

**DEPARTMENT OF COMPUTER SCIENCE**  
**COURSE CURRICULUM & MARKING SCHEME**

**B.Sc. Part - III**  
**INFORMATION TECHNOLOGY**

**SESSION : 2023-24**



**ESTD : 1958**

**GOVT. V.Y.T. PG AUTONOMOUS COLLEGE,**  
**DURG, 491001 (C.G.)**

(Former Name – Govt. Arts & Science College, Durg)

NAAC Accredited Grade A<sup>+</sup>, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)

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**B.Sc.**  
**(Information Technology)**

**Part -III**

**DEPARTMENT OF COMPUTER SCIENCE**  
**GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG**  
**Approved syllabus for B.Sc. - III (Information Technology)**  
**by the members of Board of Studies for the Session 2023-24**  
**The syllabus with the paper combinations is as under**

**B.Sc.-II:**

<b>Paper I: AMPLIFIERS AND OSCILIATORS</b>	<b>Paper II: FUNDAMENTAL DATA STRUCTURE</b>
<b>Paper III: COMPUTER PRACTICAL</b>	

The syllabus for B.Sc. Computer Science is hereby approved for the session 2023-24.

**Name and Signatures**

	<b>Departmental members</b>
V.C. Nominee .....	
Subject Expert .....	1. HOD- Mr. Dileep Kumar Sahu .....
Subject Expert.....	2. Mrs. Latika Tamrakar .....
Alumni(member).....	3. Mr. Sanat Kumar Sahu .....
Prof. from other Dept. of Sc. Faculty .....	
Specialist from Industry .....	

**Syllabus and Marking Scheme for B.Sc.-III YEAR  
Session 2023-24**

PAPER NO.	SUBJECT CODE	TITLE OF THE PAPER	MARKS ALLOTTED IN THEORY	
			Max	Min
I	BIT-301	Amplifiers And Oscillators	50	17
II	BIT-302	Fundamental Data Structure	50	17
III	BIT-303	Lab course/ Practical	50	17
		<b>Total</b>	<b>150</b>	

01	Theory papers	-	50
02	Practical	-	50
	<b>Total Marks</b>	-	<b>100</b>

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**GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG**

**SYLLABUS FOR: (2023-24)**

**B.Sc. - III (Information Technology)**

**Subject Code: BIT 301**

**Paper-I**

**Amplifiers and Oscillators**

**Max Marks: 50**

**Min Marks : 17**

**Course Objective:**

This course intended to provide understanding of data representation for digital logic , fundamental organization of a digital computer and Memory Organisation

**Course Outcomes:**

CO1: Apply the principles of Number System, Binary Code and Boolean Algebra

CO2: Acquire Knowledge about Logic Gates.

CO3: Design various Combinational Circuits.

CO4: Understanding of Multivibrator circuits

CO5: Understand Processor Organization and Memory Organization

**N.B:** Since the computer organization study is very vast & complicated, so that study is restricted to only the description and understanding part, fence the paper setter is requested to keep this important factor in mind.

**UNIT-I**

**POWER AMPLIFIER:** Classification of power amplifiers, requirement of power amplifiers, single ended class A power amplifier, and its efficiency, transformer coupled power amplifier, power dissipation curve, harmonic dissipation curve, harmonic distortion in push pull power amplifier, power and efficiency calculation for push pull for push pull power amplifier, Distortion in push pull power amplifier, Advantages of push pull power amplifier.

**UNIT-II**

**FEEDBACK AMPLIFIERS AND OSCILATORS:** Feedback in amplifiers, types of feedback positive, and negative feedback. Derivation of input and output impedence in voltage and current series feedback. Advantage of negative feedback. Positive feedback. Berkhauson criteria for sustained oscillator. RF oscillators-Hartley oscillator, colpetts oscillators (Qualitative study) relaxation oscillators, Multivibraton-As table, Monostable.

**UNIT-III**

**OPERATIONAL AMPLIFIER AND POWER CONTROL DEVICES:** Differential amplifier, operational amplifier, Characteristics of an ideal CPAMP, definition of input bias current input offset current, drift, input offset, common mode rejection ratio, slew rate, universal biasing technique, Application of OP-Amp, as inverting, non-inverting amplifiers, differentiation, Integrator, scal charger and voltage follower, silicon controlled rectifier (SCR), Diac Traic and UUT (Only Qualitative study).

**UNIT-IV**

**THE INTEL 8088/8085 MICROPROCESSOR:** Introduction the 8085 pin diagram and functions. The 8085 architecture, addressing modes, the 8080/8085 instruction set, the 8080/8085 data transfer instructions, the 8080/8085 arithmetic instructions, the 8080/8085 logical the 8080/8085 stack, I/O and machine controlled instructions.

**UNIT-V**



**PROGRAMMING THE MICROPROCESSOR:** Machine and assembling language  
 simplified instruction set, Instruction set, arithmetic operation, Instruction set logical operations, instruction set data transfer poeration, instruction set branch operations, instruction subroutine all and return operations, instruction set miscellaneous operations, writing a program, addressing modes, program branching, program looping using subroutines.

Programming the 8080/8085 microprocessor: Introduction straight-line programs looping programs, mathematical programs.




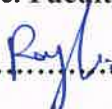

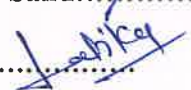

**REFERENCE TAXT BOOK :**

1. Integrated Electronics - Millman&Halkias
2. Principle of Electronics - V.K. Mehta
3. Digital Electronics - R.P. Jain
4. Computer System Architecture - Morris Mano
5. Digital Electronics & Computer Hardware - Morris Mano

**RECOMMENDED BOOKS:**

1. COMPUTER FUNDAMENTAL & ARCHITECTURE -BY B.RAM
2. COMPUTER TODAY -BY. DONEH.SANDERS
3. COMPUTER FUNDAMENTAL -BY RAJA RAMAN.
4. IBM PC\_XT CLONE -BYGOVINDARAJALU

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GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG  
SYLLABUS FOR: (2023-24)

B.Sc. - III (Information Technology)

Subject Code: BIT 302

Paper – II

**Fundamental Data Structure**

Max Marks: 50

Min Marks : 17

**Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.**

Course Objectives	Course Outcomes
This course demonstrates familiarity with major algorithms and data structures and analyses performance of algorithms. It is used to choose the appropriate data structure and algorithm design method for a specified application and determine which algorithm or data structure to use in different scenarios	<ol style="list-style-type: none"><li>1. Implement various basic data structures and its operations.</li><li>2. Implement various sorting and searching algorithms.</li><li>3. Implement various tree operations.</li><li>4. Implement various graphs algorithms.</li><li>5. Develop simple applications using various data structures.</li><li>6. Develop algorithms using various searching and sorting techniques</li></ol>

**UNIT-I**

Introduction to Data Structure: The concept of data structure, Abstract data structure, Analysis of Algorithm. The concept of list. Stacks and Queues: Introduction to stack & primitive operation on stack, stack as an abstract data type, Multiple Stack, Stacks application: infix, post fix, and Recursion, Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular Queue, Dequeue. Priority Queue.

**UNIT-II**

Linked List: Introduction to the linked list of stacks, The linked of queues, Header modes, Doubly linked list, Circular linked List, Stacks & Queues as a Circular linked list Application of linked list.

**UNIT-III**

Trees: Basic Terminology. Binary Trees, Tree Representations as Array & Linked list, Binary tree representation. Traversal of Binary trees: In order, Preorder & post order. Application of Binary tree, Threaded binary tree, B-Tree & Height balanced tree, representation of B & B trees, Binary tree representation of trees, counting binary trees, 2-3 Trees algorithm or manipulating 2-3 Trees.

**UNIT-IV**

Searching & Sorting: Sequential Searching. Binary search, Insertion sort, Selection fort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

*Ref. [Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]*

## UNIT-V

Tables & graphs: Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology. Directed, Undirected & Weighted graph, Representation of graphs Graph Traversal Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, The basic, Greedy Strategy for computing Algorithm of Kruskal and prims.

### TEXT & REFERENCE BOOK:

1. Fundamental of Data Structure: By S. Sawhney & Horowitz
2. Data Structure: By Trembley & Sorrenson.
3. Data Structure Using Pascal: By Tannenbaum & Alugenstein
4. Data Structure: By lipschuists (Schaume's Outline Series Mcgraw Hill Publication)
5. Fundamental of Computer Algorithm: By Ellis Horowitz an Sartaj Sawhney.

### PRACTICAL WORK

1. The sufficient practical work should be done for understanding the date structure with C.
2. The sufficient practical work must be performed on stacks queues linked list, trees etc.
3. All practical works should prepared in form of print outs and valuated while practical examination.



Handwritten signatures in blue ink, including names like 'Labitey', 'Raj', and 'Rajh'.



**GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE DURG**  
**SYLLABUS FOR AY (2023-24)**  
**B.Sc. –III (Information Technology)**  
**Subject Code: BCS-303**  
**PRATICAL WORK**

**Practical paper**

**Program 1 - 15**  
**Program 2 - 15**  
**Internal - 10**  
**Viva - 10**






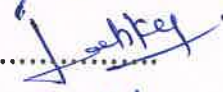

**Total - 50**

Practical Test will consist of 3hrs.

**Practical List**

1. To demonstrate the concept of one dimensional array finding the sum of array elements.
2. To insert an element in an array.
3. To delete an element from an array.
4. To add two matrix A and B.
5. To multiply two matrix A and B.
6. To demonstrate the concept of one dimensional array finding the sum of array elements.
7. Implementation of linked list using array.
8. Implementation of stack using array.
9. To Create Fibonacci series using recursive function.
10. Implementation of queue using array.
11. Implementation of circular queue using array.
12. Implementation of binary search tree using array.
13. To demonstrate the concept of one dimensional array finding the sum of array elements.
14. To Search an element using sequential search.
15. To Search an element using binary search
16. Arrange the list of numbers in ascending order using Bubble Sort.
17. Arrange the list of numbers in ascending order using Insertion Sort.
18. Arrangethe list of numbers in ascending order using Selection Sort
19. Arrangethe list of numbers in ascending order using Merge Sort
20. Arrange the list of numbers in ascending order using Quick Sort.
21. Arrange the list of numbers in ascending order using Radix Sort.
22. Arrange the list of numbers in ascending order using Heap Sort.

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## DIRECTIVES FOR STUDENTS, FACULTY AND EXAMINERS

1. There shall be three sections (Section A, B, and C ) in each theory paper.
2. Section A shall contain very short answer type questions (One or two line answer) or objective type questions (fill in the blank). **(not multiple choice questions)**
3. Section B shall contain short answer type questions with the limit of 150 words
4. Section C shall contain long answer/ descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.
5. The students are required to study the content mentioned in the curriculum exhaustively.

### **EVALUATION PATTERN**

- **Theory 50 marks**
- **Practical 50 marks**

<b>Question Type</b>	<b>MM 50</b> <b>(Marks X No. of Q.)</b>
<b>A (Very short Ans.)</b>	<b>1X10 = 10</b>
<b>B (Short Ans.)</b>	<b>3X5 = 15</b>
<b>C (Long Ans.)</b>	<b>5X5 = 25</b>

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Corrigendum for UG Classes

**1. Section –A (very short answer question)**

There shall be 8/9/10 objective type questions (No multiple choice). All questions are compulsory; at least one from each unit.

**2. Section B, Section C**

There shall be 10 questions, two questions from each unit.

The candidate has to attempt one question from each unit.

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