HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED)
(Affiliated to Osmania University)
Nallakunta, Hyderabad

B.Sc. II YEAR SEMESTER III & IV
DEPARTMENT OF
COMPUTER SCIENCE
(2020-2021)

स्थापना : 1961

हिन्दी महाविद्यालय

(स्वायत्त एवं NAAC-पुनर्मूल्यांकित)
(कला, वाणिज्य, विज्ञान तथा स्नातकोत्तर केन्द्र)
(उस्मानिया विश्वविद्यालय से सम्बद्ध)
नल्लाकुंटा, हैदराबाद - 500 044

Off : 040-2761 6330
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Hindi Mahavidyalaya

(AUTONOMOUS & NAAC-REACCREDITED)
(Arts, Commerce, Science and P.G. Centre)
(Affiliated to Osmania University)
Nallakunta, Hyderabad - 500 044

Website : www.hindimahavidyalaya.org
E-mail : info@hindimahavidyalaya.org

Dr. Y. V.Rao, MBA, M.Phil., D.C.R.S., Ph.D.
Principal

संदर्भ / Ref. :

दिनांक / Date : 04/01/2024

To

Industry Expert.
HYDERABAD.

Subject : Convening of Board of Studies meeting – Reg.

Sir/Madam,

We are happy to inform that Hindi Mahavidyalaya had been conferred Autonomy for a period of 5 years from 2018 to 2023. We have introduced B.Sc (English medium) with Computer Science as one of the optional subject from academic year 2016-17 and also introduced CBCS for all the UG courses.

We have constituted Board of Studies for different departments as per the UGC norms duly ratified by Osmania University. As a Member of BOS, O.U. You are requested to make it convenient to attend meeting on 4/1/2024 at 12 am/pm in our college premises to discuss and approve Degree Second year (III and IV Semester)Syllabus.

Thanking you,

Yours Faith fully,

PRINCIPAL

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HINDI MAHA VIDYALAYA
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Arts, Commerce & Science
Nallakunta, Hyderabad-44.

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Head –department of Computer Science
Hindi Mahavidyalaya , Nallakunta, Hyderabad

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Department of Computer Science
Osmania University-Hyderabad

Members of BOS:

1. Professor P.V.Sudha
   Subject Expert
   Department of Computer Science
   Osmania University-Hyderabad
2. Mrs.B Ramani
   Subject Expert
   Department of Computer Science
   Andhra Mahila Sabha Arts and science college
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3. Mrs.Srivally
   Lecturer in computer science
   Hindi Mahavidyalaya
   Nallakunta, Hyderabad
4. Mrs.M.Pratibha
   Lecturer in Computer Science
   Hindi Mahavidyalaya
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5. Mr.Aravind Sharma
   Industry Expert

Alumini

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2. Ramani

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
DEPARTMENT OF COMPUTER SCIENCE
AGENDA OF THE MEETING

1	Welcome address by the chair.
2	Previous Meeting Details.
3	Details of choice based credit system.
4	Discussion and Distribution of Common Core Syllabus for all the Semester (III& IV)
5	Marks allotted for internal and end semester exams.
6	Discussion on Pattern and model paper of Semester Exam and internal exam for all the Semester (III and IV)
7	Discussion on Practical exam model paper for all the Semester (III and IV)
8	Panel of Examiners
9	Any other matter
10	Vote of thanks

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DEPARTMENT OF COMPUTER SCIENCE
BOARD OF STUDIES
Academic Year – 2020-2021
Minutes of BOS Meeting

BOS meeting of the Department of Computer science was held on .....
The following members were present

Prof. Dr.G.Kamala	-	Ex-Officio member-BOS
Prof.P.V.Sudha	-	Subject Expert, O.U
Smt B.Ramani	-	Member of BOS
Mr.Aravind.Sharma	-	Member of BOS
Ms.Haseena Begum	-	Member of BOS
Mrs.M.Pratibha	-	Member of BOS
Mrs.Srivally	-	Member of BOS

4.1 Welcome address by the chair

The chair welcomed the University Nominee, Chairperson BOS, O.U. Department of Computer Science and Member of B.O.S

4.2 Previous Meeting details

The CBCS system has been introduced by Osmania University from 2016-17. The theory and practical syllabus of I, II & IIIyears of B.Sc., question paper pattern for theory and practical, internal assessment pattern, practical examination scheme and panel of examiners were discussed and approved by all the BOS Members in previous BOS meeting.

4.3 Details of choice based credit system.

Members were informed that TSCHE has referred that from the academic year 2016-17 autonomous institutions have to follow CBCS i.e. From the Academic Year 2016-17 Osmania University has instructed all the Degree colleges including Autonomous Degree colleges to follow CBCS under which after passing the exam student will get the Grade in the Final Result. B.Sc.I

YEAR SEM I&II AND II YEAR SEM III & IV 4 credits are given for the theory and 1 credit for practical in each semester and III YEAR in V and VI semester 3 credits are given for theory paper and 1 credit is given for practical in each semester.

4.4 Discussion and Distribution of Common Core Syllabus for semester I and II.

1. Members were informed by the chair that Department of Computer Science, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University B.Sc. II YEAR in III and IV semesters.
2. The syllabus comprises of 4 units.
3. Syllabus copy for both the semesters is enclosed.
4. Syllabus was approved by the Members of BOS.

4.5 Marks allotted for Internal and end Semester exams.

1. Internal assessment is of 30 marks and 5 marks assignment ,5 marks seminar where students have to answer 20 MCQs in 25 minutes. Each question carries 1 mark. In each Semester two internal assessments of 20 Marks will be conducted and an average of both the internal assessments will be added in the marks of theory exam.
2. Theory Question paper is of 70 marks.
3. Total allotted marks are 100 for each theory paper DSC/DSE (A&B).

The distribution of marks was approved by the Members of BOS.

4.6 Discussion on Pattern and Model Paper of Semester exam and Model Paper of Internal Exam

1. It was informed by the department that in each Semester Two Internal exams will be conducted for 20 marks. The internal assessment will have three sections.

Section – A 20 Multiple choice questions each carries 1 marks (20*1 =20M),

Section – B Assignment – 5 Marks

Section – C Seminar – 5 Marks

Average marks of these two internal exams will be taken.

2..Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 25 Min and Semester exam duration will be of 2½ hrs.

3. Model Question paper for Semester III and Semester IV was discussed. Theory paper for each Semester will have 2 sections.

i) Section A contains 8 short Questions. The student has to answer six questions.

Each Question carries 3 Marks (6X3=18 Marks)

ii) Section B contains 4 Essay type Questions with internal choice. Each Question carries 13 Marks (4X13=52 Marks)

ii) Section B contains 2 Essay type Questions with internal choice. Each Question carries 15 Marks (2X10=20 Marks)

- Pattern of Model Theory Question Papers for DSC Paper III and Paper IV are enclosed.
- Pattern of Model Theory Question Papers for DSC was approved by Member of BOS

4. It was informed by the department that in each semester one internal exam will be conducted for SEC of 15 marks. The internal assessment will have two sections

   i) Section A 10 mcqs each carries 1mark(10*1=10m)

   ii)section B Assignment/seminar-5marks

5. Model question paper of SEC for Semester III and semester IV was discussed.Theory paper for each SEC will have 2 sections

   i)Section A contains 4 short Questions.The student has to answer THREE questions.Each question carries 5marks(3*5=15marks)

   ii) Section B contains 2 Essay type Questions with internal choice.Each question carries 10marks(2*10=20marks)

4.7 Discussion on Practical Exam Model paper.

It was decided in BOS meeting that 25 Marks Practical Exam of 2 hrs will be held in each Semester (III & IV) and 1 credit will be given for Practical in each Semester.

- Pattern of Model Practical Question Papers for Paper III and Paper IV are enclosed.
- Pattern of Model Practical Question Papers was approved by Members of BOS

4.8 Panel of Examiners

The panel of examiners was approved by the members.

- List is enclosed

4.9 Any other matter.

4.10 Vote of Thanks

Meeting concluded with the Vote of Thanks by Ms. Haseena Begum

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1. P.V. Subba
2. Ramani B
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(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE

Academic Year – 2020-2021

B.Sc. (Computer Science)(MPCS/MSCS)

CBCS PATTERN IN SEMESTER SYSTEM-2020-2021

Course Title(Bsc-Mscs/Mpcs)	Hours/Week		Credits
	Theory	Practical	
Semester –I			
Programming in C	4	3	4+1 = 5
Semester –II			
Programming in C++	4	3	4+1 = 5
Fundamental of Computer (AECC)	2		2
Semester –III			
Data Structures using C++	4	3	4+1 = 5
Communication skills/Professional skills (SEC-I)	2		2
Python-I (SEC-II)	2		2
Semester –IV			
Data Base Management Systems (DBMS)	4	3	4+1 = 5
Leadership and management skills/universal human values(SECIII)	2		2
Python –II(SECIV)	2		2

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(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE

Academic Year – 2020-2021

B.Sc. (Computer Science) (MPCS/MSCS)

CBCS PATTERN IN SEMESTER SYSTEM-2020-2021

2nd YEAR SEMESTER –III					Semester end exams		Continuous internal evaluation		TOTAL	Practical 3hrs
Code	Course title	Course type	HPW	Credits	Duration in hrs	Marks	Exam duration	Marks		
BS306	Data Structure Using C++	DSC-3C	4T+3P	4+1=5	2½	70	25MIN	30	100	25
BS301	PYTHON-I	SEC-3	2T	2	1½	35	15MIN	15	50	-

2nd YEAR SEMESTER –IV					Semester end exams		Continuous internal evaluation		TOTAL	Practical 3hrs
Code	Course title	Course type	HPW	Credits	Duration in hrs	Marks	Exam duration	Marks		
BS406	DataBase Management System	DSC-3D	4T+3P	4+1=5	2½	70	25MIN	30	100	25
BS401	PYTHON-II	SEC-4	2T	2	1½	35	15MIN	15	50	-

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B.Sc. (Computer Science) –II YEAR SEMESTER-III

Paper-III

Data Structures using C++

Code: BS306 **DSC-3C**

HPW-4T+3P **credits-4T+1P**

Unit - I

Basic data Structure: Introduction to Data Structures, Types of Data Structures, and Introduction to Algorithms, Pseudo code and algorithms, Implementation of data structures, Analysis of Algorithms.

Liner Data Structure using Arrays: 1-.D Arrays, 2-D Arrays-D Arrays, Memory representation and Address calculation of 1-D, 2-D, N-D Arrays.

Stacks: Concept of Stacks, Primitive Operations, Stack Abstract Data Type, Representation of stack using Array, Applications of Stack- converting Infix expression to Post fix expression, Evaluating the post-fix expression, checking well-formed Parenthesis, Processing of Function Calls, Reversing a String with a Stack.

Unit - II

Recursion: Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Recursive Functions, Iteration versus Recursion.

Queues: Concept of Queues, Primitive Operations, Queue as Abstract Data Type, Representation of Queues Using Arrays, Circular Queue, DE queue, Priority Queue, Applications of Queues.

Linked Lists: Introduction, Concept, Terminology, Primitive Operations-Creating, Inserting, Deleting, Traversing Linked List, Linked List Abstract Data Type, Linked List Variants-Doubly Linked List, Circular Linked List, Linked Stack, Linked Queue.

Unit - III

Trees: Introduction, Types of Trees, Tree Operations, Binary Tree, Binary Tree Abstract Data Type, Implementation of a Binary Tree, Binary Tree Traversal - Pre-order, Post- order, In-order Traversal, Applications of Binary Trees.

Searching and Sorting: Search Techniques-Linear Search, Binary Search, Sorting Techniques- Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort, Comparison of All Sorting Methods,

Unit - IV

Graphs: Introduction, Representation of Graphs, Graph Traversal – Depth First Search, Breadth First Search, Spanning Tree, Prim's Algorithm, Kruskal's Algorithm.

Hashing: Introduction, Key Terms and Issues, Hash Functions, Collision in hashing, hash table.

Heaps: Basic Concepts, Implementation of Heap, Heap as Abstract Data Type, Heap Sort, Heap Applications.

Text books:

1. Varsha H. Patil "Data structures using C++" Oxford University press, 2012
2. M.T. Goodrich, R. Tamassia and D. Mount, Data Structures and Algorithms in C++, John Wiley and Sons, Inc., 2011.

References:

1. Adam Drozdek "Data structures and algorithm in C++" Second edition, 2001 2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms, 2nd Ed., Prentice-Hall of India, 2006. 3. Robert L. Kruse and A.J. Ryba, Data Structures and Program Design in C++, Prentice Hall, Inc., NJ, 1998. 4. B. Stroupstrup, The C++ Programming Language, Addison Wesley, 2004 5. D.E. Knuth, Fundamental Algorithms (Vol. I), Addison Wesley, 1997

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	CHAIRMAN	2.	
	Board of Studies in Computer Science		
	Dept. of Mathematics	3.	
	Osmania University, Hyd.		

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(AUTONOMOUS)
B.Sc. (Computer Science) –II YEAR SEMESTER-III
(SEC – II)
Python – I

Theory - 2 Hours/Week **2-Credits**

Unit – I

Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output.
Decision Structures and Boolean Logic:if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables. Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

Unit – II

Functions: Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, Local Variables,Passing Arguments to Functions, Global Variables and Global Constants, Value-Returning Functions- Generating RandomNumbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules.
File andExceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Book:
Tony Gaddis, Starting Out With Python (3e)

References:

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

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B1 - MP4 - 1, 3, (Stack ADT), 2, 14 (merge sort)

B2 - MSC4 - 3 (Queue ADT), 1 (Stack ADT), 9, 14 (Quicksort).

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(AUTONOMOUS)

B.Sc. (Computer Science) –II YEAR SEMESTER-III

Paper-III (Practical/Laboratory)

Data Structures using C++

Code: BS306P **HPW-3**

Credits-1 **Marks: 25**

1. Write C++ programs to implement the following using an array
   a) Stack ADT b) Queue ADT
2. Write a C++ program to implement Circular queue using array.
3. Write C++ programs to implement the following using a single linked list.
   a) Stack ADT b) Queue ADT
4. Write a C++ program to implement Circular queue using Single linked list.
5. Write a C++ program to implement the double ended queue ADT using double linked list.
6. Write a C++ program to solve tower of Hanoi problem recursively
7. Write C++ program to perform the following operations:
   a) Insert an element into a binary search tree.
   b) Delete an element from binary search tree.
   c) Search for a key in a binary search tree.
8. Write C++ programs for the implementation tree traversal technique BFS.
9. Write a C++ program that uses recursive functions to traverse a binary search tree.
   a) Pre-order b) In-order c) Post-order
10. Write a C++ program to find height of a tree.
11. Write a C++ program to find MIN and MAX element of a BST.
12. Write a C++ program to find Inorder Successor of a given node.
13. Write C++ programs to perform the following operations on B-Trees and AVL Trees.
    a) Insertion b) Deletion
14. Write C++ programs for sorting a given list of elements in ascending order using the following sorting methods.
    a) Quick sort b) Merge sort
15. Write a C++ program to find optimal ordering of matrix multiplication.
16. Write a C++ program that uses dynamic programming algorithm to solve the optimal binary search tree problem
17. Write a C++ program to implement Hash Table
18. Write C++ programs to perform the following on Heap
    a) Build Heap b) Insertion c) Deletion
19. Write C++ programs to perform following operations on Skip List
    a) Insertion b) Deletion
20. Write a C++ Program to Create a Graph using Adjacency Matrix Representation.
21. Write a C++ program to implement graph traversal techniques
    a) BFS b) DFS
22. Write a C++ program to Heap sort using tree structure.

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B.Sc. (Computer Science) –II YEAR SEMESTER-IV

Paper-IV

Data Base Management Systems

Code: BS406 **DSC-3D**

HPW-4T+3P **Credits-4T+1P**

Unit – I

Introduction: Database-System Applications, Purpose of Database Systems, View of Data , Database Design, Data Storage and Querying, , Database Architecture, Database Users and Administrators. Data Models.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Relational calculus, Relational Algebra.

Unit – II

Database Design and the E-R Model: Overview of the Design Process, The Entity-Relationship Model, Constraints, Entity Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional-Dependency Theory, Decomposition Using Multivalued Dependencies, Normal Forms-2 NF, 3 NF, BCNF, The Database Design Methodology for Relational Databases.

Unit – III

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub queries, Modification of the Database.

Intermediate SQL: Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

NoSql databases: Introduction to NoSqldb(Mongo dB)

Unit - IV

Transaction Management: Transaction Support–Properties of Transactions, Database Architecture, Concurrency Control–The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Time Stamping Methods, Multi-version Timestamp Ordering, Optimistic Techniques, Granularity of Data Items.
Database Recovery– The Need for Recovery, Transactions and Recovery, Recovery Facilities, Recovery Techniques, Nested Transaction Model.
Security: Database Security–Threats, ComputerBased Controls–Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

Text book:

1. Silberschatz, H. Korth and S. Sudarshan, Database System Concepts, 7th Ed., Tata McGraw Hill, 2019
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems–A Practical Approach to Design, Implementation, and Management (6e)

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1. P.V.S...
2. Kamala B
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B.Sc. (Computer Science) –II YEAR SEMESTER-IV

Paper-IV (Practical/Laboratory)

Data Base Management Systems

Code: BS406P **HPW-3**

Credits-1 **Marks: 25**

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price),

IssuedBooks (Accession number, Borrower)

a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.

b) Delete the record of book titled "Database System Concepts".

c) Change the Department of the book titled "Discrete Maths" to "CS".

d) List all books that belong to "CS" department.

e) List all books that belong to "CS" department and are written by author "Navathe".

f) List all computer (Department="CS") that have been issued.

g) List all books which have a price less than 500 or purchased between "01/01/1999" and "01/01/2004".

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student's Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.

b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.

c) List all students who live in "Warangal" and have marks greater than 60 in paper1.

d) Find the total attendance and total marks obtained by each student.

e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (CustID, email, Name, Phone, ReferrerID)

Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)

BicycleModel(ModelNo, Manufacturer, Style)

Service (StartDate, BicycleID, EndDate)

a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table. b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
c) List the bicycles purchased by the customers who have been referred by Customer "C1".
d) List the manufacturer of red colored bicycles.
e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.
   Employee (Person_Name, Street, City)
   Works (Person_Name, Company_Name, Salary)
   Company (Company_Name, City)
   Manages (Person_Name, Manager_Name)

a) Identify primary and foreign keys.
b) Alter table employee, add a column "email" of type varchar(20).
c) Find the name of all managers who work for both Samba Bank and NCB Bank.
d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than $10,000.
e) Find the names of all employees who live in the same city as the company for which they work.
f) Find the highest salary, lowest salary and average salary paid by each company.
g) Find the sum of salary and number of employees in each company.
h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.
   Suppliers (SNo, Sname, Status, SCity)
   Parts (PNo, Pname, Colour, Weight, City)
   Project (JNo, Jname,Jcity)
   Shipment (Sno, Pno, Jno, Qunatity)

a) Identify primary and foreign keys.
b) Get supplier numbers for suppliers in Paris with status>20.
c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
d) Get suppliers names for suppliers who do not supply part P2.
e) For each shipment get full shipment details, including total shipment weights.
f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
h) Get the names of cities that store more than five red parts. i) Get full details of parts supplied by a supplier in Hyderabad.
j) Get part numbers for part supplied by a supplier in Warangal to a project in Chennai. k) Get the total number of project supplied by a supplier (say, S1). l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.

9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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B.Sc. (Computer Science) –II YEAR SEMESTER-IV
Python – II
(SEC – IV)

Theory -2 Hours/Week **2Credits**

Unit – I

Lists and Tuples: Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists, Two- Dimensional Lists, Tuples. Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.

Dictionaries and Sets: Dictionaries, Sets, Serializing Objects. Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms.

Unit – II

Object-Oriented Programming: Procedural and Object-Oriented Programming, Classes, Working with Instances, Techniques for Designing Classes, Inheritance, Polymorphism.

GUI Programming: Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets, Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons.

Text Book:
Tony Gaddis, Starting Out With Python (3e)

References:

1. **Kenneth A. Lambert, Fundamentals of Python**
2. **Clinton W. Brownley, Foundations for Analytics with Python**
3. **James Payne, Beginning Python using Python 2.6 and Python 3**
4. **Charles Dierach, Introduction to Computer Science using Python**
5. **Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3**

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc - II Year
Semester –III & IV
Computer Science Paper – III & IV
Scheme of Model Question Paper

Time: 2 ½ hrs
Max.Marks : 100

Semester Exam Pattern **70 Marks**

Section –A – 8 Short Answer Questions-Answer any 6 — 6 X 3 = 18 Marks
Each Question carries 3 Marks.

Section – B—4 Long Answer Questions-With Internal Choice — 4 X 13 = 52 Marks
Each Question carries 13 Marks

Total=70 Marks

Internal Assessment Pattern **30 Marks** **Duration - 20 Minutes**

In Internal Assessment there will be
20 Multiple Choice Questions — 20X1 = 20 Marks
Two internals will be conducted and average of these two is considered.

Assignment : 5 Marks
Seminar : 5Marks

Total Internal Assessment Marks 30 Marks

Practical Exam pattern **Max Marks:25** **Duration:3hrs**

Program execution — 7.5X2=15marks
4 practical question-Attempt any two each carries 7.5marks
Record — 5marks
Viva — 5marks

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B.Sc Computer Science-II Year
Semester – III/IV-Paper – III/IV
Theory Model Question Paper

Time: 2 ½ hrs | Max. Marks: 70

SECTION A

I Write short notes on any Six of the following: 6 X 3 = 18 Marks

1. A question from Unit I
2. A question from Unit I
3. A question from Unit II
4. A question from Unit II
5. A question from Unit III
6. A question from Unit III
7. A question from Unit IV
8. A question from Unit IV

SECTION B

II Answer all the Questions. Each question carries 13 marks 4 X 13 = 52 Marks

9 (a) A question from Unit I
(OR)
(b) A question from Unit I

10 (a) A question from Unit II
(OR)
(b) A question from Unit II .

11 (a) A question from Unit III.
(OR)
(b) A question from Unit III.

12 (a)A question from Unit IV
(OR)
(b) A question from Unit IV.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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B.Sc Computer Science-IIYear
Semester – III/IV Paper – III/IV
Data Structure using C++
Practical Model Question Paper

Time: 3 hrs **Max. Marks: 25**

I. Answer any two questions:
1.program 1.
2.program 2
3.program 3
4.program 4

Program execution **(15 Marks)**
II. Record **(5 Marks)**
III. Viva **(5 Marks)**

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B.Sc Computer Science-II Year
Semester – III/IV-Paper(SEC) – III/IV
Theory Model Question Paper

Time: 1 ½ hrs **Max. Marks: 35**

SECTION A

I Write short notes on any THREE of the following: 5 X 3 = 15 Marks

1. A question from Unit I
2. A question from Unit I
3. A question from Unit II
4. A question from Unit II

SECTION B

II Answer all the Questions. Each question carries 13 marks 2X 10 = 20 Marks

9 (a) A question from Unit I

(OR)

(b) A question from Unit I

10 (a) A question from Unit II

(OR)

(b) A question from Unit II .

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc Computer Science-II Year
Semester – III Paper – III
Data Structure Using C++
Theory Model Question Paper

Time: 2 ½ hrs Max. Marks: 70

SECTION A

I Write short notes on any Six of the following: 6 X 3 = 18 Marks

1. What is data structure?
2. What is Recursion:?
3. Define linked list?
4. What is BFS?
5. Binary Tree Traversal?
6. What is DLL ?
7. What is the best sorting technique?

SECTION B

II Answer all the Questions. Each question carries 13 marks 4 X 13 = 52 Marks

9 (a) Define Stack and STACK ADT?Explain with program stack using Array?

(OR)

(b) what is expression ? Write a program to convert an infix expression that includes (,), +, -, *, and / to postfix

10 (a) what is Queue? Explain different types of queue with program ?

(OR)

(b) What are the operations of a singly linked list? Discuss Differentiate between doubly linked list and circular linked list.?

11 (a) a) Define the following terms used in binary trees i) Siblings ii) height iii) level and Write recursive traversals of the tree with an example?

(OR)

(b)) Explain the algorithm for insertion sort and give a suitable example and Demonstrate the insertion sort results for each pass for the following initial array of elements . 21 6 3 57 13 9 14 18 2

12 (a) Explain the graph traversal methods with suitable examples

(OR)

(b)Explain the implementation heap and heap ADT?

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(AUTONOMOUS)
B.Sc Computer Science-IIYear
Semester – III/IV Paper – III/IV
Data Structure using C++
Practical Model Question Paper

Time: 3 hrs | Max. Marks: 25

I. **Answer any two questions:**

1. Write C++ programs to implement the following using an array
   a) Stack ADT b) Queue ADT
2. Write a C++ program to implement Circular queue using Single linked list.
3. Write a C++ program that uses recursive functions to traverse a binary search tree.
   a..Pre-order b.In order c.Post order
4. Write a C++ program to find MIN and MAX element of a BST.

Program execution (15 Marks)

II. **Record** (5 Marks)

III. **Viva** (5 Marks)

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B.Sc Computer Science-II Year
Semester – IV Paper – IV
DATA BASE MANAGEMENT SYSTEM
Theory Model Question Paper

Time: 2 ½ hrs

Max. Marks: 70

SECTION A

I Write short notes on any Six of the following: 6 X 3 = 18 Marks

8. What is database?
9. What is Normalization?
10. Define tigger?
11. Define serilizabilty?
12. Aggregation?
13. What is Concurrency?
14. What is dead lock?
15. Define functional dependency?

SECTION B

II Answer all the Questions. Each question carries 13 marks 4 X 13 = 52 Marks

9 (a) what is relationship? List and explain relational Algerbra?

(OR)

(b) Define Data Model? Explain various types of data models?

10 (a) what is ER Model? Explain with example about ER model?

(OR)

(b) What is Normal Form? Explain 1NF and 2NF with example?

11 (a) Define SQL? List and explain with example DDL and DML Commands?

(OR)

(b) explain about PL/SQL with syntax and example ?

12 (a)Explain about Transaction with ACID properties?

(OR)

(b) Explain about lock Management?

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Semester – IV Paper – IV
DataBase Management System
Practical Model Question Paper

Time: 2 hrs **Max. Marks: 25**

I. Answer any two questions

1. Create the following tables and answer the queries given below:
Customer (CustID, email, Name, Phone, ReferrerID)Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)BicycleModel(ModelNo,Manufacturer,Style) Service (StartDate, BicycleID, EndDate)
   a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
   b) List all the customers who have the bicycles manufactured by manufacturer
   c) "Honda".
   d) List the bicycles purchased by the customers who have been referred by Customer "C1".
2. Create the following tables, enter at least 5 records in each table and answer the queries given below.
Employee (Person_Name, Street, City)Works (Person_Name, Company_Name, Salary) Company (Company_Name, City)Manages (Person_Name, Manager_Name)
   a) Identify primary and foreign keys.
   b) Alter table employee, add a column "email" of type varchar(20).
   c) Find the name of all managers who work for both Samba Bank and NCB Bank.
   d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than $10,000.
3. Write a PL/SQL Program to demonstrate Function.
4. Write a PL/SQL program to Handle Exceptions.

Program execution	(15 Marks)
II.Record	(5 Marks)
III.Viva	(5 Marks)

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