UG PROGRAM (4 Years Honors)

CBCS - 2020-21

B. Sc/ B.A
Computer Applications

Syllabus and Model Question Papers

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Note: BOS is to provide final soft copy in PDF and word formats and four copies of hard copies in bounded form to the office of Dean Academic affairs.

1. RESOLUTIONS OF THE BOARD OF STUDIES

Meeting held on: 22.01.2021. Time:10 A.M At: Adikavi Nannaya University, RJY

Agenda:

1. Adoption of revised-common program structure and revising/updating course - wise syllabi (in the prescribed format) as per the guidelines issued by APSCHE.
2. Adoption of regulations on scheme of examination and marks/grading system of the University UG programs.
3. Preparation of Model question Courses in prescribed format.
4. List of equipment/software requirement for each lab/practical
5. Eligibility of student for joining the course.
6. Eligibility of faculty for teaching the course.
7. List of Course-setters /Course evaluators with phone, email-id in the prescribed format

Members present:

Dr. P.Venkateshwara Rao	Chairman, Dept. of CSE, ANUR.
Mr.D.Dasu	Coordinator, Dept. of CSE, ANUR
Mrs. P S V D Gayatri	Member, Dept. of CSE, ANUR

Resolutions:

1. Resolved to adopt the revised-common program structure and revising/updating course-wise syllabi (in the prescribed format) as per the guidelines issued by APSCHE.
2. Resolved to adopt the regulations on scheme of examination and marks/grading system of the University UG programs.
3. Resolved to prepare the Model question Courses in prescribed format.
4. Resolved to give the list of equipment/software requirement for each lab/practical
5. Resolved the eligibility of student for joining the course
6. Resolved the eligibility of faculty for teaching the course
7. Resolved to give the list of Course-setters/Course evaluators with phone, email-id in the prescribed format

2. DETAILS OF COURSE TITLES & CREDITS

Sem	Course no.	Course Name	Course type **(T/L/P)**	Hrs/Week **(Arts:5+2)**	Credits **(Arts:4 +1)**	Max. Marks **Cont/ Internal /Mid -Assessment**	Max. Marks **Sem- end Exam**
I	1	Computer Fundamentals and Office Tools	T	5	4	25	75
		Computer Fundamentals and Office Tools Lab	L	2	1	-	50
II	2	Programming in C	T	5	4	25	75
		Programming in C Lab	L	2	1	-	50
III	3	Database Management System	T	5	4	25	75
		Database Management System Lab	L	2	1	-	50
IV	4	Object Oriented Programming using Java	T	5	4	25	75
		Object Oriented Programming using Java Lab	L	2	1	-	50
	5	Web Design	T	5	4	25	75
		Web Design Lab	L	2	1	-	50

Note: *Course type code: T: Theory, L: Lab, P: Problem solving

a. Proposed combination subjects:
b. Student eligibility for joining in the course:
c. Faculty eligibility for teaching the course:
d. List of Proposed Skill enhancement courses with syllabus, if any:
e. Any newly proposed Skill development/Life skill courses with draft syllabus and required resources

f. Required instruments/software/ computers for the course (Lab/Practical course-wise required i.e., for a batch of 15 students)

Sem. No.	Lab/Practical Name	Names of Instruments/Software/ computers required with specifications	Brand Name	Qty Required
1	Computer Fundamentals and Office Tools Lab	Intel desktop PC(80GB HDD,512MB DDR), Windows OS, MS-Office		15
2	Programming in C Lab	Intel desktop PC(80GB HDD,512MB DDR), Windows OS, C compiler with supporting editors		15
3	Database Management System Lab	Intel desktop PC(80GB HDD,512MB DDR), Windows OS, Oracle 8i/9i or SQL Server, MY SQL		15
4	Object Oriented Programming using Java Lab	Intel desktop PC(80GB HDD,512MB DDR), Windows OS, JDK		15
5	Web Design Lab	Intel desktop PC(80GB HDD,512MB DDR), Windows OS, Web browser, XAMP,MY SQL		15

g. List of Suitable levels of positions eligible in the Govt/Pvt organizations Suitable levels of positions for these graduates either in industry/govt organization like, technical assistants/ scientists/school teachers, clearly define them, with reliable justification.

S.No	Position	Company/ Govt organization	Remarks	Additional skills required, if any
1	Software Programmer	IT Industry		
2	Software Developer	IT Industry		
3	Software Engineer	IT Industry		
4	Program Manager	IT Industry		
5	Clerk/PO	Banking Industry		
6	IT Specialist	Banking Industry		
7	Teacher/Lecturer/Asst.Prof	Education Institutes		
8	DB Admin	IT Industry/Medical		

h. List of Govt. organizations / Pvt companies for employment opportunities or internships or projects

S.No	Company/ Govt organization	Positio n type	Level of Position			
1	Software Development Industry					
2	E-Commerce Industry					
3	Medical Industry					
4	IT Industry					
5	Banking Industry					
6	Education Industry					

i. Any specific instructions to the teacher /Course setters/Exam-Chief Superintendent

3. PROGRAM OBJECTIVES, OUTCOMES, CO-CURRICULAR AND ASSESSMENT METHODS

B.Sc/ B.A	Computer Applications

1. Aim and objectives of UG program in Subject: Computer Applications

The Objectives of this Program describes what students are expected to know and be able to do by the time of graduation. The Computer Science/Applications Department's Bachelor of Science program must enable students to attain, by the time of graduation:

- An ability to identify, formulate and develop solutions to computational challenges.
- An ability to design, implement and evaluate a computational system to meet desired needs within realistic constraints.
- An ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals.
- An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession.
- An ability to communicate and engage effectively with diverse stakeholders.
- An ability to analyze impacts of computing on individuals, organizations, and society.
- Recognition of the need for and ability to engage in continuing professional development.
- An ability to use appropriate techniques, skills, and tools necessary for computing practice.
- Effectively utilizing their knowledge of computing principles and mathematical theory to develop sustainable solutions to current and future computing problems.
- Developing and implementing solution based systems and/or processes that address issues and/or improve existing systems within in a computing based industry.

1. Learning outcomes of Subject Computer Applications:.
   - Students will be able to communicate in written and oral forms in such a way as to demonstrate their ability to present information clearly, logically, and critically..
   - Students will be able to apply mathematical and computing theoretical concepts in solution of common computing applications, such as computing the order of an algorithm.
   - Students will be able to complete successfully be able to program small-to-mid- size programs on their own. Sufficient programming skills will require use of good practice, e.g., good variable names, good use of computational units, appropriate commenting strategies.
   - Students will be able to use appropriately system design notations and apply system design engineering process in order to design, plan, and implement software systems
   - In a self-selected area of depth in Computing, students will demonstrate a depth of knowledge appropriate to graduate study and/or lifelong learning in that area. Students should be able to read for understanding materials in that area beyond those assigned in coursework.
   - Students will be prepared for a career in an information technology oriented business or industry, or for graduate study in computer applications or other scientific or technical fields.
   - Use systems development, word-processing, spreadsheet, and presentation software to solve basic information systems problems

2. Recommended Skill enhancement courses: (Titles of the courses given below and details of the syllabus for 4 credits (i.e., 2 units for theory and Lab/Practical) for 5 hrs class-cum-lab work.

3. Recommended Co-curricular activities: (Co-curricular Activities should not promote copying from text book or from others' work and shall encourage self/independent and group learning)

   A. Measurable:
   1. Assignments
   2. Student seminars (Individual presentation of Courses)
   3. Quiz Programmes
   4. Individual Field Studies/projects
   5. Group discussion
   6. Group/Team
   7. Projects

   B. **General**
   1. Collection of news reports and maintaining a record of Course-cuttings relating to topics covered in syllabus
   2. Group Discussions
   3. Watching TV discussions and preparing summary points recording personal observations etc., under guidance from the Lecturers
   4. Any similar activities with imaginative thinking.

5. Recommended Continuous Assessment methods:

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests),
- Closed-book and open-book tests,
- Coding exercises,
- Practical assignments and laboratory reports,
- Observation of practical skills,
- Individual and group project reports,
- Efficient delivery using seminar presentations,
- Viva voce interviews.
- Computerized adaptive testing, literature surveys and evaluations,
- Peers and self-assessment, outputs form individual and collaborative work

4. DETAILS OF COURSE-WISE SYLLABUS

B. Sc /B.A	Semester: I	Credits: 4
Course: 1	COMPUTER FUNDAMENTALS AND OFFICE TOOLS	Hrs/Wk: 5

1. Aim and objective of Course:
   To introduce the fundamental concepts of Computers, Hardware, Software and able to interact with documentation, Power point and Spreadsheet.
2. Learning outcomes of Course:
   1. To learn about Basics of Computers
   2. To learn about basics of Hardware Components
   3. To learn about basics of Operating System Software
   4. To learn about basics of Application System Software
   5. To practice handful exercises on Documentation, Spreadsheet, Presentation
3. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

UNIT I: 12 Hrs

Basics of Computers : Definition of a Computer - Characteristics and Applications of Computers – Block Diagram of a Digital Computer – Classification of Computers based on size and working – Central Processing Unit – I/O Devices.

UNIT II: 12 Hrs

Primary, Auxiliary and Cache Memory – Memory Devices. Software, Hardware, Firmware and People ware – Definition and Types of Operating System – Functions of an Operating System – MS-DOS – MS Windows – Desktop, Computer, Documents, Pictures, Music, Videos, Recycle Bin, Task Bar – Control Panel.

UNIT III: 10 Hrs

MS-Word: Features of MS-Word – MS-Word Window Components – Creating, Editing, Formatting and Printing of Documents – Headers and Footers – Insert/Draw Tables, Table Auto format – Page Borders and Shading – Inserting Symbols, Shapes, Word Art, Page Numbers, Equations – Spelling and Grammar – Thesaurus – Mail Merge.

UNIT, IV: 10 Hrs

MS-PowerPoint: Features of PowerPoint – Creating a Blank Presentation - Creating a Presentation using a Template - Inserting and Deleting Slides in a Presentation – Adding Clip Art/Pictures - Inserting Other Objects, Audio, Video - Resizing and Scaling of an Object – Slide Transition – Custom Animation.

UNIT V: 12 Hrs

MS-Excel: Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Formulae, Referencing cells – Inserting Rows/Columns–Changing column widths and row heights, auto format, changing font sizes, colors, shading.

PRESCRIBED BOOKS:

1. Fundamentals of Computers by Reema Thareja, Second Edition, Publishers
2. Oxford University Press,India, ISBN: 9780199499274

REFERENCES:

1. Fundamentals of Information Technology Including Lab Work by Vinod Babu Bandari, Publishers : Pearson
2. Fundamentals of Computers by V.Raja Raman, Publishers : PHI
3. Microsoft Office 2010 Bible by John Walkenbach, Herb Tyson, Michael R.Groh and Faithe Wempen, Publishers : Wiley

1. Details of Lab Syllabus: **Computer Fundamentals and Office Tools LAB**

List of Experiments for Lab:

WORD:

1. Create curriculum vitae of a graduate
2. Design a visiting card for an Organization
3. Create a letter as the main document and create 5 records for the 5 persons use mail merge to create letter for selected persons among 5.
4. Macro's concept implementation.

SPREADSHEET:

1. Students Marks, Result, Grade & Rank Calculation

2. Number conversions:

Decimal to Octal, Hexa, Decimal, Binary
conversion Binary to decimal, octal, hexa decimal
conversion Octal to decimal, hexa decimal, binary
conversion Hexa decimal to decimal, octal, binary
conversion

Column Chart
Bar Chart
Pie Chart

POWERPOINT:

1. Make a Power point presentation about Social Network.
2. Make a Power point presentation about College.
3. Make a Power point presentation about the given topic.

5. RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

6. RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

MODEL QUESTION COURSE

B. Sc /B.A DEGREE EXAMINATION
SEMESTER: I
COMPUTER APPLICATIONS
Course 1: COMPUTER FUNDAMENTALS AND OFFICE TOOLS

Time: 3Hrs. Max. Marks: 75

Section - A

Answer any 5 question. **5X5 = 25M**

1. Write the Applications of Computers.
2. Define and write the types of Operating Systems.
3. Write the Features of MS-Word.
4. Write the Features of MS-Power Point.
5. Write the Features of MS-Excel.
6. Define and write examples for Software, Hardware, Firmware and People ware.
7. Write MS-Word Window Components.
8. Write about Types of effects in Custom Animation.

Section -B

Answer following question **5X10 = 50M**

9. a) Write about Classification of Computers based on size and working.

(OR)

b) Draw the block diagram of Computer and explain the functioning.

10. a) Write about different types of Memory.

(OR)

b) Explain the functions of Operating System.

11. a) Explain the process of inserting a table and write the properties of table in MS-Word.

(OR)

b) Write the process of mail merge to prepare progress reports of students in MS-Word.

12. a) Explain the process to inserting, resizing and scaling the objects in MS-Power Point.

(OR)

b) Write the process to prepare a power point presentation with designs and animations.

13. a) Write the process to prepare students results table using formulae in MS-Excel.

(OR)

b) What are the types of charts in Excel and write the process to insert a chart?

B. Sc /B.A	Semester: II	Credits: 4
Course: 2	PROGRAMMING IN C	Hrs/Wk: 4

1. Aim and objectives of Course:
   This course aims to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.
2. Learning outcomes of Course:
   On completing the subject, students will be able to:

   1. Analyse a given problem and develop an algorithm to solve the problem.
   2. Understand tokens and control structures in C.
   3. Understand arrays and strings and implement them.
   4. Understand the right way of using functions, pointers, structures and unions in C
   5. Develop and test programs written in C.
3. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

UNIT I: 12 Hrs

Introduction to Algorithms: Algorithm - Key features of Algorithms - examples of Algorithms, Flow Charts.

Introduction to C : Structure of C Program, Writing the first C Program , Files used in C Program, Compiling and Executing C Programs, Using Comments, Keywords, Identifiers, Basic Data Types in C, Variables, Constants, I/O Statements in C, Operators in C, Type Conversion and Type Casting.

UNIT II: 16 Hrs

Control and Looping Statements: Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue Statement, Goto Statement.

Functions: Introduction, using functions – Function declaration/ prototype – Function definition function call – return statement – Passing parameters, Recursive functions.

UNIT III: 16 Hrs

Arrays: Introduction, Declaration of Arrays , Accessing elements of the Array – Storing Values in Array, One dimensional array -declaration, initialization, Accessing one dimensional array, Passing one dimensional array to function, Two dimensional Arrays- declaration, initialization, Accessing two dimensional arrays, passing two dimensional arrays to functions.**Strings:** Introduction, String and Character functions**,** String Operations using String functions- strcat() , strcmp() , strcpy() , strlen().

UNIT IV: 8 Hrs

Pointers: declaring Pointer Variable, Pointer Expressions and Pointer Arithmetic , Passing Arguments to Functions using Pointers, Memory Allocation in C Programs, Drawbacks of Pointers.

UNIT V: 8 Hrs

Structures: Introduction to structures, Arrays of Structures, Nested Structures.

Union and Enumerated Data Types: Introduction to Union – accessing union elements**,** Enumerated Data Types.

TEXT BOOKS:

1. Computer Fundamentals and Programming in C by REEMA THAREJA from OXFORD UNIVERSITY PRESS

REFERENCE BOOKS:

1. E Balagurusamy - Programming in ANSI C Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The ‘C’ Programming language” - Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us ‘C’ BPB Publications**.**

4. Details of Lab Syllabus: **Programming in C Lab**

List of Experiments

1. Write a C program to calculate the expression: ((a*b)/c)+(a+b-c)
2. Write a C program to calculate $(a+b+c)^3$.
3. Write a C Program to convert temperature from

a. Celsius to Fahrenheit.

b. Fahrenheit to Celsius.

4. Write a C program to find roots of quadratic equation.
5. Write a C Program to convert Hours into seconds.
6. Write a C program to Find Biggest of Three numbers.

i. Write a C program to read student marks in five subjects and calculate the Total, Average and Grade according to the following conditions:

ii.If average >=75 grade is _A‘.

iii.If average >=60 and <75 grade is _B‘.

iv. If average >=50 and <60 grade is _C‘.

v. Otherwise grade is _D‘.

vi.Check that marks in each subject >= 35.

7. Write a C Program to display number of days in given month using Switch – -Case.
8. Write a C Program to check whether a given number is perfect or Not.
9. Write a C program to check whether the given number is Prime or Not.
10. Write a C program to Check whether given number is Palindrome or Not.
11. Write a C Program to check whether a given number is Armstrong or Not.
12. Write a C program to print Fibonacci Series.
13. Write a C program to print multiplication tables up to given range.
14. Write a C program to perform i) Matrix addition ii) Matrix Multiplication.
15. Write a C program to find largest number in the array.
16. Write a C Program to find factorial of a given number using functions.
17. Write a C Program to accept and display Student Details using Structures.
18. Write a C Program to swap two numbers using different parameter passing techniques.

5. RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

6. RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

MODEL QUESTION COURSE

B. Sc /B.A DEGREE EXAMINATION
SEMESTER: II
COMPUTER APPLICATIONS Course-II
Course 2: PROGRAMMING IN C

Time: 3Hrs. Max. Marks: 75

Section -A

Answer any 5 question **5X5 = 25M**

1. What is Flow chart and draw the symbols used in flowchart.
2. Write about the conditional branching statements in C.
3. Define Array and write Declaration, initialization and accessing of elements in Array.
4. Write the Drawbacks of Pointers.
5. What the difference between Structure and Union.
6. Write about the basic Data Types used in C.
7. Write about function declaration, definition and calling.
8. Write about Nested Structures.

Section - B

Answer following question **5X10 = 50M**

9. a) Explain about the operators in C with examples.

(OR)

b) Explain the Structure of C program with example.

10. a) Explain about different types of Loops available in C.

(OR)

b) Explain about Parameter passing techniques with examples.

11. a) Write algorithm and C Program for Matrix multiplication.

(OR)

b) Explain the String operations using String functions in C.

12. a) Explain about Passing Arguments to Functions using Pointers.

(OR)

b) Explain about Memory Allocation in C Programs.

13. a) Explain about creating a structure and accessing elements of structure with example.

(OR)

b) Explain about Enumerated Data Types with example program.

B. Sc / B. A	Semester: III	Credits: 4
Course: 3	DATABASE MANAGEMENTSYSTEMS	Hrs/Wk: 4

1. Aim and objectives of Course:

    1. To educate student regarding databases and how to manage databases.
    2. To provide knowledge about creating relationships.
    3. To provide knowledge about dependencies and relational constraints.
    4. To enable student to write various types of queries for handling data.

2. Learning outcomes of Course:

    On completing the subject, students will be able to:

    1. Gain knowledge of Database and DBMS.
    2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
    3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
    4. Model database using ER Diagrams and design database schemas based on the model.

3. Create a small database using SQL.
4. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

UNIT I: 12Hrs

Introduction: Data and Information**, Characteristics of the Database Approach:** Self-Describing Nature of the a Database System, Insulation between Programs and Data, Data Abstraction, Support of Multiple Views of the data, Sharing of Data and multiuser Transaction Processing, **Actors on the Scene:** Database Administrators, Database Designers, End Users, System Analysts and Application, Advantages of DBMS, **Data Models, Schemas and Instances:** Categories of Data Models, Schemas, Instances, and Database State**, DBMS Architecture and Data Independence:** The Three-Schema Architecture, Data Independence**.**

UNIT II: 12 Hrs

Entity Relationship Model: Introduction, Entity types, Entity sets, Attributes and Keys, Entities and Attributes, Entity Types, Entity Sets, Keys and Value Sets, Relationships, Relationship types, Roles, and Structural Constraints, Relationship Types, Sets and Instances, Relationship Degree, Role Names, and Recursive Relationships, Constraints on Relationship Types, Attributes of Relationship Types, Weak Entity Types, ER Diagrams, Naming Conventions, and Design Issues

Enhanced Entity-Relationship: Subclasses, super classes, and inheritance, Specialization and Generalization, Constraints and characteristics of Specialization and Generalization.

UNIT III: 12 Hrs

The relational data model, Relational Constraints: Introduction, Relational Model Concepts, Domains, Attributes, Tuples and Relations, Characteristics of Relations, Relational Model Notation Relational Constraints and Relational **Database Schemas:** Domain Constraints, Key Constraints and Constraints on Null, Relational Databases and Relational Database Schemas, Entity Integrity, Referential Integrity and Foreign Keys **Functional Dependencies and normalization for Relational Databases:** Functional Dependencies, Definition of Functional Dependency, Inference Rules for Functional Dependencies, Equivalence of sets of Functional Dependencies, Minimal Sets of Functional Dependencies, **Normal forms based on primary keys**: Introduction to Normalization, First Normal Form, Second Normal Form, Third Normal Form.

UNIT IV: 12 Hrs

The Relational Algebra: Basic Relational Algebra Operation, The SELECT Operation, The PROJECT operation, Sequences of Operations and the, RENAME Operation, Set Theoretic Operations, The JOIN Operation, A Complete Set of Relational Algebra Operations, The DIVISION Operation, **Additional Relational Operations:** Aggregate Functions and Grouping, Recursive Closure Operations, OUTER JOIN and OUTER UNION Operations

UNIT V: 12 Hrs

SQL (STRUCTURED QUERY LANGUAGE): Data Definition, Constraints and Schema changes in SQL, The CREATE TABLE Command and SQL Data Types and Constraints, The DROP SCHEMA and DROP TABLE Command, The ALTER TABLE Command, The SELECT-FROM-WHERE Structure of SQL Queries WHERE-Clause , Aggregate Functions and Grouping, Insert, Delete, and Update Statements in SQL, The INSERT Command, The DELETE Command

TEXT BOOKS:

1. "Fundamentals of Database Systems" by R.Elmasri and S.Navathe.
2. "Introduction to Database Management System" Atul Kahate Pearson Education *ISBN*: 9789332505537.
3. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.

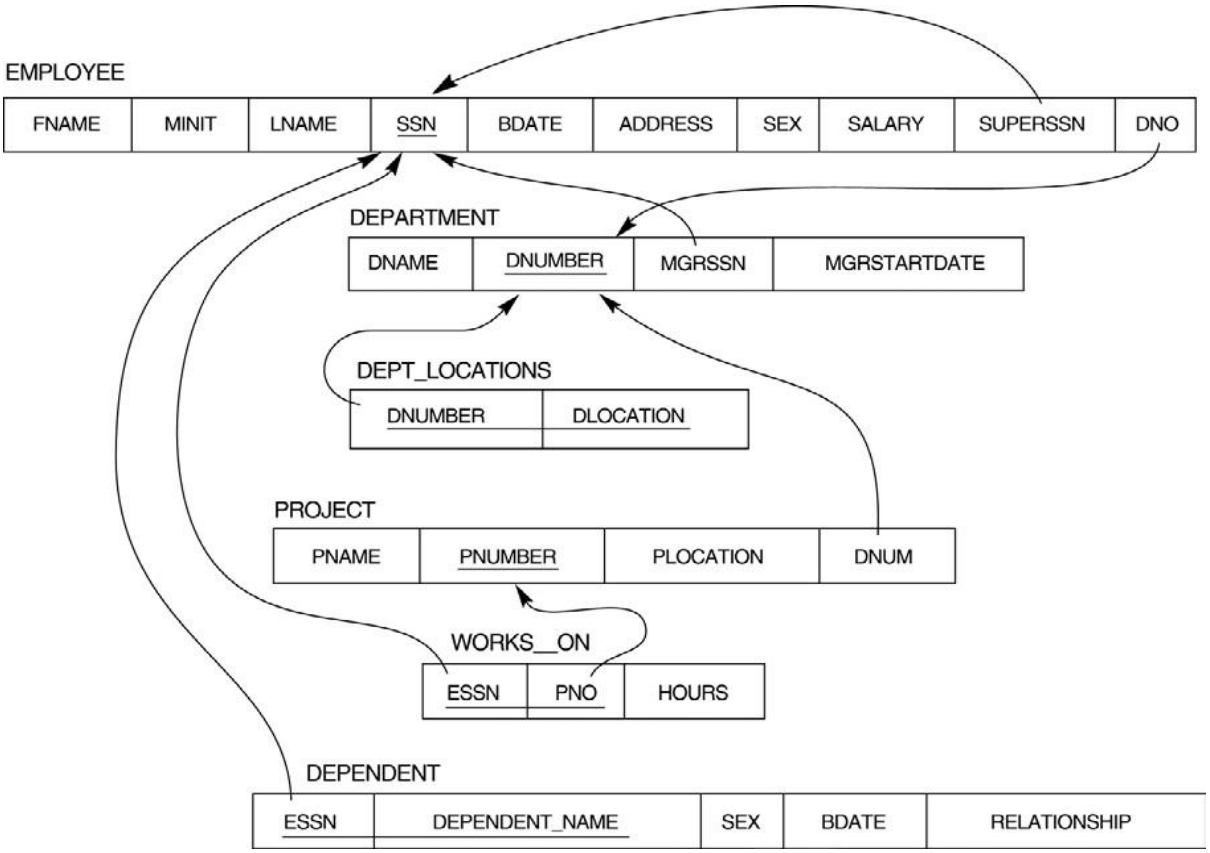
REFERENCE BOOKS:

1. "Database Management Systems" by Raghu Ramakrishnan, NcGrawhill,2002
2. "Prinicples of Database Systems" by J.D.Ullman.
3. "An Introduction to Database Systems" by Bipin C Desai.
4. "Fundamentals of Relational Database Management Systems" by S.Sumathi, S. Esakkirajan, Springer Publications

4. Details of Lab Syllabus: **DATABASE MANAGEMENT SYSTEMS LAB**

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY



Questions to be performed on above schema

1. Create above tables with relevant ***Primary Key, Foreign Key and other constraints***
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display ***ssn, lname, fname, address*** of employees who work in department no 7.
5. Retrieve the ***Birthdate and Address*** of the employee whose name is 'Franklin T. Wong'
6. Retrieve the name and salary of every employee
7. Retrieve all distinct salary values

8. Retrieve all employee names whose address is in 'Bellaire'
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.
18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
20. Select the names of employees whose salary does not match with salary of any employee in department 10.

5. RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
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B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

6. RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

MODEL QUESTION COURSE

B. Sc /B.A DEGREE EXAMINATION
SEMESTER: III
COMPUTER APPLICATIONS
Course 3: DATABASE MANAGEMENT SYSTEMS

Time: 3Hrs. Max. Marks: 75

Section - A

Answer any 5 question **5X5 = 25M**

1. Define Database management systems.
2. What is a Data Model?
3. What is Specialization?
4. What is a Weak Entity?
5. What is referential integrity Constraint?
6. Define Functional Dependency?
7. List out Aggregate Functions
8. Explain SQL Data Types.

Section -B

Answer following question **5X10 = 50M**

9. a) What are the characteristics of the Database? Explain the responsibilities of the Actors of the database.

(OR)

b) Explain about the Three-Schema Architecture with the help of a neat diagram.

10. a) Discuss the convention for constructing an ER-diagram along with an example.

(OR)

b) Discuss the Enhanced Entity-Relationship with a suitable example.

11. a) Explain the concepts of relational model with example.

(OR)

b) What is Normalization? Explain 1NF, 2NF, 3NF, BCNF and multivalve dependency.

12. a) Discuss various types of Join operations with examples.

(OR)

b) List the operations of relational algebra and the purpose of each.

13. a) Explain Data Definition Commands with example database and queries for each command.

(OR)

b) Explain Data Manipulation Commands with suitable queries

B.Sc /B.A	Semester: IV	Credits: 4
Course: 4	OBJECT ORIENTATED PROGRAMMING USING JAVA	Hrs/Wk: 4

1. Aim and objectives of Course:
   To introduce the fundamental concepts of Object-Oriented programming and to design & implement object oriented programming concepts in Java.
2. Learning outcomes of Course:
   1. Understand the concept and underlying principles of Object-Oriented Programming, Understand how object-oriented concepts are incorporated into the Java programming language.
   2. Implement Object Oriented Programming Concepts (class, constructor, overloading, inheritance, overriding) in java.
   3. Create and use interfaces in a Java.
   4. Implement Multithreading, exception handling in Java.
   5. Create and use packages and applets
3. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

UNIT I: 12Hrs

FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features.
OVERVIEW OF JAVA LANGUAGE: Simple Java program structure, Java tokens, Implementing a Java Program, Java Virtual Machine, Command line arguments.
CONSTANTS, VARIABLES & DATATYPES: Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Getting Value of Variables, Operators in Java.

UNIT II: 12Hrs

DECISION MAKING & BRANCHING: Decision making with if statement- Simple if statement**,** If - Else statement**,** Nesting of if- else statements, The else if ladder**,** The switch statement**,** The conditional operator.
LOOPING: The While statement, The do-while statement, The for statement.
CLASSES, OBJECTS & METHODS: Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members.

UNIT III: 12Hrs

INHERITANCE: Extending a class, Overriding methods, Final variables and methods, Final classes, Abstract methods and classes. **ARRAYS, STRINGS :**Arrays, One-dimensional arrays, Two – dimensional arrays, Strings. **INTERFACES:** Introduction to multiple inheritance, Defining interfaces, Extending interfaces, Implementing interfaces.

UNIT IV: 12Hrs

MULTITHREADED PROGRAMMING: Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread, Using Thread Methods. **MANAGING ERRORS AND EXCEPTIONS:** Types of errors, Compile-time errors, Run-time errors, Exceptions, Exception handling, Multiple Catch Statements, Using finally statement.

UNIT V: 12Hrs

APPLET PROGRAMMING: Local and remote applets, Applets and Applications, Building Applet code, Applet Life cycle:-Initialization state, Running state, Idle or stopped state, Dead state, Display state.
PACKAGES: Java API Packages, Creating Packages, Accessing a Package, Using a Package.

TEXT BOOKS:

1. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.

REFERENCES:

1. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
2. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TATA McGraw-Hill Company.
3. Deitel &Deitel. Java TM: How to Program, PHI (2007)
4. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press (2008)

4. Details of Lab Syllabus: **Object Orientated Programming using Java Lab**

1. Java program to generate Harmonic Series (1/1+1/2+….+1/n).
2. Java program to display even, odd numbers and their sum upto given number n.
3. Java program to find a sub string in the given string.
4. Java program to arrange the given strings in Alphabetic Order.
5. Java program to implement Addition and multiplication of two Matrices.
6. Java program to demonstrate the use of Constructor.
7. Java program to implement method overloading.
8. Java program to demonstrate Method overriding.
9. Java program for single Inheritance.
10. Java program for implementing Interface.
11. Java program on Multiple Inheritance.
12. Java program to implement Threads.
13. Java program to demonstrate Exception handling.
14. Java program to demonstrate Applets.

5. RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

6. RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

MODEL QUESTION COURSE

B. Sc /B.A DEGREE EXAMINATION
SEMESTER: IV
COMPUTER APPLICATIONS
Course 4: OBJECT ORIENTED PROGRAMMING USING JAVA

Time: 3Hrs. Max. Marks: 75

Section - A

Answer any 5 question **5X5 = 25M**

1. What are the benefits of Object oriented programming?
2. Explain different data types in Java?
3. Describe simple 'if statement' with example?
4. What is overriding method and give one example?
5. Explain one-dimensional array?
6. Write short notes on threads?
7. How to terminate a thread?
8. Explain local and remote applets?

Section - B

Answer following question **5X10 = 50M**

9. a) Explain basic concepts of object oriented programming?

(OR)

b) Discuss different operator in java?

10. a) What is switch statement? and write a program using switch statement?

(OR)

b) Explain constructors and types of constructors with an example?

11. a) Briefly explain about final, finally and finalize key words?

(OR)

b) Explain interface with an example?

12. a) Explain life cycle of a thread with example?

(OR)

b) Discuss different types of exception handlings?

13. a) Explain applet life cycle with an example?

(OR)

b) Explain java API packages?

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B.Sc / B.A	Semester: IV	Credits: 4
Course: 5	WEB DESIGN	Hrs/Wk: 4

1. Aim and objectives of Course:
   To introduce the fundamental concepts of HTML, PHP, MySQL and able to design the web pages using scripting languages.
2. Learning outcomes of Course:
   1. To learn about Basic tags in Html.
   2. To learn about the CSS and Java Script.
   3. To learn about the Building Blocks of php, functions.
   4. To learn about working with Forms, Sessions, Cookies.
   5. To learn about Interacting with MySQL using PHP.
3. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

UNIT I: 10 Hrs

Introduction to HTML: Introduction to HTML and World Wide Web, Basic html, Document body, text, Hyperlinks, Adding more formatting Lists, Tables, Images, Multimedia Objects, Frames, Forms.

UNIT II: 13 Hrs

CSS and Java Script: CSS: Introduction, Using Styles: Simple Examples, Defining your own Styles, Properties and Values in Styles, Stylesheets-A worked example, Formatting Blocks of Information, Layers. Java Script: Dynamic HTML, JavaScript-The basics, variables, String manipulation, Mathematical functions, Statements, Operators, Arrays, Functions, Data validation.

UNIT III: 10Hrs

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: Defining Functions, Calling functions, returning the values from User Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

UNIT IV: 14Hrs

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users.

UNIT V: 13Hrs

Interacting with MySQL using PHP: MySQL Versus MySQL Function, Connecting to MySQL with PHP, Working with MySQL Data. Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

TEXT BOOKS:

1. Chris Bates, Web Programming Building Internet Application, Second Edition, Wiley (2007)
2. Head First Servlets and JSP 2nd Edition, Bryan Basham, Kathy Sierra 3. Uttam Kumar Roy, Web Technologies from Oxford University Press.
3. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach yourself, Pearson Education (2007).
4. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

4. Details of Lab Syllabus: **Web Design Lab**

List of Laboratory Experiments:

HTML

1. Write an HTML program to demonstrate text formatting, working with image and hyper links
2. Write an HTML program to create Student Marks sheet preparation.
3. Write an HTML program to explain String manipulation-using functions.
4. Write an HTML program to explain <form> events
5. Write an HTML program to perform all arithmetic operations using java script.
6. Develop a HTML Form, which accepts any Mathematical expression.

PHP Programs

7. Introduction To PHP programming, XAMPP Tool and Dreamweaver Editor Write a Simple Hello Program in PHP by Installing & Configuring XAMPP with Dreamweaver
8. Study Of Basic Building Blocks In PHP Write a Program in PHP for type Casting Of a Variables
9. Study Of Control Structure & Loops In PHP Write a Program In PHP to Display Multiplication Table Using Nested For Loop
10. Study Of Array and Function In PHP Write a program In PHP to Sort an array using function (Bubble Sort)
11. Study Of Form handling In PHP Design a personal Information form , then Submit & Retrieve the Form Data Using $_GET(), $_POST() and $_REQUEST() Variables
12. Study Of Server Side Validation and Page Redirection In PHP Design A Login Form and Validate that Form using PHP Programming
13. Study Of Cookies And Sessions In PHP Create Admin Login, Logout form using session variables.
14. Write a PHP application to add new Rows in a Table.
15. Write a PHP application to modify the Rows in a Table.
16. Write a PHP application to delete the Rows from a Table.
17. Write a PHP application to fetch the Rows in a Table.

MySQL Lab Cycle -Experiments:

Cycle -1:
An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that, he uses the following details.

Suppliers (sid: Integer, sname: string, address: string)
Parts (pid: Integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL:
1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.
5. Find the sid‟s of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid‟s of suppliers who supply only red parts.
8. Find the sid‟s of suppliers who supply a red and a green part.
9. Find the sid‟s of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2:
An organisation wishes to maintain the status about the working hours made by his employees. For that, he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)
Works (eid: integer, did: integer, pct_time: integer)
Dept (did: integer, budget: real, managerid: integer)

An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.
Resolve the following queries.

11. Print the names and ages of each employee who works in both Hardware and Software departments.
12. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did‟s together with the number of employees that work in that department.
13. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
14. Find the managerid‟s of managers who manage only departments with budgets greater than 1,000,000.
15. Find the enames of managers who manage the departments with largest budget.
16. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid‟s of managers who control more than 5,000,000.
17. Find the managerid‟s of managers who control the highest amount.
18. Find the average manager salary.

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8. Viva voce interviews.
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MODEL QUESTION COURSE

B. Sc /B.A DEGREE EXAMINATION
SEMESTER: IV
COMPUTER APPLICATIONS
Course 5: WEB DESIGN

Time: 3Hrs. Max. Marks: 75

Section - A

Answer any 5 question **5X5 = 25M**

1. What are the applications of World Wide Web?
2. Write the properties and values in Style Sheets.
3. Write about Operators and Expressions in PHP.
4. How to combine HTML and PHP code on a single Page?
5. Write the differences between MySQL and MySQL Function.
6. Write how to insert an image in to a web page using HTML.
7. Write about string manipulation in Java Script.
8. How to Set a Cookie with PHP?

Section - B

Answer following question **5X10 = 50M**

9. a) What are the types of Lists, explain with examples.

(OR)

b) Explain about Forms and Form Controls with example program.

10. a) Explain the types of CSS with examples.

(OR)

b) Create a Web Form and write java Script code for Data validation in that form.

11. a) Explain about Flow Control Functions in PHP.

(OR)

b) Explain how to return the values from User Defined Functions with example.

12. a) Write the process how to Send Mail on Form Submission.

(OR)

b) Explain about passing Session IDs and Destroying Sessions.

13. a) Explain about Connection to MySQL with PHP and Working with MySQL Data..

(OR)

b) Explain about Creating Record Addition Mechanism.