HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED)

(Affiliated to Osmania University)

Nallakunta, Hyderabad-44

B.Sc. II YEAR SEMESTER III

DEPARTMENT OF COMPUTER SCIENCE

2017-2018

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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DEPARTMENT OF COMPUTER SCIENCE

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Head – Department of Computer Science
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Nallakunta, Hyderabad.

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Ex-Officio Member – BOS
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Osmania University, Hyderabad

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2. Mrs. B. Ramani
   Subject Expert
   Andhra Mahila Sabha Arts and Science College
   Osmania University, Hyderabad
3. Shri N. Srikanth
   Industry Expert
   Tech Mahindra, Hyderabad

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BOARD OF STUDIES

DEPARTMENT OF COMPUTER SCIENCE

COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I. **Composition : Department of Computer Science**

1. **Head of the department concerned (Chairperson)**
   Shri Subash Chandra Badola-Department of Computer Science

2. **The entire faculty of each specialization**
   Shri Subash Chandra Badola

3. **One expert to be nominated by the vice-chancellor from a panel if six recommended by the College Principal**

   1. Dr. C. Goverdhan Ex-Officio Member-BOS. Department of Computer Science

4. **Three Experts in the subject from outside the college to be nominated by the Academic Council**

   1. Prof. M. V. Ramana Murthy, Chairperson, Dept of Maths
   2. Mrs. B. Ramani, Subject Expert – Department of Computer Science.
   3. Shri N.Srikanth, Industry Expert

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
Department of Computer Science

Academic Year – 2017-18

Board of Studies Meeting on _____ **at** _____

Agenda

2.1 The chairperson can update the activities since last meeting including a review of semester examination results.

2.2 Preparation of Scheme of instruction and Evaluation

2.3 Revision of existing courses/syllabus.

2.4 Panel of Paper Setters and valuers for the existing Year 2017-2018

2.5 Any other Matter

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DEPARTMENT OF COMPUTER SCIENCE
BOARD OF STUDIES
Academic Year – 2017-18
Minutes of BOS Meeting

BOS meeting of the Department of Computer Science was held on, 29th July 2017 at 10:30 A.M

The following members were present

Dr. C. Goverdhan	-	Ex-officio Member
Shri Subhash Chandra Badola		Chairman
Prof. Shri M.V. Ramana Murty	-	Member
Mrs. B. Ramani	-	Member
Shri N. Srikanth	-	Member

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2.1 Welcome address by the chair

The chair welcomed the University Nominee, Ex-officio Member BOS, O.U Department of Computer Science and Members of B.O.S.

2.2 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. 4 Credits are given for theory paper and 1 credit is given for practical in each semester.

2.3 Discussion and Distribution of Common Core Syllabus.

i. Members were informed by the chair that Department of Computer Science, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University for B.Sc II Year for Semester III and IV.

ii. We are adopting Osmania University same syllabus of each Semester as it is with minor changes in theory papers of Semester III and IV.

Syllabus copy for both the semesters is enclosed.
Syllabus was approved by the Members of BOS.

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2.4 Marks allotted for Internal and End Semester exams.

1. Internal assessment is of 20 marks. (15M for Internal + 5 M for assignment).In each Semester two internal assessment of 15 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 80 marks.
3. Total allotted marks are 100.
4. Internal assessment is of 10 marks for SEC. One internal assessment of 10 Marks will be conducted and added in the marks of Theory exam.
5. Theory Question paper for SEC is of 40 marks.
6. Total allotted marks are 50 for each SEC.

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

2.5 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 15 marks. The internal assessment will have three sections.
   Section – A 10 Multiple choice questions each carries ½ marks (10* ½ = 5M),
   Section – B 10 Fill in the blanks each carries ½ marks (10* ½ = 5M) and
   Section – C 5 short notes each 1mark (5*1=5)
   Average of marks of these two internal exams will be taken. 5 marks will be allotted for assignment.
2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30Mts and Semester exam duration will be of 3 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 four questions. Each question carries 5 Marks (4X5=20 Marks)
   ii) Section B contains 4 Essay type Questions with internal choice. Each question carries 15 Marks (4X15=60 Marks)
4. Model Question paper for SEC Semester III and Semester IV was discussed. Theory paper for each SEC will have 2 sections.
   i) Section A contains 2 short Questions. The student has to answer TWO questions Each Question carries 5 Marks (2X5=10 Marks)
   ii) Section B contains 2 Essay type Questions with internal choice. Each Question carries 15 Marks (2X15=30 Marks)

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

2.6 Discussion on Practical Exam Model paper.

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Dept. of Computer Science
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It was decided in BOS meeting that 50 Marks Practical Exam of 3 hrs will be held in each Semester 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

2.7 Panel of Examiners

The panel of examiners was approved by the members.

- List is enclosed

2.8 Any other matter.

2.9 Vote of Thanks

Meeting concluded with the Vote of Thanks by Shri Subhash Chandra Badola

Chairperson **University Nominee** **Members** **Principal**

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3. Board of Studies in Mathematics
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Meeting concluded with the Vote of Thanks by Shri Subhash Chandra Badola

Chairperson **University Nominee** **Members** **Principal**

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2017-18 CBCS STRUCTURE

SCHEME OF INSTRUCTIONS & EVALUATION

B.SC. M P CS / M S CS

SECOND YEAR SEMESTER-III					Semester End exam		Continuous Internal Evaluation		Total	Practical 3 HRS
Code	Course Title	Course Type	HPW	Credits	Duration in HRS	Marks	Exam Duration	Marks		
BS301	A/B	SEC-1	2	2	2	40	30 min	10	50	-
BS302	English	CC-1C	5	5	3	80	30 min	20	100	-
BS303	Second Language	CC-2C	5	5	3	80	30 min	20	100	-
BS304	MATHS	DSC-1C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS305	PHYSICS / STATISTICS	DSC-2C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS306	COMPUTER SCIENCE	DSC-3C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
			30	27		440		110	700	

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Unit – III

Trees: Introduction, Representation of a General Tree, Binary Tree Introduction, Binary Tree Abstract Data Type, Implementation of Binary Trees, Binary Tree Traversals – Preorder, Inorder, Postorder Traversals. Applications of Binary Trees Briefly. Graphs: Introduction, Graph Abstract Data Type, Representation of Graphs, Graph Traversal – Depth-First Search, Breadth-First Search, Spanning Tree – Prim's Algorithm, Kruskal's Algorithm. Hashing: Introduction, Hash Functions, Collision Resolution Strategies.

Unit – IV

Searching and Sorting: Sequential (Linear) Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, and Comparison of Sorting Techniques. Heaps: Concept, Implementation, Abstract Data Type, Heap Sort.

Text

Varsha H. Patil, Data Structures Using C++

References

1. Nell Dale,C++ Plus Data Structures Seymor Lipschutz, Data Structures (Revised 1e)
2. Adam Drozdek,Data Structures and Algorithms in C++
3. Mark Allen Weiss,Data structures and Algorithm Analysis in C++ (4e)
4. D.S. Malik, C++ Programming: Program Design Including Data Structures (6e)
5. Michael Main, Walter Savitch, Data Structures and Other Objects Using C++ (4e)
6. Michael T. Goodrich, R. Tamassia, David M. Mount,Data Structures and Algorithms in C++

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B.Sc II Year Semester III

Computer Science

Paper – III (Practical / laboratory)

Data Structures Lab

Subject Code: BS 306P

Instruction	: 2 Hrs/Week
Duration of the Semester Examination	: 3 Hrs
Marks for Semester Examination	: 50 M
No of Credits	: 1 Credit

1. Write programs to implement the following using an array: a) Stack ADT b) Queue ADT.
2. Write a program to convert the given infix expression to postfix expression using stack.
3. Write a program to evaluate a postfix expression using stack.
4. Write a program to ensure the parentheses are nested correctly in an arithmetic expression.
5. Write a program to find following using Recursion
    a) Factorial of +ve Integer
    b) nth term of the Fibonacci Sequence
    c) GCD of two +ve integers
6. Write a program to create a single linked list and write functions to implement the following operations.
    a. Insert an element at a specified position
    b. Delete a specified element in the list
    c. Search for an element and find its position in the list
    d. Sort the elements in the list ascending order
7. Write a program to create a double linked list and write functions to implement the following operations.
    a. Insert an element at a specified position
    b. Delete a specified element in the list
    c. Search for an element and find its position in the list
    d. Sort the elements in the list ascending order
8. Write a program to create singular circular linked lists and function to implement the following operations.
    a. Insert an element at a specified position
    b. Delete a specified element in the list
    c. Search for an element and find its position in the list
9. Write programs to implement the following using a single linked list:
    a. Stack ADT b . Queue ADT.
10. Write a program to implement Binary search technique using Iterative method and Recursive methods.
11. Write a program for sorting the given list numbers in ascending order using the following technique:
    Bubble sort and Selection sort
12. Write a program for sorting the given list numbers in ascending order using the following technique:
    Insertion sort and Quick sort
13. Write a program for sorting the given list numbers in ascending order using the following technique:
    Merge sort and Heap sort
14. Write a program to traverse a binary tree in following way a Pre order b. In order c. Post-order

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Department of Computer Science

B.Sc II Year- Semester-III

Paper-III

Internal Exam (Theory)

Time: 30 Minutes

Maximum marks: 20

- Two internal exams (one at the middle of the semester and the other at the end) of half an hour duration are to be conducted carrying 15 marks each.
- Average of the scores of two exams should be taken into account.
- Following is the examination pattern.
  - 10 MCQs (multiple choice questions) of half mark each,
  - 10 FIBs (Fill in the Blanks) of half mark each
  - 5 SAQs (short answered questions) of one mark each
  - **Totaling 15 marks.**
  - 5 marks meant for assignment.

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Department of Computer Science

B.Sc II Year- Semester-III

Paper-III

Code : BS306

Theory Model Paper

Time: 3 Hrs.

Maximum marks: 80

Section – A

I. Answer any four of the following of eight questions. Each carries four marks. **(4 x 5M = 20 Marks)**

Q1. From Unit 1
Q2. From Unit 1
Q3. From Unit 2
Q4. From Unit 2
Q5. From Unit 3
Q6. From Unit 3
Q7. From Unit 4
Q8. From Unit 4

Section – B

II. Answer all the following four questions. Each carries FIFTEEN marks. **(4 x 15M = 60 Marks)**

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2
Q11. (a) or (b) from Unit 3
Q12. (a) or (b) from Unit 4

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B.Sc II Year Semester III
Computer Science
Paper – III

Time:3Hrs **Total Marks: 50Marks**

I	Answer any one question Program Execution	30 Marks
II	Record	10 Marks
III	Viva	10 Marks

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B.Sc II Year Semester III

COMPUTER SCIENCE

SEC-1A

SciLab – 1

Code BS 301

No of Credits: 2

No of Hours: 30Hrs.

Unit – I

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab. The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos. Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

Unit – II

Scalars & Vectors – elementary mathematical functions, mathematical functions on scalars, complex numbers, trigonometric functions, inverse trigonometric functions, hyperbolic functions. Matrices – introduction, arithmetic operators for matrices, basic matrix processing. Polynomials – introduction, creating polynomials, basic polynomial commands, finding roots of polynomial, polynomial arithmetic, miscellaneous polynomial handling.

Text

1. Er. Hema Ramachandran, Dr. Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB

References

1. Digite, Introduction to Scilab Digite, Optimization in Scilab Scilab Enterprises, Scilab for Very Beginners Digite, Introduction to Discrete Probabilities with Scilab

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B.Sc II Year Semester III

COMPUTER SCIENCE

SEC-1B

Boolean Algebra

Code – BS 301

No of Credits: 2

No of Hours: 30Hrs.

Unit – I

Introduction Number Systems and Conversion: Digital Systems and Switching Circuits, Number Systems and Conversion, Binary Arithmetic, Representation of Negative Numbers, Binary Codes. Boolean Algebra: Basic Operations, Boolean Expressions and Truth Tables, Basic Theorems, Commutative, Associative, Distributive, and DeMorgan's Laws, Simplification Theorems, Multiplying Out and Factoring, Complementing Boolean Expressions.

Unit – II

Boolean Algebra: Multiplying Out and Factoring Expressions, Exclusive-OR and Equivalence Operations, The Consensus Theorem, Algebraic Simplification of Switching Expressions, Proving Validity of an Equation, Programmed Exercises. Applications of Boolean Algebra Minterm and Maxterm Expansions: Conversion of English Sentences to Boolean Equations: Combinational Logic Design Using a Truth Table, Minterm and Maxterm Expansions, General Minterm and Maxterm Expansions, Examples of Truth Table Construction, Design of Binary Adders and Subtracters.

Text

1. Charles H. Roth, Jr. and Larry L. Kinney, Fundamentals of Logic Design (7e)

References:

1. M. Morris Mano, Michael D. Ciletti, Digital Design (4e)
2. A. Saha and N. Manna, Digital Principles and Logic Design
3. M. Rafiquzzaman, Fundamentals of Digital Logic and Microcontrollers (6e) Elliott
4. Mendelson, Theory and Problems of Boolean Algebra and Switching Circuit
5. M. Morris Mano, Charles R. Kime, Tom Martin, Logic and Computer Design Fundamentals

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B.Sc II Year Semester III

COMPUTER SCIENCE

SEC-1

Internal Model Paper

Time: 30 Minutes. Maximum marks: 10

- One internal exam at the end of the semester, of half an hour duration is to be conducted carrying 10 marks.
- Following is the examination pattern.
  - 10 MCQs (multiple choice questions) of ½ mark each
  - 10 FIB(Fill in the Blanks) of ½ Mark each.

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B.Sc II Year Semester III

COMPUTER SCIENCE

SEC-1

Code: BS301

Theory Model Paper

Time: 2 Hrs.

Maximum marks: 40

Section – A

1. Answer any two of the following four questions. Each carries five marks. **(2 x 5M = 10 Marks)**

Q1. From Unit 1
Q2. From Unit 1
Q3. From Unit 2
Q4. From Unit 2

Section – B

2. Answer all the following two questions. Each carries fifteen marks. **(2 x 15M = 30 Marks)**

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2

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