HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

COIMBATORE - 641 028

B.Sc COMPUTER TECHNOLOGY

SCHEME OF EXAMINATIONS – CBCS PATTERN

CODE NO.	SUBJECT	LECTURE HRS/ WEEK	EXAM DURATION (HRS)	MAX.MARKS			CREDIT POINTS
				IE	EE	TOTAL	
First Semester							
	Part - I						
16LAT01 / 16LAH01 / 16LAM01/ 16LAF01	Tamil / Hindi / Malayalam / French - I	6	3	25	75	100	3
	Part - II						
16ENG01	English - I	6	3	25	75	100	3
	Part - III						
16CTU01	Computer Organization and Architecture	5	3	25	75	100	4
16CTU02	Programming with C	5	3	25	75	100	4
16CTU03	Practical I: Programming Lab - C	4	3	40	60	100	3
16CTU04	Practical II: Office Automation Lab	4	3	40	60	100	3
Second Semester							
	Part - I						
18LAT02 / 18LAH02 / 18LAM02 / 18LAF02	Tamil / Hindi / Malayalam / French - II	6	3	25	75	100	3
	Part - II						
16ENG02	English - II	6	3	25	75	100	3
	Part - III						
18CTU05	Data Structures	4	3	25	75	100	3

18CTU06	Programming with C++	4	3	25	75	100	3
16CTU07	Practical III : Programming Lab - C++	3	3	40	60	100	3
18CTU08	**Allied :** Numerical Methods (MAT)	5	3	25	75	100	3
	Part - IV						
16GSU01	Value Education - Human Rights	2	-	100	-	100	2
Third Semester							
	Part - III						
16CTU09	Principles of Compiler Design	5	3	25	75	100	4
16CTU10	Java Programming	5	3	25	75	100	4
16CTU11	Operating System - Unix	5	3	25	75	100	4
16CTU12	Practical IV: Programming Lab - Java	5	3	40	60	100	3
16CTU13	Practical V: Programming Lab - Unix	3	3	40	60	100	3
16CTU14	**Allied :** Mathematical Structures (MAT)	5	3	25	75	100	3
	Part - IV						
16GSU02	Environmental Studies	2	-	100	-	100	2
Fourth Semester							
	Part - III						
18CTU15	Visual Basic Programming	6	3	25	75	100	5
18CTU16	Data Communication and Networks	6	3	25	75	100	5
18CTU17	Microprocessor and ALP	6	3	25	75	100	5
18CTU18	Practical VI: Programming Lab - Visual Basic	5	3	40	60	100	3
16CTU19	**Allied :** Business Accounting (COM)	5	3	25	75	100	3
	Part - IV						
16GSU03	**Skill Based:** Internet Security	2	-	100	-	100	2
	Part - V						
16GSU04	Extension Activity		-	100	-	100	2
Fifth Semester							
	Part - III						
16CTU20	Relational Database Management Systems	5	3	25	75	100	4
16CTU21	Programming with PHP	6	3	25	75	100	5
16CTU22	Practical VII: Oracle Lab	5	3	40	60	100	3
16CTU23	Practical VIII: Programming Lab - PHP	5	3	40	60	100	3
16CTU24	Practical IX: HTML Lab	3	3	40	60	100	3
16CTU25	**Elective - I** (a) Computer Installation and Services (OR) (b) Artificial Intelligence and Expert Systems	6	3	25	75	100	4
	Part - IV						
16GSU05	**Non - Major Elective:** General Awareness		-	100	-	100	2
	Part - V						
16GSU06	Law of Ethics	-		100		100	2

Sixth Semester							
	Part - III						
18CTU26	Software Testing	6	3	25	75	100	5
18CTU27	Open Source Tools	6	3	25	75	100	5
18CTU28	Practical X: Software Testing & Advanced Networks Lab	6	3	40	60	100	5
18CTU29	Practical XI: Open Source Lab	6	3	40	60	100	5
16CTU30	**Elective – II** (a) Cloud Computing (OR) (b) Digital Image Processing	6	3	25	75	100	4
16CTU31	Project Work		-	40	60	100	4
							142

REGULATIONS

Components for Evaluation:

1. **Internal Examination Marks (For Part III theory papers)**

Components	Marks
Test –I & II (Best of Two)	10
Model Exam	10
Assignment	5
Total	------- **25** ======

QUESTION PAPER PATTERN FOR I.E TEST I and II
(2 HOURS TEST) **MAXIMUM: 50 Marks**

SECTION - A (20 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (10 x 2 = 20 marks)
Short answers 10

SECTION - B (10 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (2 x 5 = 10 marks)
Either or Type

SECTION - C (20 Marks)
Answer any **TWO** Questions out of **THREE** questions
ALL Questions Carry **EQUAL** Marks (2 x 10 = 20 marks)

QUESTION PAPER PATTERN FOR IE Model Examination

(3 HOURS TEST) **MAXIMUM: 75 Marks**

SECTION - A (20 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (10 x 2 = 20 marks)
TWO questions from each unit

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25 marks)

Either or Type.
ONE question from each unit with internal choice

SECTION - C (30 Marks)
Answer any **THREE** Questions out of **FIVE** questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30 marks)
ONE question from each unit

2 a) Components for Practical I.E.

Components	**Marks**
Test –I	20
Test – II	20
Total	40

2 b) Components for Practical E.E.

Components	**Marks**
Completion of Experiments	50
Record	5
Viva	5
Total	60

3. Institutional/ Industrial Training, Mini Project and Major Project Work

Institutional /Industrial Training		**Mini Project**	**MajorProject Work**	
Components	**Marks**	**Marks**	**Components**	**Marks**
I.E Work Diary Report Viva –voce Examination	 25 50 25	 - 50 50	**I. E** a) Attendance 10 Marks b) Review / Work Diary*[1] 30 Marks	40

Total	**100** ====	**100** ====	**E.E*2** a) Final Report 40 Marks b) Viva-voce 20 Marks	60
			Total	**100** ====

*1 Review is for Individual Project and Work Diary is for Group Projects (group consisting of minimum 3 and maximum 5)

*2Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

4. Components for Value Education (Part IV):

S.No.	Components	Marks
a)	Attendance 96% and above - 30 marks 91% to 95% - 25 marks 86% to 90% - 20 marks 76% to 85% - 10 marks	30 marks
b)	Participation in group activity	30 marks
c)	Assignment (2 x 10)	20 marks
d)	Test (1 hr for 20 marks) 2 out of three questions, 10 marks each	20 marks
	Total	**100 marks**

On completion of the above components students will be remarked as follows:

Range of marks	Equivalent remarks
80 and above	Exemplary
70 – 79	Very good
60 – 69	Good
50 – 59	Fair
40 – 49	Satisfactory
Below 39	Not Satisfactory = Not completed

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent semesters.

5. Guidelines for Environmental Studies(Part IV)

- The paper Environmental Studies is to be treated as 100% IE course which is offered in III Semester for II year UG students.
- The classes will be handled for two hours per week till the end of the Semester. At least one field trip should be arranged.
- Total Marks for the subject = 100

Components	Marks
Two Tests (2 x 30)	60
Field visit and report (10 + 10)	20
Two assignments (2 x 10)	20
Total	**100**

The question paper pattern is as follows:

Test I – 2 hours [3 out of 5 essay type questions] 3 x 10 = 30 Marks

Test II – 2 hours [3 out of 5 essay type questions] 3 x 10 = 30 Marks

Total 60 Marks

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent semesters.

6. Guidelines for Skill based subject - Internet Security (Part IV)

Components	Marks
Two Tests (2 x 40)	80
Two assignments (2 x 10)	20
Total	**100**

The question paper pattern is as follows:

a) Test I – 2 hours [4 out of 7 essay type questions] 4 x 10 = 40Marks

b) Test II – 2 hours [4 out of 7 essay type questions] 4 x 10 = 40 Marks

Total 80 Marks

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent semesters

7. Guidelines for General Awareness(Part IV)

Components	Marks
Two Tests (2 x 50)	100

The question paper pattern is as follows:

Test I – 2 hours [50multiple choice questions] 50 x 1 = 50Marks
Test II – 2 hours [50 multiple choice questions] 50 x 1 = 50 Marks

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Total 100 Marks

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent semesters

8. Guidelines for Law of Ethics(Part V)

Components	Marks
Two Tests (2 x 50)	100

The question paper pattern is as follows:

a) Test I – 2 hours [5 out of 8 essay type questions] 5 x 10 = 50Marks
b) Test II – 2 hours [5 out of 8 essay type questions] 5 x 10 = 50 Marks

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Total 100 Marks

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent semesters

9. Guidelines for Extension Activity(Part V)

- Atleast two activities should be conducted within this semester (IV) consisting of two days each.
- The activities may be Educating Rural Children, Unemployed Graduates, Self Help Group etc.

The marks may be awarded as follows

No of Activities	Marks
2 x 50 (Each Activity for two days)	100

10.QUESTION PAPER PATTERN FOR EE (Part III Theory Papers)
(3 HOURS TEST) **MAXIMUM: 75 Marks**

SECTION - A (20 Marks)
Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (10 x 2 =20 marks)

TWO questions from each unit

SECTION- B (25 Marks)
Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 5 = 25 marks)

Either or Type.

ONE question from each unit with internal choice

SECTION - C (30 Marks)
Answer any **THREE** Questions out of **FIVE** questions

ALL Questions Carry **EQUAL** Marks (3 x 10 =30 marks)

ONE question from each unit

For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU05	DATA STRUCTURES	II
Objective:	This subject provides a practical application using different tools and techniques in Data structure and algorithms.	
Course Outcome	By the end of the course student will understand : • To improve the logical ability. • To design and implementation of various basic advanced data structures. • To handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures	
Unit No.	**Topics**	**Hours**
Unit I	**Introduction** Introduction to Algorithm –Arrays and sequential representations – ordered lists – Stacks and Queues – Evaluation of Expressions – Infix , Postfix - Conversions -Singly Linked List – doubly linked list- Polynomial addition	10
Unit II	**Trees and Graphs** Binary tree representations – Tree Traversal – Threaded Binary Trees –Counting binary trees – Graphs Terminology and Representations – Traversals, Connected Components.	09
Unit III	**Spanning trees and Symbol Tables** Biconnected components – Hashing - Introduction- Static Hashing- Dynamic Hashing - Symbol tables - Static tree table-Dynamic table.	09
Unit IV	**Sorting and Searching** Internal sorting - Insertion sort-quick sort-heap sort-Merge sort-two way merge sort-sorting on several keys. External Sorting: Storage device- Magnetic tape – Disk storage - Sorting with disk- K-way merging - Sorting with tape – Searching - Binary search.	10

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Unit V	**Files** Files -Queries and Sequential organizations - Index Techniques- File Organizations-sequential organizations-Random Organization-Linked Organization-Inverted Files-Cellular Partitions - Storage Management.	**10**

Text Book:

1. *Ellis Horowiz, SartajSahni and Sanguthevar, "Fundamentals of Data Structure", Galgotia Publications*

Reference Books:

1. *Horowitz, Sahni, Anderson-freed, "Fundamentals of Data structures in C", Second edition, 2008.*
2. *Ellis Horowiz, SartajSahni and SanguthevarRajasekaran, "Fundamentals of Computer Algorithms", Galgotia Publications, 2001.*
3. *NarashimhaKarumanchi, "Data Structures and Algorithms Made Easy", CareerMonk Publications, Second Edition.*

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU06	PROGRAMMING WITH C++	II
Objective:	This course provides in-depth coverage of Object Oriented Programming principles and techniques using C++. Topics include Classes, Overloading, Data Abstraction, Information Hiding, Encapsulation, Inheritance and Polymorphism, File Processing, Templates and Exceptions.	
Course Outcome	By the end of this course, students will be able to: • Understand the relative merits of C++ as an object oriented programming language • Get familiar with the features of C++ correlated with OOPS • Implement programs in C++ to illustrate the OOP concepts such as encapsulation, inheritance and polymorphism • Know the advanced features of C++ specifically stream I/O, templates and operator overloading	
Unit No.	**Topics**	**Hours**
Unit I	**Introduction to C++:** Introduction to C++ - Key concepts of Object-Oriented Programming –Advantages– I/O in C++ - C++ Declarations. Control Structures: Decision Making and Statements: If.. Else, jump, go to, break, continue and Switch case statements - Loops in C++: For, While, Do - Functions in C++ - Inline functions.	15
Unit II	**Classes, Objects and Constructor, Destructor:** Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – Array of objects –Friend functions – Bit fields and classes – Constructor and Destructor with static members.	15
Unit III	**Operator Overloading and Types of Inheritance:** Operator Overloading: Overloading unary, binary operators – Type conversion. Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchical, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.	14
Unit IV	**Array and Pointers:** Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – Array of classes – Memory models – New and Delete operators – Dynamic object – Binding , Polymorphism and Virtual function.	14

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Unit V	**Files:** Files – File stream classes – File modes – Sequential Read / Write operations – Random Access Operation – Exception Handling – String- Declaring and Initializing string objects – String Attributes – Miscellaneous functions.	**14**

Text Book:

1. Ashok N Kamthane , "C++ PROGRAMMING" Pearson Education publication, 2013.

Reference Books:

1. *Balagurusamy, E. "Object-Oriented Programming with C++", Tata McGraw-Hill Publications. 4th Edition, 2009.*
2. *Maria Litvin& Gray Litvin, "C++ for you" Vikas publication, 2nd Edition, 2003.*
3. *B.J Arnestroustrup "C++ programming language" Publication, Addison-wesle.*

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU15	VISUAL BASIC PROGRAMMING	IV
Objective:	To understand the Visual Basic event-driven programming concepts, terminology, and available tools and learn to design and develop Windows-based business applications.	
Course Outcome	By the end of this course, students will be able to understand: • Visual Basic is easy to learn and fast to write code with, it's sometimes used to prototype an application that will later be written in a more difficult but Efficient language. • Visual Basic is also widely used to write working programs. Microsoft says that there are at least 3 million developers using Visual Basic. • The runtime recovers unused memory using reference counting, which depends on variables passing out of scope or being set to Nothing, avoiding the problem of memory leaks common to other languages. • There is a large library of utility objects, and the language provides basic support for object-oriented programming. Unlike many other programming languages, Visual Basic is generally not case-sensitive though it transforms keywords into a standard case configuration and forces the case of variable names to conform to the case of the entry in the symbol table. • String comparisons are case sensitive by default. The Visual Basic compiler is shared with other Visual Studio languages (C, C++).	
Unit No.	Topics	Hours
Unit I	**Introducing Visual Basic:** Visual Basic- Events and Event Procedures- Object Related Concepts-The Visual Basic Program Development Process- Logical Program Organization- Visual Basic Program Components- The Visual Basic Environment- Opening an Existing Visual Basic Projects- Saving and Running a Visual Basic Project. Visual Basic Fundamentals:Numeric Constants- String Constants- Variables- Data Types and Data Declarations- Operators and Expressions- Hierarchy of Operations-Inserting Parentheses- Special Rules Concerning Numeric Expressions-String Expressions- Assigning Values to Variables- Displaying Output	15

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Unit II	**Branching and Looping:** Relational Operators and Logical Expressions- Logical Operators- Branching with The If-Then Block- Branching with If-Then-Else Blocks- Selection: Select Case- Looping with For-Next- Looping with Do-Loop. Visual Basic Control Fundamentals: Visual Basic Control Tools- Working with Controls- Naming Forms and Controls- Assigning Property Values To Forms and Controls- Executing Commands - Displaying Output Data - Entering Input Data - Selecting Multiple Features - Selecting Exclusive Alternatives - Selecting From a List - Assigning Properties Collectively- Generating Error Messages- Creating Timed Events - Scroll Bars.	15
Unit III	**Menus and Dialog Boxes** Building Drop-Down Menus-Accessing a Menu from the Keyboard- Menu Enhancements- Submenus- Pop-Up Menus- Dialog Boxes- More About the MsgBox Function. Executing and Debugging a New Project : The Input box Function—Syntactic Errors- Logical Errors- Setting Breakpoints- Defining Watch Values- Stepping Through a Program.	15
Unit IV	**Procedures** Modules and Procedures- Sub Procedures- Event Procedures- Function Procedures- Scope -Optional Arguments. Arrays: Array Characteristics- Array Declarations-Processing Array Elements- Passing Array To Procedures- Dynamic Arrays- Array-Related Functions- Control Arrays- Looping with For Each-Next.	12
Unit V	**Data Files** Data File Characteristics- Accessing and Saving a File in Visual Basic: The Common Dialog Control- Processing a Data File- Sequential Data Files - Random Access Data Files- Binary Files – Overview of OLE - Using the Data Control – Methods and events for the data control.	15

Text Book:

1. Byron S. Gottfried- "Visual Basic"- Schaum Outline Series- TMH
2. Gary Cornell "Visual Basic 6 " – McGraw Hill Education (India) Private Limited, New Delhi.

Reference Books:

1. Julia Case Bradley & Anita C. Millspaugh, "Programming in Visual Basic 6.0" by McGraw-Hill.
2. Eric A. Smith- Valor Whisher- Hank Marquis- "Visual Basic 6 Programming Bible".
3. Rod Stephens- "Visual Basic 2012 Programmer's Reference"- Paperback – 26 Sep 2012.

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU16	DATA COMMUNICATION AND NETWORKS	IV
Objective:	To understand the use, architecture and applications of networks.	
Course Outcome	By the end of this course, students will be able to understand: • Understand the basic principles of network design. • Understand the principles of network protocols. • Understand the concept of data communication within the network environment. • Ability to understand analog and digital transmission methods. • Understand the conflicting issues and resolution techniques in data transmission	
Unit No.	Topics	Hours
Unit I	**Introduction to communications and Networking** Introduction – Fundamental concepts – Data communications – Protocols- standards - Standards organizations - Signal propagations- Analog and Digital signals- Bandwidth of a signal and a medium -Fourier analysis and the concept of bandwidth of a signal - The data transmission rate and the bandwidth. Information encoding - Introduction– Representing different symbols- Minimizing errors- Multimedia –Multimedia and Data compression.	15
Unit II	**Analog and digital transmission methods** Introduction - Analog signal- Analog transmission - Digital signal- Digital transmission - Digital signal - Analog transmission - Baud rateand bits per second -Analog signal- Digital (Storage and) transmission -Nyquist Theorem - Modes of data transmission and MultiplexingIntroduction – Parallel and Serial communication - Asynchronous-Synchronous and Isochronous communication - Simplex- Half-duplexand Full-duplex communication – Multiplexing - Types of Multiplexing- FDM versus DM. Transmission Errors: Detection and correction -Introduction – Error classification – Types	15

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	of Errors –Error detection.	
Unit III	**Transmission media** Introduction - Guided media - Un Guided media - Shannon capacity. Network topologies- switching and routing algorithms - Introduction - Mesh topology – Star topology - Tree topology - Ring topology – Bus topology - Hybrid topology - Switching basics- Circuit switching –Packet switching - Message switching - Router and Routing – Factors affecting routing algorithms – Approaches.	15
Unit IV	**OSI Model ,Protocol Standards and Network Security** Introduction – ISO-OSI Model-TCP/IP Model-Comparison between OSI and TCP/IP Reference Models-Network Standardization. Network Security: Introduction-Cryptography-Symmetric key algorithms-Public key algorithms-Digital signatures.	12
Unit V	**Asynchronous transfer mode (ATM)** Introduction- Overview of ATM – Packet size – Virtual circuits in ATM– ATM cells – Switching – ATM layers – Miscellaneous Topics.	15

Text Book:

1. *Achyut. S. Godbole," Data Communications and Networks"- Tata McGraw-Hill Publishing Company- 2007.*

Reference Books:

1. *R.Sivaranjani,K.A.Senthildevi, "Computer Networks",Aruna Publications -2017.(Unit IV)*
2. *Andrew S. Tanenbaum- "Computer Networks"- Prentice hall India Pub- Fourth Edition- 2005.*
3. *William Stallings-" Data and computer communications"- PHI- seventh edition- 2000.*

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU17	MICROPROCESSORS AND ALP	IV
Objective:	To introduce the basic concepts of microprocessor and assembly language programming with its applications.	
Course Outcome	By the end of this course, students will be able to understand: • The architecture of microprocessor various advanced processor architectures such as Pentium and Multi core Processors. • Techniques for faster execution of instructions and improve speed of operation and performance of microprocessors. • RISC and CISC based microprocessors. • About the peripheral devices and have knowledge of Assembly Language Program. To develop enough confidence to take up the challenges in building useful microprocessor based applications.	
Unit No.	**Topics**	**Hours**
Unit I	**Introduction to microprocessors** Evolution of microprocessors – Single-chip Microcomputer – Embedded Microprocessors – Bit-Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors	15
Unit II	**Intel 8086** Pin description of Intel 8086-Operating modes-Register Organization of 8086-BIU-EU-Interrupts.Addressing modes of 8086.	15

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Unit III	**8086 Instruction Set** 8086 Instruction Groups: MOV Instructions-ADD instructions-Instructions for multiplication- Instructions for division. Assembly language Programs for 8086: To find the Largest number in a Data array- To find the smallest number in a Data array. Block Move or Relocation.	**15**
Unit IV	**Intel 386 and 486 Microprocessor** Microprocessor- Intel 486 Microprocessor-486DXArchitecture-Register organization of 486 microprocessor-Operatingmodes of Intel 486.	**12**
Unit V	**Input/output devices** Input devices-Output devices-CRT Screen-Printers-Memory and I/O Addressing. Applications: Keyboard Program for a Large Matrix Keyboard – Displays – LCD Displays – D/A Conversions - A/D Conversions.	**15**

Text Book:

1. *Badri Ram- "Microprocessors and ALP"- Fourth Revised and Enlarged Edition – Dhanpat Rai and Sons – 1993.*

Reference Books:

1. Kenneth. J. Ayala, "The 8051 Microcontroller, Architecture, Programming & Applications", Second Edition, Penram International – 1996.

2. Ramesh S.Gaonkar,"Microprocessor Architecture, Programming and Applications with the 8085 / 8080A", Wiley Eastern – 1990.

3. Ray A.K., BhurchandiK.M,"Advanced Microprocessors and Peripherals", Tata McGraw-Hill Publishing Company Limited- Second Edition- 2007.

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU18	PRACTICAL IV: PROGRAMMING LAB – VISUAL BASIC	IV
Objective:	Make the students to write the code which covers the following objectives	
Course Outcome	By the end of this course, students will be able to understand: •Visual Basic is easy to learn and fast to write code with, it's sometimes used to prototype an application that will later be written in a more difficult but Efficient language. •Visual Basic is also widely used to write working programs. Microsoft says that there are at least 3 million developers using Visual Basic. •The runtime recovers unused memory using reference counting, which depends on variables passing out of scope or being set to Nothing, avoiding the problem of memory leaks common to other languages. •There is a large library of utility objects, and the language provides basic support for object-oriented programming. Unlike many other programming languages, Visual Basic is generally not case-sensitive though it transforms keywords into a standard case configuration and forces the case of variable names to conform to the case of the entry in the symbol table. •String comparisons are case sensitive by default. The Visual Basic compiler is shared with other Visual Studio languages (C, C++).	
Ex. No.	**Program List**	
1	Create a Form to Generate Series Using Goto Labels Using Visual Basic.	
2	Create a VB Form to Add And Remove the Items in the List Box Using Add Item and Remove Item Methods.	
3	Write a Program to Create Font Style Form Using Combo Box.	
4	Write a Visual Basic Program to Create a Form to Change the Font Size Using Timer Control.	
5	Write aVisualBasicProgram to Design Calculator Form Using Array of Command Buttons.	
6	Write aProgram Using Visual Basic to Show Simple and Compound Interest.	
7	Create a Quiz Application Using Visual Basic.	
8	Write aVisualBasicProgram to Create a Notepad Using VB.	
9	Write aVisualBasicProgram to Create a Electricity Bill.	
10	Create Employee Pay Slip Using Visual Basic.	
11	Write aVisualBasicProgram to Create Student Details Using Data Control in VB	
12	Design a VB Form to Run the ".avi" Files.	

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Code No.	Subject	Semester No.
18CTU26	SOFTWARE TESTING	VI
Objective:	To develop the skill of Software Testing. Knowledge on Software Testing and how to test the software at various levels. To inculcate knowledge on Software Testing Concepts.	
Course Outcome	By the end of this course, students will be able to understand: • To understand the fundamental concepts in software testing, including software testing, principles, quality of software at thread levels by identifying faults. • Ability to use software testing methods and modern software testing tools. • To conduct tests at various levels to check the flow of data and control, and to check the code after integrating. • To apply a wide variety of testing techniques in an effective and efficient manner.	

Unit No.	Topics	Hours
Unit I	**Introduction to Testing:** Principle of Testing- Context of Testing in Producing Software - A test in time-Test the test first-The end of pendulum- Putting all together-Phases of Software project.	14
Unit II	**Software development and Life cycle model:** Quality Assurance and Control-Testing verification and validation-Process model to represent different phases-Life cycle model: Waterfall Model, Iterative Model or Spiral model- Rapid Application model and V model Prototyping .	15
Unit III	**Testing Types** White box testing (Static testing and Structural testing), Black box testing: What is testing? , Why testing is done? , When testing is done? How testing is done? , Integration testing, Types of Integration testing, Scenario testing.	15
Unit IV	**System and Acceptance Testing** Over View of System and Acceptance Testing-Why System Testing-Functional Vs Non Functional Testing-Functional Testing-Non Function Testing-Acceptance Testing- Performance Testing-Factors of testing-Methodology of testing- Tools of testing.	14
Unit V	**Regression Testing** What is Regression Testing- Types of Regression Testing - When Regression Testing is done- When Regression Testing is performed-	14

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	Planning Regression Testing-Management of Regression Testing-Execution of Regression Testing- Reporting Regression Testing.	

Text Books:

1. SrinivasanDesikan&Gopalswamy Ramesh, "Software Testing Principles and Practices", Pearson Educatio,2006.

Reference Books:

1. *RenuRajani, Pradeep Oak , "Software Testing. – Effective Methods, Tools & Techniques" – Tata McGraw Hill.*
2. *Bob Hughes & Mike Cotterell, "Software Project Management ",4th ed, PHI.*
3. *Ron Patton,"Software Testing" Second Edition, 2005 .*

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU27	**OPEN SOURCE TOOLS**	VI
Objective:	Emphasize usability and a just works philosophy in default configurations and feature designs.	
Course Outcome	By the end of this course, students will be able to understand: • To interpret the concepts and methodology of embedded HTML. • To perform various commands in Shell Script to automate various tasks in Linux Programming. • Ability to interact with Apache to provide meaningful patterns for web server software. • Able to understand various queries, triggers and stored routine of MYSQL	
Unit No.	**Topics**	**Hours**
Unit I	**Introduction to open source** Open source Introduction: Open Source – Open source vs. Commercial Software – What is Linux? – Free Software – Where I can use Linux? Linux Kernel – Linux Distributions	14
Unit II	**Linux operating system** Linux Introduction: Linux Essential Commands – File system Concept – Standard Files – Vi Editor – Partitions creation – Shell Introduction – String Processing – Installing Application	15
Unit III	**Open Source Web Servers** Open Source Web Servers: Installation, Configuration and administration of Apache, Nginx. Open Source Tools, IDE,RDBMS: Eclipse IDE, Open Stack cloud technology, Version Control Systems, GIT, CVS, Open Source Repositories: GitHub, SourceForge, Google Code, Open Source RDBMS:MYSQL basics, installation an d usage, PostgreSQL, NoSQL, Mongo DB, Hadoop	15
Unit IV	**MY SQL** Introduction to MY SQL – The Show Databases and Table – The USE command – Create Database and Tables – Describe Table – Select, Insert, Update and Delete statement – Some Administrative detail –	15

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	Table Joins – Loading and Dumping a Database	
Unit V	**Server script** Introduction : General Syntactic Characteristics – PHP Scripting – Commenting your code – Primitives , Operations and Expressions – PHP Variables – Operations and Expressions Control Statement – Array – Functions – Basic Form Processing – File and Folder Access – Cookies – Sessions – Database Access with PHP – MYSQL – MYSQL Functions – Inserting Records – Selecting Records – Deleting Records – Update Records	13

Text Book:

1. *James Lee and Brent Ware: "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP", Dorling Kindersley(India) Pvt. Ltd, 2008.*
2. *Eric Rosebrock, Eric Filson: "Setting up LAMP: Getting Linux, Apache, MySQL and PHP and working Together", Published by John Wiley and Sons, 2004.*

Reference Books:

1. *Dacie Cristian- "Pack Pub AJAX and PHP" - 2006.*
2. *Scouarnec Yann- Stolz Jeremy Jeremy and Glass Michael - "Beginning PHP5- APACHE-MYSQL Web Development" - Wiley-India. New Delhi- 2005.*
3. *Christopher Diggins-" Linux Unwired"- Shroff Publishers & Distributors Pvt. Ltd-2004.*

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Code No.	Subject	Semester No.
18CTU28	PRACTICAL X: SOFTWARE TESTING & ADVANCED NETWORKS LAB	VI
Objective:	To gain knowledge on how to test the Applications Using Automation test and to Inculcate knowledge on Software testing & Advance Networking Concepts.	
Course Outcome	By the end of this course, students will be able to understand: • To understand the fundamental concepts in software testing, including software testing, principles, quality of software at thread levels by identifying faults. • Ability to use software testing methods and modern software testing tools. • To conduct tests at various levels to check the flow of data and control, and to check the code after integrating. • To apply a wide variety of testing techniques in an effective and efficient manner.	
Ex. No.	**ProgramList**	
	SOFTWARE TESTING LAB **Automation Tool: Win runner**	
1	Perform Synchronization point test using Flight Reservation Application	
2	Create a software test case to perform TSL programming for Flight Reservation Application	
3	Develop a test case to implement the GUI object properties Test for the Flight Reservation Application	
4	Write a test case to perform Bitmap check points for Flight Reservation Application	
5	Write a test case to perform Database check points for Student Information Application	
6	Develop a test case to implement Data Driven Test	

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ADVANCED NETWORK LAB	
1	Program to implement the File Transfer Protocol
2	Program to downloading the file from HTTP Server

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3	Program to determine class, Network and Host ID
4	Program to implement the RIP Routing Protocol
5	Program to implement the Multicasting service.
6	Study on Network interfacing and communication of physical objects, devices and peripherals

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For the students admitted in the academic year 2018-2019 and onwards

Code No.	Subject	Semester No.
18CTU29	**PRACTICAL XI: OPEN SOURCE LAB**	**VI**
Objective:	To enable the students to gain knowledge in developing programs of Open Source Tools for certain specified problems.	
Course Outcome	By the end of this course, students will be able to understand: •To interpret the concepts and methodology of embedded HTML. •To perform various commands in Shell Script to automate various tasks in Linux Programming. •Ability to interact with Apache to provide meaningful patterns for web server software. •Able to understand various queries, triggers and stored routine of MYSQL.	
Ex. No.	**Program List**	
1.	Write a shell script to show the following system configuration: a. currently logged user and his log name. b. current shell, home directory, Operating System type, current Path setting, current working directory. c. show currently logged number of users, show all available shells. d. show CPU information like processor type, speed. e. show memory information.	
2.	Write a shell script to implement the filter commands	
3.	Create a mysql table and execute queries to read, add, remove and modify a record from that table.	
4.	Write a PHP program interface to create a database and to insert a table into it.	
5.	Write a PHP program using classes to create a table.	
6.	Write a PHP program to upload a file to the server.	
7.	Write a PHP program to access the data stored inamysql table.	
8.	Write a PHP program to create a directory, and to read contents from thedirectory.	
9.	Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputsfor name, number andmarks from a HTML form.	
10.	Write a PHP program that adds products that are selected from a web page to a shopping cart.	

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