

**GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET**

**(AUTONOMOUS)**

**CHOICE BASED CREDIT SYSTEM**

**(CBCS)**



**SYLLABUS**

**For**

**B.A (COMPUTER APPLICATIONS)**

**Under Graduate Programme**

**DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS**

**(W.e.f. 2021 - 22 Session)**

## **Programme Outcome**

- 1) Apply the knowledge of mathematics and computing fundamentals to various real life applications for any given requirement
- 2) Design and develop applications to analyze and solve all computer science related problems
- 3) Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects
- 4) Analyze and review literatures to invoke the research skills to design, interpret and make inferences from the resulting data
- 5) Integrate and apply efficiently the contemporary IT tools to all computer applications
- 6) Solve and work with a professional context pertaining to ethics, social, cultural and cyber regulations
- 7) Involve in perennial learning for a continued career development and progress as a computer professional
- 8) Function effectively both as a team leader and team member on multi disciplinary projects to demonstrate computing and management skills
- 9) Communicate effectively and present technical information in oral and written reports
- 10) Utilize the computing knowledge efficiently in projects with concern for societal, environmental, and cultural aspects
- 11) Function competently as an individual and as a leader in multidisciplinary projects
- 12) Create and design innovative methodologies to solve complex problems for the betterment of the society
- 13) Apply the inherent skills with absolute focus to function as an successful entrepreneur

## **PROGRAM SPECIFIC OUTCOMES**

- 1) Ability to pursue careers in IT industry/ consultancy/ research and development, teaching and allied areas related to computer science.
- 2) Comprehend, explore and build up computer programs in the areas allied to Algorithms, System Software, Multimedia, Web Design and Big Data Analytics for efficient design of computer-based systems of varying complexity.

**GOVERNMENT DEGREE COLLEGE FOR WOMEN**

(AUTONOMOUS)

**BEGUMPET, HYDERABAD**

**DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS**

**ALLOCATION OF CREDITS**

Course Code	Course Title	Course Type	Hours per Week	Credits
<b>SEMESTER – I</b>				
106	Programming in C	DSC-3A	4T+3P=7	4+1=5
<b>SEMESTER – II</b>				
206	Programming in C++	DSC-3B	4T+3P=7	4+1=5
<b>SEMESTER – III</b>				
301	A:Scilab - 1	SEC-1	2	2
	B: Python - 1			
306	Relational Database Management System	DSC-3C	4T+3P=7	4+1=5
<b>SEMESTER – IV</b>				
401	C: SciLab – 2	SEC-2	2	2
	D: Python – 2			
406	Multimedia Systems	DSC- 3C	4T+3P=7	4+1=5
<b>SEMESTER – V</b>				
501	Information Technologies – 1	GE–1	2	2
505	Multimedia Systems	DSC- 3E	3T+2P=5	3+1=4
506	Elective–A: Web Technologies	DSE-1E	3T+2P=5	3+1=4
	Elective–B: Visual Programming	DSE-2E	3T+2P=5	3+1=4
<b>SEMESTER – VI</b>				
601	Information Technologies – 2	GE–2	2	2

<b>605</b>	<b>Mobile Applications</b>	<b>DSC-3F</b>	<b>3T+2P=5</b>	<b>3+1=4</b>
	<b>Elective-A: PHP Programming</b>	<b>DSE-1F</b>	<b>3T+2P=5</b>	<b>3+1=4</b>
<b>606</b>	<b>Elective-B: Information Security and Cyber Laws</b>	<b>DSE-2F</b>	<b>3T+2P=5</b>	<b>3+1=4</b>
	<b>PROJECT</b>			<b>1</b>

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**B.A (C/A) I YEAR**  
**Semester-I**  
**Subject: Computer Applications**  
**Paper- I Programming in C**

**Theory: 4**

**Hours/Week**

**4 credits**

**Course Outcome:**

- 1) Able to implement the algorithms and draw flowcharts for solving Mathematical and Engineering problems.
- 2) Demonstrate an understanding of computer programming language concepts. To be able to develop C programs on Linux platform.
- 3) Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
- 4) Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures.
- 5) Student must be able to define union and enumeration user defined data types. Develop confidence for self education and ability for life-long learning needed for Computer language.

**Syllabus**

**Unit – I**

**Computer Fundamentals:** Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS.

**Program Fundamentals:** Generation and Classification of Programming Languages, Writing first C Program

**Algorithms:** Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms.

**Basics of C:** Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Type Conversions.

**Unit – II**

**Input-Output:** Non-formatted and Formatted Input and Output Functions, Escape Sequences,

**Control Statements:** Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

**Arrays and Strings:** One and Two Dimensional Arrays, Character Arrays, Functions from ctype.h, string.h.

### **Unit – III**

**Functions:** Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.

**Pointers:** Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation.

### **Unit – IV**

**User-Defined Data Types:** Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Structures versus Unions, Enumeration Types.

**Files:** Introduction, Using Files, Working with Text Files and Binary Files, Other File Management Functions.

### **Text**

PradipDey, ManasGhosh, Computer Fundamentals and Programming in C (2e)

### **References**

1. Ivor Horton, Beginning C
2. Herbert Schildt, The Complete Reference C
3. Paul Deitel, Harvey Deitel, C How To Program
4. Byron S. Gottfried, Theory and Problems of Programming with C
5. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
6. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

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**B.A (C/A) I YEAR**

**Semester-I**

**Subject: Computer Applications**

**Paper- I Programming in C**

**Course Outcome:**

- 1) Know concepts in problem solving .
- 2) To do programming in C language .
- 3) To write diversified solutions using C language.

**Practical Question Bank**

**Practical: 3 Hours/Week**

**1 credit**

1. Write a program to find the largest two numbers using if and conditional operator.
2. Write a program to calculate arithmetic operations of two numbers using switch.
3. Write a program to print the reverse of a given number.
4. Write a program to print whether the given number is a prime or not.
5. Write a program to find largest and smallest elements in a given list of numbers.
6. Write a program to find the sum of two matrices.
7. Write a program to find the product of two matrices.
8. Write a program to print the reverse of a given string.
9. Write a program to find the factorial of a positive integer using iteration and recursion.
10. Write a program to find the GCD of two positive integers using iteration and recursion.
11. Write a program to demonstrate the call by value and the call by reference concepts.
12. Write a program to illustrate the use of Enumeration data type.
13. Write a program to illustrate the use of structure concept.
14. Write a program to illustrate the use of union concept.

15. Write a program to write content into a file and display contents of a file
16. Write a program to copy content of one file into another file and display the content of new file.

**Note**

Write the Pseudo Code and draw Flow Chart for the above programs.  
Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.



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B.A (C/A) I YEAR

Semester-II

Subject: Computer Applications

Paper- II Programming in C++

Theory

4 Hours/Week

4credits

**Course Outcome:**

- 1) To understand how C++ improves C with object-oriented features.
- 2) To learn how to write inline functions for efficiency and performance.
- 3) To learn the syntax and semantics of the C++ programming language.
- 4) To learn how to design C++ classes for code reuse.
- 5) To learn how to implement copy constructors and class member functions.
- 6) To understand the concept of data abstraction and encapsulation.
- 7) To learn how to overload functions and operators in C++.
- 8) To learn how containment and inheritance promote code reuse in C++.
- 9) To learn how inheritance and virtual functions implement dynamic binding with polymorphism.
- 10) To learn how to design and implement generic classes with C++ templates.
- 11) To learn how to use exception handling in C++ programs.

**Syllabus**

**Unit – I**

**Introduction to C++:** Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Arrays.

**Functions:** Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

## **Unit – II**

**Object Oriented Programming:** Procedural Programming verses Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

**Classes:** Introduction, Defining an Instance of a Class, Private Members, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Copy Constructors, Operator Overloading.

## **Unit – III**

**Inheritance:** Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

**C++ Streams:** Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

## **Unit – IV**

**Exceptions:** Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Re-throwing an Exception.

**Templates:** Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance.

## **Text**

Tony Gaddis, Starting out with C++: from control structures through objects (7e)

## **References**

B. Lippman, C++ Primer

Bruce Eckel, Thinking in C++

K.R. Venugopal, Mastering C++

Herbert Schildt, C++: The Complete Reference

Bjarne Stroustrup, The C++ Programming Language

Sourav Sahay, Object Oriented Programming with C++

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**B.A (C/A) I YEAR**

**Semester-II**

**Subject: Computer Applications**

**Paper- II Programming in C++**

**3Hours/Week**

**1 credit**

**Practical**

**Course Outcome:**

- 1) **Creating simple programs using classes and objects in C++.**
- 2) **Implement Object Oriented Programming Concepts in C++.**
- 3) **Develop applications using stream I/O and file I/O.**
- 4) **Implement simple graphical user interfaces.**
- 5) **Implement Object Oriented Programs using templates and exceptional handling concepts.**

**Practical Question Bank**

1. Write a program to print the sum of digits of a given number
2. Write a program to check whether the given number is Armstrong or not
3. Write a program to check whether the given string is Palindrome or not
4. Write a program to read student name, roll no, marks and display the same using class and object.
5. Write a program to find area of a rectangle, circle, and square using class and object.
6. Write a program to implement inline function inside and outside of a class for
  - a. Finding the area of a square
  - b. Finding the area of a cube
7. Write a program to implement friend function and friend class
8. Write a program to implement constructor and destructor with in a class.

9. Write a program to demonstrate hierarchical inheritance.
10. Write a program to demonstrate multiple inheritances.
11. Write a program to demonstrate the constructor overloading.
12. Write a program to demonstrate static polymorphism.
13. Write a program to demonstrate dynamic polymorphism.
14. Write a program to implement polymorphism using pure virtual functions.
15. Write a program to demonstrate the function templates and class templates.
16. Write a program to demonstrate exception handling using try, catch, and finally.

**Note:** Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows.

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**B.A (C/A) II YEAR**

**Semester-III**

**Subject: Computer Applications**

**Theory 4 Hours/Week 4credits**

**Course Outcome:**

- a. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
- b. Design ER-models to represent simple database application scenarios
- c. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
- d. Improve the database design by normalization.
- e. Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

**Syllabus**

**Unit – I**

Introduction to Databases: Introduction, Traditional File-Based Systems, Database Approach, 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.

**Unit – II**

SQL: Introduction, Data Manipulation Language commands, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Joins, EXISTS and NOT EXIST, Combining Result Tables.

SQL: The ISO SQL Data Types, Data Definition Language commands –Creating an Index, Removing an Index, Views–Creating a View, Removing a View, WITH CHECK OPTION, Advantages and Disadvantages of Views.

**Unit – III**

Advanced SQL: The SQL Programming Language–Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.

Entity–Relationship Modeling: Entity Types, Relationship Types, Attributes, Keys, Strong and Weak Entity Types, Problems with ER Models–Fan Traps, Chasm Traps.

Enhanced Entity–Relationship Modeling: Specialization/Generalization, Aggregation, and Composition.

#### **Unit – IV**

Functional–Dependencies: Anomalies, Partial Functional Dependency, Transitive Functional Dependency.

Normalization: The Purpose of Normalization, Data Redundancy, Functional Dependencies, 1NF, 2NF, 3NF, BCNF.

Transaction Management: Transaction Support–Properties of Transactions, Concurrency Control–The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Time Stamping Methods.

#### **Text Books:**

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

Sharon Allen, Evan Terry, Beginning Relational Data Modeling

#### **Reference**

Jeffrey A. Hoffer, V. Ramesh, HeikkiTopi, Modern Database Management Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems RamezElmasri, Shamkant B. Navathe, Fundamentals of Database Systems Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts

Carlos Coronel, Steven Morris, Peter Rob, Database Systems: Design, Implementation, and Management

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**B.A (C/A) II YEAR**

**Semester-III**

**Subject: Computer Applications**

**Practical**

**2 Hours/Week**

**1 credit**

**Course Outcome:**

- 1) To explain basic database concepts, applications, data models, schemas and instances.
- 2) To demonstrate the use of constraints and relational algebra operations. IV. Describe the basics of SQL and construct queries using SQL.
- 3) To emphasize the importance of normalization in databases.
- 4) To facilitate students in Database design .
- 5) To familiarize issues of concurrency control and transaction management.

**Practical Question Bank**

**Consider the relational schema for part of the DreamHome case study is:**

**Branch (branchNo, street, city, postcode)**

**Staff (staffNo, fName, IName, position, sex, DOB, salary, branchNo)**

**PropertyForRent (propertyNo, street, city, postcode, type, rooms, rent, ownerNo, staffNo, branchNo)**

**Client (clientNo, fName, IName, telNo, prefType, maxRent, eMail)**

**PrivateOwner (ownerNo, fName, IName, address, telNo, eMail, password)**

**Viewing (clientNo, propertyNo, viewDate, comment)**

**Registration (clientNo, branchNo, staffNo, dateJoined)**

1. Create a database with name "Dream Home" and now create all the tables listed above with constraints.
2. Insert a new row into the table supplying data for all columns.
3. Modify data in the database using UPDATE
4. Delete data from the database using DELETE
5. Changing a table definition using ALTER

6. Removing a table using DROP
7. Removing rows in table using TRUNCATE
8. Create an index and removing an index
9. Practice other standard SQL commands for creating, modifying, displaying data of tables.
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.
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.
65. Create a database with name "Hotel" and now create all the tables listed above with constraints.
66. Insert a new row into the table supplying data for all columns.
67. Modify data in the database using UPDATE
68. Delete data from the database using DELETE
69. Changing a table definition using ALTER
70. Removing a table using DROP
71. Removing rows in table using TRUNCATE
72. Practice other standard SQL commands for creating, modifying, displaying data of tables.
73. List full details of all hotels.
74. List full details of all hotels in London.
75. List the names and addresses of all guests living in London, alphabetically ordered by name.
76. List all double or family rooms with a price below £40.00 per night, in ascending order of price.
77. List the bookings for which no dateTo has been specified.
78. How many hotels are there?

79. What is the average price of a room?
80. What is the total revenue per night from all double rooms?
81. How many different guests have made bookings for August?
82. List the price and type of all rooms at the Grosvenor Hotel.
83. List all guests currently staying at the Grosvenor Hotel.
84. List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in the room, if the room is occupied.
85. What is the total income from bookings for the Grosvenor Hotel today?
86. List the rooms that are currently unoccupied at the Grosvenor Hotel.
87. What is the lost income from unoccupied rooms at the Grosvenor Hotel?
88. List the number of rooms in each hotel.
89. List the number of rooms in each hotel in London.
90. What is the average number of bookings for each hotel in August?
91. What is the most commonly booked room type for each hotel in London?
92. What is the lost income from unoccupied rooms at each hotel today?
93. Insert rows into each of these tables.
94. Update the price of all rooms by 5%.
95. Investigate the SQL dialect on any DBMS that you are currently using. Determine the system's compliance with the DML statements of the ISO standard. Investigate the functionality of any extensions that the DBMS supports. Are there any functions not supported?
96. Demonstrate that queries written using the UNION operator can be rewritten using the OR operator to produce the same result.
97. Apply the syntax for inserting data into a table.
98. Create a view containing the cheapest hotels in the world.
99. Create the Hotel table using the integrity enhancement features of SQL.
100. Create a database trigger for the following situations:
  - (a) The price of all double rooms must be greater than £100.
  - (b) The price of double rooms must be greater than the price of the highest single room.

- (c) A booking cannot be for a hotel room that is already booked for any of the specified dates.
- (d) A guest cannot make two bookings with overlapping dates.
- (e) Maintain an audit table with the names and addresses of all guests who make bookings for hotels in London (do not store duplicate guest detail)

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**B.Sc II Year Examination**

**Semester – III**

**Subject: Computer Science**

**Paper- Python – 1 (SEC-I)**

**Syllabus**

**Theory** **2 Hours/Week** **2 credits**

**Course Outcome:**

1. To acquire programming skills in core Python.
2. To acquire Object Oriented Skills in Python.
3. To develop the skill of designing Graphical user Interfaces in Python .
4. To develop the ability to write database applications in Python.

**Syllabus**

**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, Operators, Type conversions, Expressions.

**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, 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 Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules.

**File and Exceptions:** Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

**Text** 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. JamesPayne,BeginningPythonusingPython2.6andPython

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**B.A (C/A) III YEAR**

**Semester-IV**

**Subject: Computer Applications**

**Paper- IV(Multimedia Systems)**

**Theory**

**3 Hours/Week**

**3 credits**

**Course Outcomes:**

- 1) Student will develop multimedia skills understanding the principal players of individual players in multimedia teams in developing projects.
- 2) Students will work with all aspects of images.
- 3) Students will work with all aspects of sound.
- 4) Students will work with all aspects of video.
- 5) Students will learn copyright laws associated with multimedia.
- 6) Students will learn the cost involved in multimedia planning, designing, and producing.
- 7) Students will learn ways to present their multimedia projects.

**Syllabus**

**Unit – I**

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality;

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

**Unit – II**

Images: Making Still Images, Color.

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats.

**Unit – III**

Animation: The Power of Motion, Principles of Animation, Making Animations.

Video: Using Video, Digital Video Containers, Shooting and Editing Video.

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software.

## **Unit – IV**

The Internet and Multimedia: Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web.

**Text** Tay Vaughan, *Multimedia: Making it work (8e)*

Keyes, *Multimedia Handbook*

**References** K. Andleigh, K. Thakkar, *Multimedia System Design*

Ralf Steinmetz, KlaraNaharstedt, *Multimedia: Computing, Communications Applications*

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**B.A (C/A) III YEAR**

**Semester-IV**

**Subject: Computer Applications**

**Paper- IV (Multimedia Systems)**

**Practical**

**2 Hours/Week**

**1 credit**

### **Course Outcome:**

1. Identify the basic tools and components of a multimedia project.
2. Apply basic elements and principles of photo editing software to achieve a great photo effect by applying effects like color, shadows, alteration of backgrounds, cropping and collage making.
3. Create simple shapes using animation editing software and design simple animation by applying shape tweens and motion tweens.
4. Prepare and present a multimedia portfolio containing electronic media that demonstrates multimedia and problem-solving skills.

### **Practical Question Bank**

Implement the followings using Blender-

- 1) Create an animation using the tools panel and the properties panel to draw the following – Line, oval, circle, pencil, brush, lasso tool etc...
- 2) Create an animation using the tools panel and the properties panel to draw the following – rectangle, square, triangle, diamond, octagon etc...
- 3) Create an animation using text tool to set the font, size, color etc.
- 4) Create an animation using free transform tool that should use followings- Move Objects, Skew Objects, Stretch Objects, Rotate Objects,
- 5) Stretch Objects while maintaining proportion, Rotate Objects after relocating the center dot
- 6) Create an animation using layers having following features- Insert layer, Delete layer, Guide layer, Mask layer.
- 7) Modify the document (changing background color etc. )using the following tools Eraser tool, Hand tool, Ink bottle tool, Zoom tool, Paint Bucket tool, Eyedropper tool
- 8) Create an animation for bus car race in which both starts from the same point and car wins the race.



- 9) Create an animation for bus car race in which both starts from the same point and bus wins the race.
- 10) Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
- 11) Create an animation in which text gets converted into digits (like hello is85121215).
- 12) Create an animation having five images having fade-in fade-out effect.
- 13) Create an scene to show the sunrise (using multiple layers and motion tweening)
- 14) Create an scene to show the sunset (using multiple layers and motion tweening)
- 15) Create an animation to show the ripple effect.
- 16) Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
- 17) Create an animation for bouncing ball (you may use motion guidelayer).

**Note:** Practical exercises based on concepts listed in theory using Presentation tools in office automation

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**B.Sc II Year Examination**

**Semester – IV**

**Subject: Computer Science**

**Paper- Python – 2 (SEC-3)**

**Theory**

**2 Hours/Week**

**2 credits**

**Course Outcome:**

1. To acquire programming skills in core Python.
2. To acquire Object Oriented Skills in Python
3. To develop the skill of designing Graphical user Interfaces in Python
4. To develop the ability to write database applications in Python

**Syllabus**

**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** 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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**B.A (C/A) III YEAR**

**Semester-V**

**Subject: Computer Applications**

**Paper- V (Multimedia Systems)**

Theory

3 Hours/Week

3 credits

**Course Outcome:**

- 1) Student will develop multimedia skills understanding the principal players of individual players in multimedia teams in developing projects.
- 2) Students will work with all aspects of images.
- 3) Students will work with all aspects of sound.
- 4) Students will work with all aspects of video.
- 5) Students will learn copyright laws associated with multimedia.
- 6) Students will learn the cost involved in multimedia planning, designing, and producing.
- 7) Students will learn ways to present their multimedia projects.

**Syllabus**

**Unit – I**

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality;

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

**Unit – II**

Images: Making Still Images, Color.

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats.

**Unit – III**

Animation: The Power of Motion, Principles of Animation, Making Animations.

Video: Using Video, Digital Video Containers, Shooting and Editing Video.

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software.

**Unit – IV**

The Internet and Multimedia: Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web.

**Text** Tay Vaughan, *Multimedia: Making it work (8e)*

Keyes, *Multimedia Handbook*

**References** K. Andleigh, K. Thakkar, *Multimedia System Design*

Ralf Steinmetz, KlaraNaharstedt, *Multimedia: Computing, Communications Applications*

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**B.A (C/A) III YEAR**

**Semester-V**

**Subject: Computer Applications**

**Paper- V (Multimedia Systems)**

**Practical**

**2 Hours/Week**

**1 credit**

**Course Outcome:**

1. Identify the basic tools and components of a multimedia project.
2. Apply basic elements and principles of photo editing software to achieve a great photo effect by applying effects like color, shadows, alteration of backgrounds, cropping and collage making.
3. Create simple shapes using animation editing software and design simple animation by applying shape tweens and motion tweens.
4. Prepare and present a multimedia portfolio containing electronic media that demonstrates multimedia and problem-solving skills.

**Practical Question Bank**

Implement the followings using Blender-

- 1 Create an animation using the tools panel and the properties panel to draw the following – Line, oval, circle, pencil, brush, lasso tool etc...
- 2 Create an animation using the tools panel and the properties panel to draw the following – rectangle, square, triangle, diamond, octagon etc...
- 3 Create an animation using text tool to set the font, size, color etc.
- 4 Create an animation using free transform tool that should use followings- Move Objects, Skew Objects, Stretch Objects, Rotate Objects, Stretch Objects while maintaining proportion, Rotate Objects after relocating the center dot
- 5 Create an animation using layers having following features- Insert layer, Delete layer, Guide layer, Mask layer.
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- 7 Create an animation for bus car race in which both starts from the same point and car wins the race.
- 8 Create an animation for bus car race in which both starts from the same point and bus wins the race.
- 9 Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
- 10 Create an animation in which text gets converted into digits (like hello is 85121215).

- 11 Create an animation having five images having fade-in fade-out effect.
- 12 Create an scene to show the sunrise (using multiple layers and motion tweening)
- 13 Create an scene to show the sunset (using multiple layers and motion tweening)
- 14 Create an animation to show the ripple effect.
- 15 Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
- 16 Create an animation for bouncing ball (you may use motion guidelayer).

**Note:** Practical exercises based on concepts listed in theory using Presentation tools in office automation

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**B.A (C/A) III YEAR**

**Semester-V**

**Subject: Computer Applications**

**Paper- VI (Web Technologies) (Elective-A)**

**Theory**

**3 Hours/Week**

**3 credits**

**Course Outcome:**

- 1) Students are able to develop a dynamic webpage by the use of java script and Students will be able to connect a java program to a DBMS and perform insert.
- 2) Students will be able to write a server side java application called Servlet to catch
- 3) Update and delete operations on DBMS table. Students will be able to write a server side java application called JSP to catch form.
- 4) Form data sent from client, process it and store it on database. data sent from client and store it on database.

**SYLLABUS**

**UNIT I** : Introduction to Internet basics, Client& Server technology, Browsers, Types of Browsers.

Introduction to HTML, HTML commands, Presentational Elements, PhraseElements, Core Elements and Attributes, Text formatting, Text Styles, Lists.

**UNIT II** :

Images: Adding Images using <IMG> element, Adding Audio and Video to web page

Tables: Introduction to Tables, Nested Tables.

Forms: IntroducingForms, Formcontrols, sending form data to server.

**UNIT III** :

Frames: Introduction to Frames, <FRAME>element, Creating link between Frames, Nested Frames.

Cascading Style sheets: Introduction to CSS, CSS rules.

CSSProperties: Controlling text, Text Formatting

Text Pseudo Classes, Selectors, Lengths, Links, Lists, Tables, Outlines, Positioning and Layout with CSS.

#### **UNIT IV :**

Introduction to Java Script, Java Script in Web pages, Advantages of Java Script, writing Java Script into HTML, Variables, Operators & Expressions in Java Script, Conditional checking statements, Loops, Functions, Events, Dialog boxes, Built –in- Objects, FormValidation, Java Script Libraries

#### **Text:**

Jon Duckett, Beginning HTML, XHTML, CSS and JavaScript

#### **References**

Chris Bates, Web Programming

M. Srinivasan, Web Technology: Theory and Practice

Achyut S. Godbole, AtulKahate, Web Technologies

Kogent Learning Solutions Inc, Web Technologies Black Book Ralph Moseley and M. T. Savaliya, Developing Web Applications

P.J. Deitel& H.M. Deitel, Internet and World Wide Web How to program.



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**B.A (C/A) IIIYEAR**

**Semester-V**

**Subject: Computer Applications**

**Paper- VI (Web Technologies) (Elective-A)**

**Practical**

**2 Hours/Week**

**1 credit**

**Course Outcome:**

- 1) Analyze a web page and identify its elements and attributes.
- 2) Create web pages using XHTML and Cascading Style Sheets.
- 3) Build dynamic web pages using JavaScript (Client side programming).
- 4) Create XML documents and Schemas.

**Practical Question Bank**

1. Write a HTML program using basic text formatting tags, <h1>, <p>, <br>, <pre>.
2. Write a HTML program using presentational element tags <b>, <i>, <del>, <sup>, <sub>, <big>, <small>, <hr>.
3. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>.
4. Write a HTML program using different list types.
5. Write a HTML program using grouping elements <div> and <span>.
6. Write a HTML program using images.
7. Write a HTML program to create your time table.
8. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
9. Write a HTML program to create a frames and links between frames.
10. Write a HTML program to create different types of style sheets.
11. Write a HTML program to create CSS on links, lists, tables and generated content.
12. Write a JavaScript program to calculate area of rectangle using function.
13. Write a JavaScript program using switch case.
14. Write a JavaScript program to print multiplication table of given number using loop.

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**SEMESTER-V**

**B.A (C/A) III Year**

**Subject: Computer Applications**

**Paper: Information Technologies (GE-1)**

**Course Outcome:**

- 1) To keep track of the latest developments in information technologies
- 2) To use modern technologies to access, organize, store, manipulate, interpret and present information, and thus to empower them to be more ready for problem solving and creative applications in their respective disciplines using computer-aided means.

**SYLLABUS**

**Unit – I**

Introduction to Computers: What is a Computer? Characteristics of Computers, Generations of Computers,

Classification of Computers, Basic Computer Organization, Applications of Computers.

Input and Output Devices: Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices.

Computer Memory and Processors: introduction, Memory Hierarchy, Processor Registers, Cache Memory,

Primary Memory, Secondary Storage Devices, Hard Disks, Optical Drives, USB Flash Drives, Memory

Cards.

**Unit – II**

Computer Software: Introduction, Classification of Computer Software, System Software, Applications

Software, Firmware, Middleware, Acquiring Computer Software.

Operating Systems: Introduction, Evolution of OS, Process Management, Memory Management, File

Management, Device Management, Security Management, Command Interpreter, Windows, Linux.

**Text:** ReemaThareja, Fundamentals of Computers

## References

P. K. sinha, Computer Fundamentals

Anita Goel, Computer Fundamentals

V. Rajaraman, Fundamentals of Computers

E. Balagurusamy, Fundamentals of Computers

J. Glenn Brookshear, Dennis Brylow, Computer Science An Overview

Note: Student friendly video lecturers pertaining to this course are available at

[http:// spoken-tutorial.org/](http://spoken-tutorial.org/)

Teachers are advised to teach this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

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**B.A (C/A) III YEAR**

**Semester-VI**

**Subject: Computer Applications**

**Paper- VII (Mobile Applications)**

**SYLLABUS**

**Theory** **3 Hours/Week** **3 credits**

**Course Outcome:**

- 1) Explains the basic concepts of Android phone features and capabilities.
- 2) Understands the basic technologies used by the Android platform.
- 3) Recognizes the structure of an Android application project. Uses the tools necessary for Android application project.
- 4) Recognizes the concept of application development for mobile devices.
- 5) Recognizes mobile computing platforms and mobile computing.
- 6) Recognizes smart devices.
- 7) Recognizes mobile development environments.

**Syllabus**

**Unit – I**

Introduction to Programming and App Inventor: Introduction, What Is a Computer Program? Introducing App Inventor, Getting Hands-On with App, Tutorial 1-1,1-2,1-3,1-4 Working with Media: Displaying Images, Tutorial2-1,2-2,2-3,Duplicating Blocks and Using Dropdowns, Sounds, Color Blocks, Layout Components, Tutorial 2-7Input, Variables, and Calculations: The Text Box Component, Performing Calculations, Tutorial 3- 1, 3-2,Storing Data with Variables Tutorial 3-3, Creating Blocks with Type blocking, Math Functions.

**Unit – II**

Decision Blocks and Boolean: Introduction to Decision Blocks, Relational Operators and the if Block, Tutorial 4-1, The if then else Block Tutorial 4-2, A First Look At Comparing Strings, Logical Operators, Tutorial 4-4,Nested Decision Blocks, Tutorial 4-5 The if then else if Block, The Screen's Initialize Event

**Unit – III**

The ListPickerComponent, The Checkbox Component, Repetition Blocks, Times, and Dates: The NotifierComponent, The while Loop, Tutorial 5-1, The for each Loop Tutorial 5-2, The Clock Component, The Date Picker Component Procedures and Functions.

## **Unit – IV**

Lists -Graphics and Animation: The Canvas Component, Tutorial 9-1, The Ball and Image SpriteComponent, Tutorial 9-2, 9-3,Using the Clock Component to Create Animations  
Working with Text: Concatenating Strings, Comparing Strings, Trimming a String,  
Converting Case, Finding a Substring Tutorial 10-3,Replacing substring , Extracting a  
Substring, Splitting a Substring Text to Speech and Text Messaging.

**Text** Tony Gaddis, Rebecca Halsey, Starting Out with App Inventor for Android (1e)

## **References**

Mark L. Murphy, Beginning Android

J.F. DiMarzio, Android – A Programmer’s Guide

W Frank Ableson, RobiSen, Chris King, Android in Action

Lucas Jordan, Pieter Greyling, Practical Android Projects



15. Design a mobile app to display images of all states and union territories in India

16 .Design a mobile app of your college having college information, features, events and placements

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**B.A (C/A) III YEAR**

**Semester-VIII**

**Subject: Computer Applications**

**Paper- VIII (PHP Programming)(Elective-A)**

**Theory**

**3 Hours/Week**

**3 credits**

**Course Outcome:**

- 1) List the major elements of the PHP & MySQL work and explain why PHP is good for web development.
- 2) Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.
- 3) Analyze the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application.
- 4) Learn how databases work and how to design one, as well as how to use phpMyAdmin to work with MySQL.
- 5) Learn different ways of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Connect to SQL Server and other data sources.

**Syllabus**

**Unit – I**

Introducing PHP – What is PHP? Why use PHP? Evolution of PHP, Installing PHP, creating your first script. PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants.

Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping with HTML. Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings.

**Unit – II**

Arrays – Creating Arrays, Accessing Array Elements, Looping Through Arrays with for-each, Working with Multidimensional Arrays, Manipulating Arrays.

Functions – What is a Function? Why Functions are useful? Calling Functions, Working with Variable

Functions, Writing your own Functions, Writing Recursive Functions.



### **Unit – III**

Objects –Introduction OOP Concepts, Creating Classes and Objects in PHP, Creating and using Properties, Working with Methods, Object Overloading with \_get(), \_set() and \_call(), Using Inheritance to Extend Power of Objects.

Constructors and Destructors, Automatically Loading Class Files, Storing as Strings. Handling HTML Forms with PHP , Dealing with Multi-Value Fields.

### **Unit – IV**

Working with Files and Directories - Getting Information on Files, Opening and Closing Files, Reading and Writing to Files, Copying, Renaming, and Deleting Files, Working with Directories.

Introducing Databases and SQL – Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL from PHP. Retrieving Data from MySQL with PHP .Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records.

**Text** Matt Doyle, Beginning PHP 5.3 (Wrox – Wiley Publishing)

### **References**

Ellie Quigley, PHP and MySQL by Example

Joel Murach, Ray Harris, Murach's PHP and MySQL

Brett McLaughlin, PHP & MySQL: The Missing Manual

Luke Welling, Laura Thomson, PHP and MySQL Web Development

W. Jason Gilmore, Beginning PHP and MySQL From Novice to Professional

Andrew Curioso, Ronald Bradford, Patrick Galbraith, Expert PHP and MySQL

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**B.A (C/A) III YEAR**

**Semester-VI**

**Subject: Computer Applications**

**Paper- VIII(PHP Programming) (Elective-A)**

**Practical**

**2 Hours/Week**

**1 credit**

**Course Outcome:**

- 1) The objective of this course is to provide the necessary knowledge to design and develop dynamic.
- 2) database-driven web applications using PHP version 5.
- 3) Students will learn how to connect to any ODBC-compliant database, and perform hands on practice with a MySQL database to create database-driven HTML forms and reports etc.
- 4) Students also learn how to configure PHP and Apache Web Server. Comprehensive lab exercises provide facilitated hands on practice crucial to develop competence web sites.

**Practical Question bank**

1. Write a PHP script to find the factorial of a given number.
2. Write a PHP script to find the sum of digits of a given number.
3. Write a PHP script to find whether the given number is a prime or not.
4. Write a PHP script to demonstrate the use of break, continue statements using nested loops.
5. Write a PHP script to display the Fibonaaci sequence with HTML page.
6. Write a PHP script to create a chess board.
7. Write a PHP script using built-in string function like strstr(), strpos(), substr\_count(), etc...
8. Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first character uppercase.
9. Write a PHP script that inserts a new item in an array in any position.
10. Write a PHP function to check whether all array values are strings or not.
11. Write a PHP script to count number of elements in an array and display a range of array elements.

12. Write a PHP script using a function to display the entered string in reverse.
13. Write a PHP script for creating the Fibonaacci sequence with recursive function.
14. Write a PHP script using pass by value and pass by reference mechanisms in passing arguments to functions.
15. Write a PHP script to demonstrate the inheritance.
16. Write a PHP script to demonstrate the overloading property accesses with `_get()` and `_set()`.
17. Write a PHP script to demonstrate the use of final classes and final methods.

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**SEMESTER-VI**

**B.A (C/A) III Year**

**Subject: Computer Applications**

**Paper: Information Technologies (GE-2)**

**Theory**

**2 Hours/Week**

**2 credits**

**Course Outcome:**

- 1) Competently use professional skills and knowledge in the systematic development of complex information systems.
- 2) Apply their skills and knowledge in a professionally responsible manner.
- 3) Communicate effectively with other computer scientists and the wider global community using a wide range of communication technologies.
- 4) Undertake research in information technology.

**Syllabus**

**Unit – I**

Introduction to Algorithms and Programming Languages: Algorithm, Control Structures, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages.

Database Systems: File Oriented Approach, Database Oriented Approach, Database Views, Three-Schema Architecture, Database Models, Components of DBMS, Introduction of SQL Queries.

**Unit – II**

Computer Networks: Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.

The Internet: Internet Services, Types of Internet Connections, Internet Security.

Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, OnDemand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

**Text**

ReemaThareja, Fundamentals of Computers

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**MODEL PAPER**

**Time: 2 1/2hr**

**Max**

**Marks: 60**

**SECTION-A**

**I Short Answer Questions**

**Answer any Five of the following questions**

**5x4=20marks**

1. Question from unit -1.
2. Question from unit -1.
3. Question from unit -2.
4. Question from unit -2.
5. Question from unit -3.
6. Question from unit -3.
7. Question from unit -4.
8. Question from unit -4.

**SECTION-B**

**II Essay Questions**

**Answer all questions choosing any one bit from each question**

**4x10=40marks**

9. a) Question from unit-1.  
(or)

b) Question from unit-1

10. a) Question from unit-2.  
(or)

b) Question from unit-2

11. a) Question from unit-3.  
(or)

b) Question from unit-3.

12. a) Question from unit-4.  
(or)

b) Question from unit-4

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**SEC**

**MODEL PAPER**

**Time:1hrs**

**MaxMarks: 40**

**SECTION-A**

**I. Answer any 4 out of 6 questions.**

**4\*4=16**

1. Question from unit -1.
2. Question from unit -1.
3. Question from unit -1.
4. Question from unit -2.
5. Question from unit -2.
6. Question from unit -2.

**SECTION-B**

**II. Answer the following questions.**

**2x12=24**

1. a) Question from unit-1.  
(or)

b) Question from unit-1

2. a) Question from unit-2.  
(or)

b) Question from unit-2.

**Practical Examinations**

1. Practical examinations will be held at the end of each Semester.
2. 50 marks are allotted for the Practical examination consisting of External and Internal Evaluation.
3. Practical Question Bank is prepared & provided to the students from which practicals will be conducted.
4. Practical shall be conducted in each Semester as per the Syllabus and Time table.

Resolved to accept the above pattern of examination