	Management Information Systems
4.	4644	Computer Graphics Lab	-----	No equivalent
5.	5045	Data Structures Lab	15035	C and Data Structures Lab
6.	5046	Visual Basic Programming Lab	-----	No Equivalent

V SEMESTER

S.No	Subject Code	Name of subject	Subject Code	Name of subject
	J Scheme	J scheme	K Scheme	K scheme
1	5071	Java Programming	15043	OOPS with Java Programming
2.	5052	Relational Database Management Systems	15052	Relational Database Management Systems
3.	5083	Elective Theory – I Linux programming and Administration	-----	No equivalent
3	5072	Elective Theory – I Visual C++ Programming	-----	No equivalent
3.	5082	Elective Theory – I Multimedia	15082	Multimedia Systems
4.	5074	Java Programming	15046	Java Programming Lab
5.	5055	Relational Database Management System Lab	15055	Relational Database Management System Lab
6.	5086	Elective Practical – I Linux programming and Administration Lab	-----	No equivalent
6.	5075	Elective Practical – I Visual C++ Programming Lab	-----	No equivalent
6.	5085	Elective Practical – I Multimedia Lab	15084	Multimedia Systems Lab

VI SEMESTER

S.No	Subject Code	Name of subject	Subject Code	Name of subject
	J Scheme	J scheme	K Scheme	K scheme
1	5081	Web Technology	15042	Internet concepts and Web Designing
2.	4662	Networks and Administration	15051	Computer Networks and Security
3.	4681	Elective Theory – II System Analysis and Design	. -----	No equivalent
3	5062	Elective Theory – II Principles of Modern Communication Systems	-----	No equivalent
3.	4683	Elective Theory – II Principles of Programming Languages	-----	No equivalent
4.	5084	Web Technology Lab	15045	Web Designing Lab
5.	5054	Networks and Administration Lab	15054.	Computer Networks and Security Lab
6.	5066	Project work and Entrepreneurship	14666	Project work and Entrepreneurship