HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED)
(Affiliated to Osmania University)
Nallakunta, Hyderabad-44

B.Sc. II YEAR SEMESTER IV

DEPARTMENT OF COMPUTER SCIENCE

2017-2018

HINDI MAHAVIDYALAYA

(AUTONOMOUS)
Affiliated to Osmania University
Nallakunta, Hyderabad-44

2017-18 CBCS STRUCTURE

SCHEME OF INSTRUCTIONS & EVALUATION

B.SC. M P CS / M S CS

SECOND YEAR SEMESTER-IV					Semester End exam		Continuous Internal Evaluation		Total	Practical 3 HRS
Code	Course Title	Course Type	HPW	Credits	Duration in HRS	Marks	Exam Duration	Marks		
BS401	C/D	SEC-2	2	2	2	40	30 min	10	50	-
BS402	English	CC -1D	5	5	3	80	30 min	20	100	-
BS403	Second Language	CC-2D	5	5	3	80	30 min	20	100	-
BS404	MATHS	DSC-1D	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS405	PHYSICS / STATISTICS	DSC-2D	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS406	COMPUTER SCIENCE	DSC-3D	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
			30	27		440		110	700	

Department of Computer Science
Hindi Mahavidyalaya

Board of Studies in Computer Science
Dept. of Economics
Osmania University, Hyd

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(AUTONOMOUS)

B.Sc II Year Semester IV

Computer Science

Paper – IV

Database Management Systems

Course Objective:

The purpose of the course is to introduce to the students the concepts of Database design, implementation and management. The course includes the entity-relation approach to data modeling, the study of the relational model, and the use of a query language like SQL.

Subject Code: BS406

Instruction	**4 Hrs/ Week**
Duration of the Semester Examination	**3 hrs**
Duration of the Internal Examination	**30 Mins**
Semester Examination	**80 Marks**
Internal Examination	**20 Marks**
No of Credits	**4 Credits**

Unit – I

Introduction to Databases: Introduction, Traditional File-Based Systems, Database Approach, Roles in the Database Environment, Advantages and Disadvantages of DBMSs, The Three-Level ANSI- SPARC Architecture, Database Languages, Data Models, Functions of a DBMS, Components of a DBMS. Relational Model: Introduction, Terminology, Integrity Constraints, Views. The Relational Algebra: Unary Operations, Set Operations, Join Operations, Division Operation, Aggregation and Grouping Operations

Unit – II

SQL: Introduction, Data Manipulation–Simple Queries, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Multi-table Queries, EXISTS and NOT EXIST, Combining Result Tables, Database Updates. SQL: The ISO SQL Data Types, Integrity Enhancement Feature–Domain Constraints, Entity Integrity, Referential Integrity, General Constraints, Data Definition–Creating a Database, Creating a Table, Changing a Table Definition, Removing a Table, Creating an Index, Removing an Index, Views–Creating a View, Removing a View, View Resolution, Restrictions on Views, View Updatability, WITH CHECK OPTION, Advantages and Disadvantages of Views, View Materialization, Transactions, Discretionary Access Control–Granting Privileges to Other Users, Revoking Privileges from Users. Advanced SQL: The SQL Programming Language–Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.

Unit – III

Entity–Relationship Modeling: Entity Types, Relationship Types, Attributes, Keys, Strong and Weak Entity Types, Attributes on Relationships, Structural Constraints, Problems with ER Models–Fan Traps, Chasm Traps. Enhanced Entity–Relationship Modeling: Specialization/Generalization, Aggregation, Composition. Functional–Dependencies: Anomalies, Partial Functional Dependency, Transitive Functional Dependency, Multi Valued Dependency, Join Dependency. Normalization: The Purpose of

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B.Sc II Year Semester IV
Computer Science
Paper – IV
Database Management Systems

Course Objective:

The purpose of the course is to introduce to the students the concepts of Database design, implementation and management. The course includes the entity-relation approach to data modeling, the study of the relational model, and the use of a query language like SQL.

Subject Code: BS406	
Instruction	**4 Hrs/ Week**
Duration of the Semester Examination	**3 hrs**
Duration of the Internal Examination	**30 Mins**
Semester Examination	**80 Marks**
Internal Examination	**20 Marks**
No of Credits	**4 Credits**

Unit – I

Introduction to Databases: Introduction, Traditional File-Based Systems, Database Approach, Roles in the Database Environment, Advantages and Disadvantages of DBMSs, The Three-Level ANSI- SPARC Architecture, Database Languages, Data Models, Functions of a DBMS, Components of a DBMS. Relational Model: Introduction, Terminology, Integrity Constraints, Views. The Relational Algebra: Unary Operations, Set Operations, Join Operations, Division Operation, Aggregation and Grouping Operations

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SQL: Introduction, Data Manipulation–Simple Queries, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Multi-table Queries, EXISTS and NOT EXIST, Combining Result Tables, Database Updates. SQL: The ISO SQL Data Types, Integrity Enhancement Feature–Domain Constraints, Entity Integrity, Referential Integrity, General Constraints, Data Definition–Creating a Database, Creating a Table, Changing a Table Definition, Removing a Table, Creating an Index, Removing an Index, Views–Creating a View, Removing a View, View Resolution, Restrictions on Views, View Updatability, WITH CHECK OPTION, Advantages and Disadvantages of Views, View Materialization, Transactions, Discretionary Access Control–Granting Privileges to Other Users, Revoking Privileges from Users. Advanced SQL: The SQL Programming Language–Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.

Unit – III

Entity–Relationship Modeling: Entity Types, Relationship Types, Attributes, Keys, Strong and Weak Entity Types, Attributes on Relationships, Structural Constraints, Problems with ER Models–Fan Traps, Chasm Traps. Enhanced Entity–Relationship Modeling: Specialization/Generalization, Aggregation, Composition. Functional–Dependencies: Anomalies, Partial Functional Dependency, Transitive Functional Dependency, Multi Valued Dependency, Join Dependency. Normalization: The Purpose of

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Normalization, How Normalization Supports Database Design, Data Redundancy and Update Anomalies, Functional Dependencies in brief, The Process of Normalization,1NF, 2NF, 3NF, BCNF. The Database Design Methodology for Relational Databases

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, Computer-Based Controls–Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

Text

Thomas M. Connolly, Carolyn E. Begg, Database Systems–A Practical Approach to Design, Implementation, and Management (6e)

References

1. Sharon Allen, Evan Terry.Beginning Relational Data Modeling
2. Jeffrey A. Hoffer, V. Ramesh, Heikki Topi, Modern Database Management
3. Raghu Ramakrishnan, Johannes Gehrke.Database Management Systems
4. Ramez Elmasri, Shamkant B. Navathe.Fundamentals of Database Systems
5. Abraham Silberschatz, Henry F. Korth, S. Sudarshan
6. Database System Concepts C Coronel, S Morris, Peter Rob,

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B.Sc II Year Semester IV
Computer Science
Paper – IV (Practical /laboratory)
Database Management Systems Lab

Subject Code: BS 406P

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

Consider the relational schema for part of the Dream Home case study is:
Branch (branch No, street, city, postcode)
Staff (staff No, fName, IName, position, sex, DOB, salary, branch No)
Property For Rent (propertyNo, street, city, postcode, type, rooms, rent, OwnerNo, staffNo, branchNo)
Client (clientNo, fName, IName, telNo, prefType, maxRent, eMail)
Private Owner (Owner No, fName, IName, address, telNo, eMail, password)
Viewing (clientNo, propertyNo, viewDate, comment)
Registration (clientNo, branchNo, staffNo, dateJoined)

1. Create a database with name "DreamHome" and now create all the tables listed above with constraints.
2. Insert a new row into the table supplying data for all columns.
3. 3.Modify data in the database using UPDATE
4. 4.Delete data from the database using DELETE
5. 5.Changing a table definition using ALTER
6. 6.Removing a table using DROP
7. 7.Removing rows in table using TRUNCATE
8. 8.Create an index and removing an index
9. 9.Practice other standard SQL commands for creating, modifying, displaying data of tables.
10. 10.List full details of all staff.
11. List all staff with a salary greater than £10000.
12. List the property numbers of all properties that have been viewed.
13. Produce a list of salaries for all staff, showing only the staffNo, fName, IName, and salary details.
14. List all cities where there is either a branch office or a property for rent.
15. List all cities where there is a branch office but no properties for rent.
16. List all cities where there is both a branch office and at least one property for rent.
17. List the names and comments of all clients who have viewed a property for rent.
18. Produce a status report on property viewings.
19. List complete details of all staff who work at the branch in Glasgow.
20. List the addresses of all branch offices in London or Glasgow
21. List all staff with a salary between £20,000 and £30,000.
22. Identify all clients who have viewed all properties with three rooms.
23. How many properties cost more than £350 per month to rent?
24. How many different properties were viewed in May 2013?
25. Find the total number of Managers and the sum of their salaries.

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26. Find the minimum, maximum, and average staff salary.
27. Find the number of staff working in each branch and the sum of their salaries.
28. List all managers and supervisors.
29. Find all owners with the string 'Glasgow' in their address.
30. List the details of all viewings on property PG4 where a comment has not been supplied.
31. Produce a list of salaries for all staff, arranged in descending order of salary.
32. Produce an abbreviated list of properties arranged in order of property type.
33. Find the number of staff working in each branch and the sum of their salaries.
34. For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of their salaries.
35. List the staff who work in the branch at '163 Main St'.
36. List all staff whose salary is greater than the average salary, and show by how much their salary is greater than the average.
37. List the properties that are handled by staff who work in the branch at '163 Main St'.
38. Find all staff whose salary is larger than the salary of at least one member of staff at branch B003.
39. Find all staff whose salary is larger than the salary of every member of staff at branch B003
40. List the names of all clients who have viewed a property, along with any comments supplied.
41. For each branch office, list the staff numbers and names of staff who manage properties and the properties that they manage.
42. For each branch, list the staff numbers and names of staff who manage properties, including the city in which the branch is located and the properties that the staff manage.
43. Find the number of properties handled by each staff member, along with the branch number of the member of staff.
44. List all branch offices and any properties that are in the same city.
45. List all properties and any branch offices that are in the same city.
46. List the branch offices and properties that are in the same city along with any unmatched branches or properties.
47. Find all staff who work in a London branch office.
48. Construct a list of all cities where there is either a branch office or a property.
49. Construct a list of all cities where there is both a branch office and a property.
50. Create a view so that the manager at branch B003 can see the details only for staff who work in his or her branch office.
51. Create a view of the staff details at branch B003 that excludes salary information, so that only managers can access the salary details for staff who work at their branch.
52. Create a view of staff who manage properties for rent, which includes the branch number they work at, their staff number, and the number of properties they manage.
53. Removing a view using DROP VIEW
54. Give the user with authorization identifier Manager all privileges on the Staff table.
55. Give users Personnel and Director the privileges SELECT and UPDATE on column salary of the Staff table.
56. Revoke the privilege SELECT on the Branch table from all users.
57. Revoke all privileges you have given to Director on the Staff table.
58. Demonstrate exceptions in PL/SQL
59. Demonstrate cursors in PL/SQL
60. Write PL/SQL queries to create procedures.
61. Write PL/SQL queries to create functions.
62. Write PL/SQL queries to create package.
63. Write PL/SQL queries to create triggers.
64. Write PL/SQL queries using recursion.

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27. Find the number of staff working in each branch and the sum of their salaries.
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31. Produce a list of salaries for all staff, arranged in descending order of salary.
32. Produce an abbreviated list of properties arranged in order of property type.
33. Find the number of staff working in each branch and the sum of their salaries.
34. For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of their salaries.
35. List the staff who work in the branch at '163 Main St'.
36. List all staff whose salary is greater than the average salary, and show by how much their salary is greater than the average.
37. List the properties that are handled by staff who work in the branch at '163 Main St'.
38. Find all staff whose salary is larger than the salary of at least one member of staff at branch B003.
39. Find all staff whose salary is larger than the salary of every member of staff at branch B003
40. List the names of all clients who have viewed a property, along with any comments supplied.
41. For each branch office, list the staff numbers and names of staff who manage properties and the properties that they manage.
42. For each branch, list the staff numbers and names of staff who manage properties, including the city in which the branch is located and the properties that the staff manage.
43. Find the number of properties handled by each staff member, along with the branch number of the member of staff.
44. List all branch offices and any properties that are in the same city.
45. List all properties and any branch offices that are in the same city.
46. List the branch offices and properties that are in the same city along with any unmatched branches or properties.
47. Find all staff who work in a London branch office.
48. Construct a list of all cities where there is either a branch office or a property.
49. Construct a list of all cities where there is both a branch office and a property.
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Department of Computer Science

B.Sc II Year- Semester-IV

Paper-IV

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-IV

Paper-IV

Code:BS406 **Theory Model Paper**

Time: 3 Hrs. Maximum marks: 80

Section – A

I. Answer any four of the following 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 IV
Computer Science
Paper – IV

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 IV

COMPUTER SCIENCE

SEC-2C

SciLab – 2

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Code –BS401

No of Credits: 2

No of Hours: 30Hrs.

Unit – I

Programming in Scilab – introduction, variables & variable names, assignment statements, arithmetic, relational, logical operators, input & output, flow control/branching/conditional statements, break and continue, handling matrices with loops, scripts, the concept of functions, user defined functions, special function commands. Menus and Dialog Boxes – introduction, a simple menu example, scilab window with greetings menu added, executing submenus from command line, linking menus to scilab code from external files, entering data through dialog boxes, printing a message in a message box, dialog box for entering a matrix.

Unit – II

Graphic Output – introduction, 2d plotting, function versions for graphic commands, 3d plotting, other graphic primitives, other graphic commands. String Handling Functions – symbolic processing in scilab, creation of a linear combination of arguments, string to ASCII conversion, creation of a string of blank characters, conversion of a string to uppercase and lowercase, string matching, string concatenation, reversing a string, replacement of a string by another, length of a string, type checking. Statistics – introduction, basic statistical functions, applying statistical functions on matrices, distributions, frequency of values of a matrix or vector, centre, weighted centre, central moment, correlation, covariance, variance matrix, percentiles, frequencies, cumulative sum, difference of two independent samples, fisher test.

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,
2. Introduction to Discrete Probabilities with Scilab

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B.Sc II Year Semester IV

COMPUTER SCIENCE

SEC-2D

Digital Logic

Code BS401

No of Credits: 2

No of Hours: 30Hrs.

Unit – I

Karnaugh Maps: Minimum Forms of Switching Functions, Two- and Three-Variable Karnaugh Maps, FourVariable Karnaugh Maps, Determination of Minimum Expressions Using Essential Prime Implicants, Other Uses of Karnaugh Maps, Other Forms of Karnaugh Maps, Programmed Exercises. Multi-Level Gate Circuits NAND and NOR Gates: Multi-Level Gate Circuits, NAND and NOR Gates, Design of Two-Level NAND- and NOR-Gate Circuits, Design of Multi-Level NAND- and NOR-Gate Circuits, Circuit Conversion Using Alternative Gate Symbols, Design of Two-Level, Multiple-Output Circuits, Multiple-Output NAND- and NOR-Gate Circuits.

Unit – II

Combinational Circuit Design and Simulation Using Gates: Design of Circuits with Limited Gate Fan-In, Gate Delays and Timing Diagrams, Hazards in Combinational Logic, Simulation and Testing of Logic Circuits. Multiplexers, Decoders: Multiplexers, Three-State Buffers, Decoders and Encoders, Read-Only Memories.

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)
4. Elliott 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 IV

COMPUTER SCIENCE

SEC-2

Internal Exam (Theory)

me: 1/2 Hr. 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 IV

COMPUTER SCIENCE

SEC-2

de: BS401

Theory Model Paper

me: 2 Hrs. Maximum marks: 40

Section – A

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

1. From Unit 1
2. From Unit 1
3. From Unit 2
4. From Unit 2

Section – B

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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Department of Computer Science

Panel of Examiners

III/IV SEM

Sno	Name	Phone	Address/Ref
1	B.Ramani	9441214888	AMS, OU Campus, Hyd
2	G. Aparna	9440137700	AMS, OU Campus, Hyd Aparnamailbag@gmail.com
3	N.Veena	9849743764	Nizam College, Hyd
4	Sunitha	9951944377	Koti Women College , Hyd
5	Vijitha Malini	9000323206	Reddy College Narayan Guda, Hyd
6	Bhaskar Rao	9885639321	AV College, Domal Guda, Hyderabad
7	N.Bhaskar	9347983943	Bhavan College, Hyd
8	Kavitha	9393003871	St Fransis College For Women
9	Madhavi	9701401686	ACME College, Hyderabad
10	Veena	9985117688	AV College , Domal Guda , Hyderabad
11	Sharanya	9849555856	Reddy College Narayan Guda, Hyd
12	Mallishwari	9848313746	Siddartha college Dilshuk Nagar
13	Vijitha	9640508855	Keshav Memorial College, Narayan guda, Hyd
14	D.Hema Latha	9393003982	Koti Women College , Hyd

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