



## SCHEME FOR FOURTH SEMESTER (COMPUTER ENGINEERING)

Sr. No.	Subject	Study Scheme			EVALUATION SCHEME						Total Marks
					INTERNAL ASSESSMENT		EXTERNAL ASSESMENT (EXAMINATION)				
		Hrs/Week L T P	Theory	Practical	Written Paper		Practical				
			Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.			
4.1	Data Structure Using C	3	--	6	25	25	100	3	50	3	200
4.2	Computer Organization	4	-	-	25	25	100	3	-	-	125
4.3	Data Base Management System	3	-	3	25	25	100	3	50	3	200
4.4	Object Oriented Programming Using C	3	-	6	25	25	100	3	50	3	200
4.5*	Microprocessor and Peripheral devices	4	-	3	25	25	100	3	50	3	200
# Student Centred Activities		-	-	-	-	25	-	-	-	-	25
<b>Total</b>		<b>17</b>	<b>-</b>	<b>23</b>	<b>125</b>	<b>125</b>	<b>500</b>	<b>-</b>	<b>200</b>	<b>-</b>	<b>950</b>

\*Common with diploma programme in Electronics and Communication Engineering

# Student Centred Activities will comprise of co-curricular activities like extension lectures, library studies, games, hobby clubs e.g. photography, painting, singing, seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, Civil Defence/Disaster Management activities etc.

**Industrial Training** - After examination of 4th Semester, the students shall go for training in a relevant industry/field organization for a minimum period of one month and shall prepare a diary. It shall be evaluated during 5th semester by his/her teacher for 50 marks. The students shall also prepare a report at the end of training and shall present it in a seminar, which will be evaluated for another 50 marks. This evaluation will be done by HOD and lecturer incharge – training in the presence of one representative from training organization.



**PM**  
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## SYLLABUS: Polytechnic (CSE)

Department: Computer Science & Engineering – 4<sup>th</sup> Semester

Subject: Data Structure Using 'C' (Theory)

Subject Code: 120842

### DETAILED CONTENTS

#### **Unit No.1 Fundamental Notations**

- Topic No.1: Problem solving concept, top down and bottom up design, structured programming
- Topic No.2: Concept of data types, variables and constants
- Topic No.3: Concept of pointer variables and constants
- Topic No.4: Introduction to data Structure (Linear, Non Linear, Primitive, Non Primitive)
- Topic No.5: Concepts of Data Structure (Array, Linked List, Stack, Queue, Trees, graphs)

#### **Unit No.2 Arrays**

- Topic No.6: Concept of Arrays
- Topic No.7: Single dimensional array
- Topic No.8: Two dimensional array: Representation of Two dimensional Array (Base Address, LB, UB) LB, UB)
- Topic No.9: Operations on arrays with Algorithms

#### **Unit No.3 Linked Lists**

- Topic No.10: Introduction to linked list and double linked list
- Topic No.11: Representation of linked lists in Memory
- Topic No.12: Traversing a linked list
- Topic No.13: Searching linked list
- Topic No.14: Insertion and deletion into linked list (At first Node, Specified Position, Last node)
- Topic No.15: Application of linked lists
- Topic No.16: Doubly linked lists
- Topic No.17: Traversing a doubly linked lists
- Topic No.18: Insertion and deletion into doubly linked lists

#### **Unit No.4 Stacks, Queues and Recursion**

- Topic No.19: Introduction to stacks
- Topic No.20: Representation of stacks with array and Linked List
- Topic No.21: Implementation of stacks
- Topic No.22: Application of stacks
- Topic No.23: Recursion: Concept and Comparison between recursion and Iteration
- Topic No.24: Introduction to queues
- Topic No.25: Implementation of queues
- Topic No.26: Circular Queues
- Topic No.27: De-queues

#### **Unit No.5 Trees: Introduction**

- Topic No.28: Concept of Binary Trees
- Topic No.29: Concept of representation of Binary Tree
- Topic No.30: Concept of balanced Binary Tree
- Topic No.31: Traversing Binary Trees
- Topic No.32: Searching, inserting and deleting in binary search trees

#### **Unit No.6 Sorting and Searching**

- Topic No.33: Introduction
- Topic No.34: Search algorithm (Linear and Binary)
- Topic No.35: Concept of sorting
- Topic No.36: Sorting algorithms
- Topic No.37: Bubble Sort
- Topic No.38: Insertion Sort,
- Topic No.39: Selection Sort
- Topic No.40: Merge Sort,
- Topic No.41: Radix Sort



## Topic No.42: Heap Sort

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	125

### TEXT BOOKS:

1. Data structures using 'c' SHAFALI AGARWAL, sun india's
2. Data structures using 'c' manoj kumar Eagle's
3. Data structures using 'c' Gupta & Gupta, NORTH

### REFERENCE BOOKS:

1. Data structures using 'c' SHAFALI AGARWAL, sun india's
2. Lets'c' Yashknitkar

### SUGGESTED DISTRIBUTION OF MARKS FOR FACILITATING THE PAPERSETTER

Topic No.	Time Allotted (in hrs)	Marks Allotted (%)
1	4	8
2	8	16
3	8	16
4	10	22
5	10	22
6	8	16
<b>Total</b>	<b>48</b>	<b>100</b>



**Subject: Data Structure Using 'C' (Practical)**

**Subject Code: 120842(P)**

## LIST OF PRACTICLES

Write Programmers' in C to implement

1. The addition of two matrices using functions
2. Inserting and deleting elements in array
3. Push and pop operation in stack
4. Conversion from in-fix notation
5. The factorial of a given number using recursion
6. Insertion and Deletion of elements in queue using pointers
7. Insertion and Deletion of elements in circular queue using pointers
8. Insertion and Deletion of elements in linked list
9. Insertion and Deletion of elements in doubly linked list
10. The linear search procedures to search an element in given list
11. The binary search procedures to search an element in a given list
12. The bubble sort techniques
13. The selection sort techniques

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks		Hrs
-	-	6	25	-	-	-	50	3	75



**Subject: Computer Organization (Theory)**

**Subject Code: 120845**

## DETAILED CONTENTS

### Unit No.1 Hardware organization of computer system

- Topic No.1: CPU organization
- Topic No.2: General register organization
- Topic No.3: stack organization
- Topic No.4: Instruction formats
- Topic No.5: Addressing modes
- Topic No.6: Immediate, register, direct, indirect, relative, indexed
- Topic No.7: CPU Design: Micro programmed vs. hard wired control
- Topic No.8: Reduced instruction set computers
- Topic No.9: CISC characteristics, RISC characteristics and their comparison

### Unit No.2 Memory organization

- Topic No.10: Memory Hierarchy
- Topic No.11: RAM and ROM chips
- Topic No.12: Memory address map, Memory connections to CPU.
- Topic No.13: Auxiliary memory: Magnetic disks and magnetic tapes.
- Topic No.14: Associative memory
- Topic No.15: Cache memory
- Topic No.16: Virtual memory
- Topic No.17: Memory management hardware

### Unit No.3 I/O organization

- Topic No.18: Basis Input output system (BIOS)
- Topic No.19: Function of BIOS
- Topic No.20: Testing and initialization
- Topic No.21: Configuring the system
- Topic No.22: Programmed I/O: Synchronous, asynchronous and interrupt initiated.
- Topic No.23: DMA data transfer

### Unit No.4 Architecture of multi processor systems

- Topic No.24: Forms of parallel processing
- Topic No.25: Parallel processing and pipelines
- Topic No.26: Basic characteristics of multiprocessor
- Topic No.27: General Purpose multiprocessors
- Topic No.28: Interconnection networks
- Topic No.29: Time shared common bus, multi port memory
- Topic No.30: Cross bar switch
- Topic No.31: Multi stage switching networks and hyper cube structures.

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L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	3	125



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## TEXT BOOKS:

1. Computer System Architecture by M. Mano, Prentice-Hall.
2. Structured Computer Organisation by A.S. Tanenbaum, 6th edition, Prentice-Hall of India, Eastern Economic Edition

## REFERENCE BOOKS:

1. Computer Organization, 5th Ed, by Carl Hamacher, Zvonko Vranesic, 2002, SafwatZaky.
2. Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.
2. Computer Architecture and Organization, 3rd Ed, by John P. Hayes, 1998, TMH

## INSTRUCTIONAL STRATEGY

Since the subject is theoretical one, the practical aspects should be taught along with the theory instruction. The students be given quiz tests and asked to give seminars on small topics. There is sufficient time in the subject and the students can be taken to laboratory for demonstration.

## SUGGESTED DISTRIBUTION OF MARS FOR FACILITATING THE PAPERSETTER

Topic No.	Time Allotted (in hrs)	Marks Allotted (%)
1	20	32
2	18	28
3	12	20
4	14	20
<b>Total</b>	<b>64</b>	<b>100</b>





## Detailed Contents

### **Unit No.1 Introduction**

- Topic No.1: Database Systems
- Topic No.2: Introduction to Database and its purpose
- Topic No.3: Why Database
- Topic No.4: History of Database System
- Topic No.5: Characteristics of the database approach
- Topic No.6: Advantages and disadvantages of database systems
- Topic No.7: Introduction to Conventional File System
- Topic No.8: Concept of files, record, data, information retrieval.
- Topic No.9: Comparison between Conventional System and Database System
- Topic No.10: Classification of DBMS Users
- Topic No.11: Actors on the scene
- Topic No.12: Database Administrators, Database Designers
- Topic No.13: End Users, System Analysts and Application Programmers
- Topic No.14: Workers behind the scene

### **Unit No.2 Database System Concepts and Architecture**

- Topic No.15: Data models:
- Topic No.16: Schemas, sub schemas, instances
- Topic No.17: data base state
- Topic No.18: Case Study of models and schemas (examples student information System
- Topic No.19: DBMS Architecture: Three Level of Architectures, Mappings
- Topic No.20: Data base Administrator and Administration
- Topic No.21: Database Management System Advantage and Disadvantage
- Topic No.22: Classification of DBMS, DBMS Interfaces
- Topic No.23: Concept of centralized and Client /Server Architecture for DBMS: Single Tier, Two Tier, Three Tier
- Topic No.24: Data Independence: Logical data Independence, Physical data Independence
- Topic No.25: Database Languages and Interfaces: DBMS Language, DBMS Interfaces
- Topic No.26: Classification of Database Management Systems: Centralized, Distributed, Parallel & Object based

### **Unit No.3 Data Modeling using E.R. Model (Entity Relationship Model)**

- Topic No.27: Data Models Classification: File based or primitive models, Traditional data models, Semantic data models
- Topic No.28: Entities and Attributes
- Topic No.29: Entity types and Entity sets
- Topic No.30: Key attribute and domain of attributes
- Topic No.31: Relationship among entities
- Topic No.32: Database design with E/R model
- Topic No.33: ER Design Issues
- Topic No.34: Mapping Constraints

### **Unit No.4 Relational Model**

- Topic No.35: Domain, Attributes,
- Topic No.36: Tuples
- Topic No.37: Cardinality Keys (Primary, Secondary, foreign, Alternative Keys etc)
- Topic No.38: Relations

### **Unit No.5 Structured Query Language Data definition language: Create, Alter, Drop commands]**

- Topic No.39: Data Manipulation Language (DML)
- Topic No.40: Select command with where clause using conditional Expressions and Boolean operators, group by Clause, like operator
- Topic No.41: Insert, Update and Delete commands



STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	125

#### TEXT BOOKS:

1. Database system concepts by Abraham Silberschatz, Henry F.Kroth and S. Sudharshan; McGraw Hill Publishers, 5th Edition.
2. Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley

#### REFERENCE BOOKS:

1. An introduction to database systems by Date C.J. Adison Wesley
2. SQL Unleashed by Hans Ladanyi Techmedia Publications, New Delhi
3. Database Management Systems by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi

#### INSTRUCTIONAL STRATEGY

Explanation of concepts using real time examples, diagrams etc. For practical sessions books along with CDs or learning materials with specified activities are required. Various exercises and small applications should be given along with theoretical explanation of concepts.

#### SUGGESTED DISTRIBUTION OF MARS FOR FACILITATING THE PAPERSETTER

Topic No.	Time Allotted (in hrs)	Marks Allotted (%)
1	8	16
2	12	26
3	12	26
4	6	12
5	10	20
<b>Total</b>	<b>48</b>	<b>100</b>





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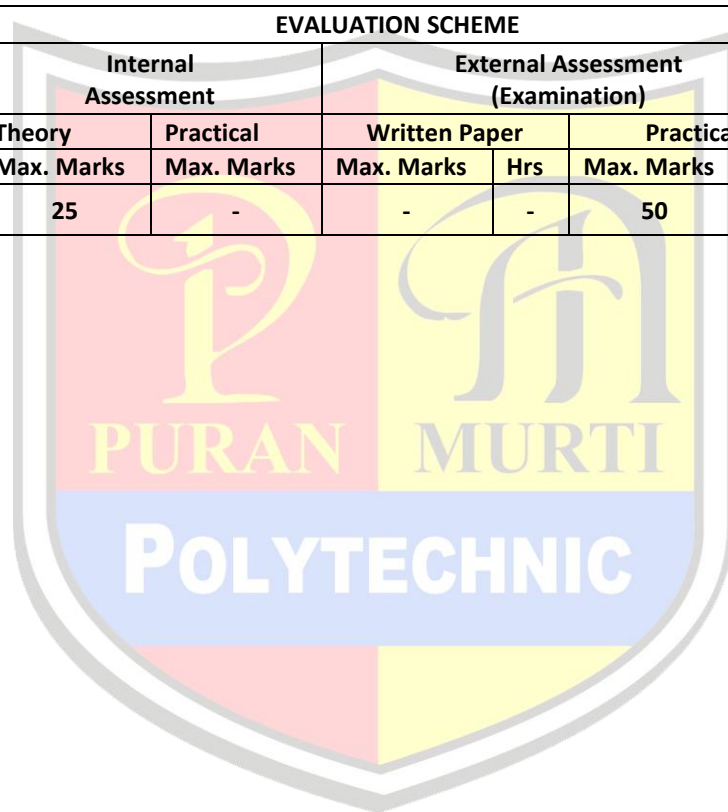
**Subject: Database Management System (Practical)**

**Subject Code: 120843(P)**

## LIST OF PRACTICALS

1. Overview, Features and functionality, Application development in MS-Access
2. Exercises on different forms of select statement, altering and dropping of tables
3. Exercises on creation of tables
4. Exercises on insertion of data into tables
5. Exercises on deletion of data using different conditions
6. Exercises on UPDATE statement

STUDY SCHEME		EVALUATION SCHEME								Total Marks
		Internal Assessment			External Assessment (Examination)					
Hrs/week			Theory	Practical	Written Paper		Practical		Total Marks	
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs		
-	-	6	25	-	-	-	50	3	75	





## Detailed Contents

### Unit No.1 Introduction and Features

- Topic No.1: Fundamentals of object oriented programming –procedure oriented programming vs. object oriented Programming
- Topic No.2: Classes, reusability, encapsulation, inheritance, polymorphism, dynamic binding, message passing
- Topic No.3: Benefits of OOPs and its Application

### Unit No.2 Language Constructs

- Topic No.4: Review of constructs of C used in C++: variables, types and type declarations, user defined data types
- Topic No.5: increment and decrement operators, relational and logical operators
- Topic No.6: if then else clause; conditional expressions, input and output statement, loops, switch case
- Topic No.7: arrays, structure, unions, functions, pointers
- Topic No.8: preprocessor directives and Header Files, Scope Resolution Operator Managing Console I/O Operations

### Unit No.3 Classes and Objects

- Topic No.9: Creation, accessing class members, Private Vs Public
- Topic No.10: Constructor and Destructor with and without Arguments
- Topic No.11: Objects Dynamic memory Allocation with new and Delete Operator

### Unit No.4 Member Functions

- Topic No.12: Method definition, Inline Implementation
- Topic No.13: Constant member functions, Static Function, This Pointer
- Topic No.14: Friend Function and its Characteristics

### Unit No. 5 Overloading Member Functions

- Topic No.15: Need of operator overloading, prefix and postfix, overloading binary operators
- Topic No.16: in stream/out stream operator overloading, Constructor Overloading
- Topic No.17: Type Conversion, Rules of Operator Overloading
- Topic No.18: Comparison between Function Overloading and overriding

### Unit No. 6 Inheritance

- Topic No.19: Definition of inheritance, Types of inheritance, Single inheritance, hierarchical inheritance
- Topic No.20: Multiple inheritances, hybrid inheritance, protected data, private data, public data
- Topic No.21: Inheriting constructors and destructors
- Topic Np.22: constructor for virtual base classes, constructors and destructors of derived classes
- Topic No.23: virtual functions, size of a derived class, order of invocation

### Unit No. 7 Polymorphism and Virtual Functions

- Topic No.24: Importance of virtual function, function call binding
- Topic No.25: virtual functions, implementing late binding
- Topic No.26: need for virtual functions, abstract base classes and pure virtual functions
- Topic No.27: virtual destructors

### Unit No. 8 File and Streams

- Topic No. 28: Components of a file, different operation of the file
- Topic No. 29: communication in files, creation of file streams, stream classes
- Topic No. 30: opening and closing a file, file modes and file pointers and their manipulations
- Topic No. 31: functions manipulation of file pointers, detecting end-of- file

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	



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#### TEXT BOOKS:

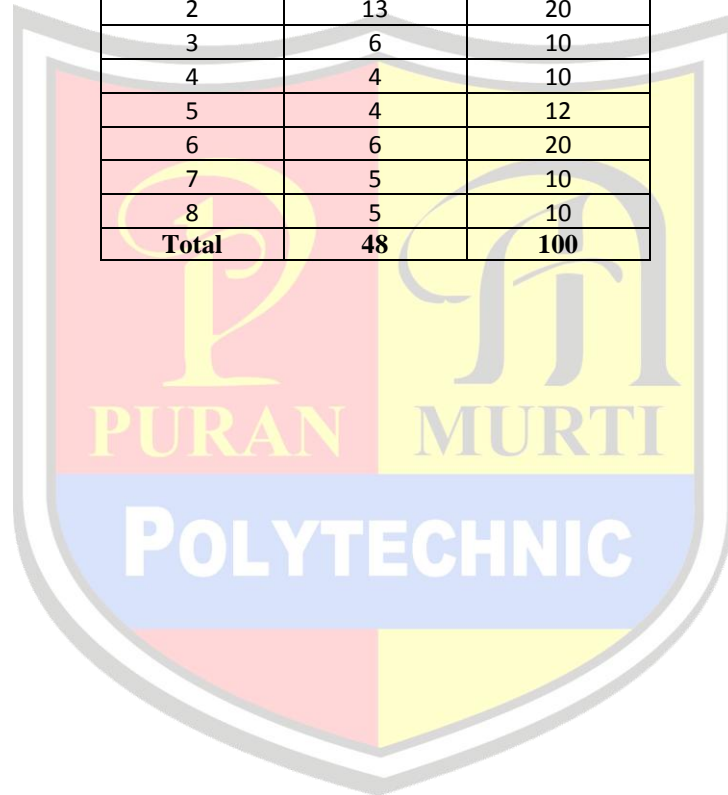
1. C++: An introduction to programming by Jense Liberty Tim Keogh: BPB Publications, New Delhi
2. OO Programming in C++ by Robert Lafore: , Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi

#### REFERENCE BOOKS:

1. Object Oriented Programming Using C++, Sanjeev Sofat, Cyber Tech. Publication, New Delhi
2. Object Oriented Programming in C++ by E. Balaguruswamy, TMH Publishing Co. Ltd., New Delhi
3. C++ Primer by Stephen Parata , TMH Publishing Co. Ltd., New Delhi

#### SUGGESTED DISTRIBUTION OF MARS FOR FACILITATING THE PAPERSETTER

Topic No.	Time Allotted (in hrs)	Marks Allotted (%)
1	5	8
2	13	20
3	6	10
4	4	10
5	4	12
6	6	20
7	5	10
8	5	10
<b>Total</b>	<b>48</b>	<b>100</b>





## LIST OF PRACTICALS

1. Write a function using variables as arguments to swap the values of a pair of integers
2. Consider a shopping list of items for which we place an order with a dealer every month. The list includes such as the code number and price of each item .we would like to perform operations such as adding an item to the list, deleting an item from the list and printing the total value of the order.
3. Write a program to read name, roll no, internal external marks using classes and display the same on the screen.
4. Write a program of swapping of numbers by accessing private numbers using friend function.
5. Define a class to represent a bank account using constructor including the following members: -  
Data members i) For Single Customer ii) For n Customers
  - a) Name of the depositors
  - b) Account number
  - c) Type of account
  - d) Balance amount in the accountMember function
  - To assign initial values
  - To deposit an amount
  - To withdraw an amount after checking the balance
  - To display the name and balance.
6. Create 2 classes OM and DB which store the value of distance. DM store distances in Meters and cm and DB in feet and inches. Write a program that can read values for the class objects and add 1 object OM with another object of DB. Use a friend function to carry out the addition operation the object that stores the results may be a DM object or a DB object, depending upon the units in which the results are required. The display should be in the format of feet and inches or meters and cms depending on the object on display.
7. A book shop maintains the inventory of books that are being sold at the shop the list includes details such as author, title and publisher and stock position. Whenever a customer wants the book, the sales person inputs the title and author and the system search the list and display whether it is available or not. If it is not, a appropriate message is displayed, if it is, then the system displays the book details and requests for the number of copies require. If the requested are available, the total cost of the required copies is displayed: otherwise the message" A required copy not in stock "is displayed. Design a system using a class called books with suitable member functions and constructors. Use new operator in constructor to allocate memory space requires.
8. Define a class string that could work as a user defined string type include constructors that will enable us to create an .un-initialized string  
String s1; / string with length 0 And also to initialize an object with string constant at the time of creation like String s2("well done"); . Include a function that adds two strings to make a third string.
9. Create a class float that contains 2 float data member. Over load all the 4 arithmetic operators so that do operate on the objects of float.
10. Programming Exercise on Hybrid Inheritance
11. Define 2 classes POLAR and RECTANGLE to represent points in the POLAR and RECTANGLE systems. Use conversion routines to convert from one system to the other.
12. Create a base class called shape. use this class to store two double type values that could be used to compute the area of fig. Derive the specific class called TRIANGLE and RECTANGLE from the data shape. Add to base class, a member function get - data ( ) to initialize base class data members and another member and another member function display – area ( ) to compute and display the area of the fig.. Make display – area ( ) as a virtual function and redefine function in the derived classes to suit their requirements, Using these 3 classes design a program that will accept dimension of RECTANGLE or TRIANGLE interactivity and display the area.  
Remember the 2 values given as input will be treated as length of 2 sides in the case of rectangle and as base and height in the case of triangles and used as follows: Area of rectangle = x\*y & Area of triangle = 1/2 \*x\*y
13. Exercise on file handling



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Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	6	-	25	-	-	50	3	75







# PM

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**Subject: Microprocessor and Peripheral Devices (Theory)**

**Subject Code: 121045**

## Detailed Contents

### **Unit No.1 Evolution of Microprocessor**

- Topic no. 1: Typical organization of a microcomputer system and functions of its various blocks.
- Topic no. 2: Microprocessor
- Topic no. 3: Evolution of microprocessor
- Topic no. 4: function and impact on modern society

### **Unit No.2 Architecture of a Microprocessor (With reference to 8085 microprocessor)**

- Topic no. 5: Functional block diagram of 8085 and function of each block
- Topic no. 6: Concept of Bus and bus organization of 8085
- Topic no. 7: Pin details of 8085 and related signals
- Topic no. 8: Demultiplexing of address/data bus
- Topic no. 9: Generation of read/write control signals
- Topic no. 10: Steps to execute a stored programme

### **Unit No.3 Instruction Timing and Cycles**

- Topic no. 11 Instruction cycle
- Topic no. 12: Machine cycle and T-states
- Topic no. 13: Fetch and execute cycle

### **Unit No.4 Programming (with respect to 8085 microprocessor)**

- Topic no. 14: Brief idea of machine and assembly languages
- Topic no. 15: Machines and Mnemonic codes.
- Topic no. 16: Instruction format and addressing mode.
- Topic no. 17: Identification of instructions as to which addressing mode they belong.
- Topic no. 18: Concept of Instruction set.
- Topic no. 19: Explanation of the instructions of the following groups of instruction set. Data transfer group, Arithmetic Group, Logic Group, Stack, I/O and Machine Control Group
- Topic no. 20: Programming exercises in assembly language.

### **Unit No.5 Memories and I/O interfacing**

- Topic no. 21: Concept of memory mapping
- Topic no. 22: Partitioning of total memory space
- Topic no. 23: Address decoding
- Topic no. 24: Concept of peripheral mapped I/O and memory mapped I/O.
- Topic no. 25: Interfacing of memory mapped I/O devices

### **Unit No.6 Interrupts**

- Topic no. 26: Concept of interrupt,
- Topic no. 27: Maskable and non-maskable
- Topic no. 28: Edge triggered and level triggered interrupts
- Topic no. 29: Software interrupts
- Topic no. 30: Restart interrupts and its use,
- Topic no. 31: Various hardware interrupts of 8085
- Topic no. 32: Servicing interrupts
- Topic no. 33: Extending interrupt system

### **Unit No.7 Data Transfer Techniques**

- Topic no. 34: Concept of programmed I/O operations
- Topic no. 35: Sync data transfer
- Topic no. 36: Async data transfer
- Topic no. 37: Interrupt driven data transfer DMA
- Topic no. 38: Serial output data
- Topic no. 39: Serial input data



### Unit No.8 Peripheral devices

- Topic no. 40: 8255 PPI  
Topic no. 41:8253 PIT,  
Topic no. 42: 8257 / 8237 DMA controller,  
Topic no. 43: 8279 Programmable KB/Display interface,  
Topic no. 44: 8251 Communication Interface Adapter

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	-	

### TEXT BOOKS:

1. Microprocessor Architecture, Programming and Applications with 8080/8085 by Ramesh S Gaonker, Willey Easter Ltd. New Delhi
2. Introduction to Microprocessor by Mathur ,Tata McGraw Hill Education Pvt Ltd , New Delhi

### REFERENCE BOOKS:

1. Microprocessor and Microcontrollers by Dr BP Singh, Galgotia Publications, New Delhi
2. Microprocessor and Applications by Badri Ram: Tata McGraw Hill Education Pvt Ltd ,New Delhi
3. Microprocessor and Microcomputers by Refiquzzaman, Prentice Hall of India Ltd., New Delhi.
4. Microprocessor programming & applications.by sudhir Goyal, North Publication.97
5. Digital Logic and Computer Design by Mano, M Morris; Prentice Hall of India, New Delhi
6. Digital Electronics by Rajaraman; Prentice Hall of India Ltd., New D

### INSTRUCTIONAL STRATEGY

The digital systems in microprocessors have significant importance in the area of electronics. Adequate competency needs to be developed by giving sufficient practical knowledge in microprocessors (programming as well as interfacing). Help may be taken in the form of charts, simulation packages to develop clear concepts of the subject. Programming exercises other than the given in the list may be given to the students.

### SUGGESTED DISTRIBUTION OF MARS FOR FACILITATING THE PAPERSETTER

Topic No.	Time Allotted (in hrs)	Marks Allotted (%)
1	4	5
2	12	20
3	8	10
4	16	25
5	10	15
6	4	5
7	4	5
8	6	15
<b>Total</b>	<b>64</b>	<b>100</b>



# PM POLYTECHNIC

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to State Board of Technical Education, Panchkula, Haryana

**Subject: Microprocessor and Peripheral Devices (Practical)**

**Subject Code: 121045(P)**

## LIST OF PRACTICALS

1. Familiarization of different keys of 8085 microprocessor kit and its memory map
2. Steps to enter, modify data/program and to execute a programme on 8085 kit
3. Writing and execution of ALP for addition and subtraction of two 8 bit numbers
4. Writing and execution of ALP for multiplication and division of two 8 bit numbers
5. Writing and execution of ALP for arranging 10 numbers in ascending/descending order
6. Writing and execution of ALP for 0 to 9 BCD counters (up/down counter according to choice stored in memory)
7. Interfacing exercise on 8255 like LED display control
8. Interfacing exercise on 8253 programmable interval timer
9. Interfacing exercise on 8279 programmable KB/display interface like to display the hex code of key pressed on display
10. Use of 8085 emulator for hardware testing

STUDY SCHEME		EVALUATION SCHEME						Total Marks	
		Internal Assessment		External Assessment (Examination)					
Hrs/week			Theory	Practical	Written Paper		Practical	75	
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks		Hrs
-	-	2	25	-	-	-	50		3