



## **VIKRAMA SIMHAPURI UNIVERSITY::NELLORE**

**Common Framework of CBCS for Colleges in Andhra Pradesh  
(A.P. State of Council of Higher Education)**

### **B.A./B.Sc. (COMPUTER APPLICATIONS)**

*(Under CBCS Framework With Effect From 2020-21)*

### **PROGRAMME: FOUR-YEAR**

*(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities &  
Model Q.P. for fifteen Courses of 1, 2, 3 & 4 Semesters)  
(with effect from 2020-21 Academic Year)*

**Three-year B.A./B.Sc. Computer Applications Syllabus**  
**Vikrama Simhapuri University, Nellore with effect from 2020-21 Academic Year**

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**Structure of Computer Applications**

**Programme: B.A./B.Sc. with Computer Applications as one of the Core Subjects.**

**Discipline: Computer Applications**

Year	Semester	Paper Code	Subject	Hours/Week	Credits	IA	ES	Total
First Year	I	C1	Information Technology	4	3	25	75	100
		C1-P	Information Technology Lab	2	2	--	50	50
	II	C2	E-commerce and Web Designing	4	3	25	75	100
		C2-P	E-commerce and Web Designing Lab	2	2	--	50	50
Second Year	III	C3	Programming with C & C++	4	3	25	75	100
		C3-P	Programming with C & C++Lab	2	2	--	50	50
	IV	C4	Programming with Java	4	3	25	75	100
		C4-P	Programming with Java Lab	2	2	--	50	50
		C5	Database Management System	4	3	25	75	100
		C5-P	Database Management System Lab	2	2	--	50	50

**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS(w.e.f. 2020-21 Admitted Batch)

**I Year B.A. (CA) / B Com (CA) / B.Sc. (CA), SEMESTER- I**

**Discipline: COMPUTER APPLICATIONS**

**INFORMATION TECHNOLOGY**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>I</b>	<b>C1</b>	<b>Information Technology</b>	<b>4</b>	<b>60</b>	<b>3</b>

**Model Outcomes:**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

*A. Remembers and states in a systematic way (Knowledge)*

1. Describe the fundamental hardware components that make up a computer's hardware and the role of each of these components
2. understand the difference between an operating system and an application program, and what each is used for in a computer
3. Use technology ethically, safely, securely, and legally
4. Use systems development, word-processing, spreadsheet, and presentation software to solve basic information systems problems

*B. Explains (Understanding)*

5. Apply standard statistical inference procedures to draw conclusions from data
6. Retrieve information and create reports from databases
7. Interpret, produce, and present work-related documents and information effectively and accurately

*C. Critically examines, using data and figures (Analysis and Evaluation\*\*)*

8. Analyse compression techniques and file formats to determine effective ways of securing, managing, and transferring data
9. Identify and analyse user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing based systems.

10. Analyse a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

11. Identify and analyse computer hardware, software

D. Working in ‘Outside Syllabus Area’ under a Co-curricular Activity(Creativity)

Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.

E. Efficiently learn and use Microsoft Office applications.

**Syllabus:**

Unit	Details
<b>I</b>	<b>Introduction:</b> Computer Definition - Characteristics and Limitations of Computer, Generations of Computer, Classification of Computers, Applications of Computer, Hardware — Basic organization of Computer - Input and Output Devices
<b>II</b>	<b>Memories:</b> primary, secondary and cache memory, <b>Software:</b> types of software, system software, Application software, commercial software, open source software, domain software and free ware software, Programming Languages: Introduction to Programming Languages – Generations of Programming Languages
<b>III</b>	<b>MS word:</b> Features of MS Word - Parts of Word Window – Creating, Saving, Opening document, Printing, <b>Formatting:</b> Formatting of Text and Paragraph - Bullets and Numbering - <b>Editing</b> - Moving and Copying - Find and Replace Text – <b>Tables:</b> Creating tables, inserting and deleting rows and columns, Insertion of pictures – Insertion of clipart - Headers and Footers - Mail Merge
<b>IV</b>	<b>MS Excel:</b> Features of Excel, Parts of Excel window, Workbooks, Creating, Opening and Saving a Workbook, Worksheets, rows, columns, Inserting and Deleting rows and columns, cells, Entering labels, values, and formulas in worksheet, <b>Formatting:</b> Adjusting row height and column width - Formatting cell values, <b>Formulas and Functions:</b> operators used in formula, cell references in formula, Mathematical, Statistical, Logical and Text functions, <b>Charts:</b> Different types of charts, Creating a chart

<b>V</b>	<b>MS Power point:</b> Features of PowerPoint, Parts of PowerPoint window, creating, saving and opening presentation, working with slides: Inserting, deleting, copying slides, editing text, formatting text, Formatting and Modifying Presentations: Applying transition and animation to the slides, inserting music or sound on a slide, viewing slide show
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### **Learning Resources (Information Technology)**

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#### **References:**

- (1) P.Mohan computer fundamentals- Himalaya Publications.
- (2) R.K.Sharma and Shashi K Gupta, Computer Fundamentals - Kalyani Publications
- (3) Fundamentals of Computers By Balagurusamy, Mcgraw Hill
- (4) Microsoft Office 2007 Fundamentals, 1st Edition By Laura Story, Dawna Walls
- (5) MS-Office S.S. Shrivastava
- (6) MS-OFFICE 2007 Training Guide Prof. Satish Jain, M. Geetha, Kratika BPB Publications

#### **Online Resources:**

- <https://support.office.com/en-us/office-training-center>
- <https://www.skillshare.com/browse/microsoft-office>
- [https://www.tutorialspoint.com/computer\\_fundamentals/index.htm](https://www.tutorialspoint.com/computer_fundamentals/index.htm)
- <https://www.javatpoint.com/computer-fundamentalstutorial>
- <https://edu.gcfglobal.org/en/subjects/office/>
- <https://www.microsoft.com/en-us/learning/training.aspx>

**Information Technology Lab**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>I</b>	<b>C1-P</b>	<b>Information Technology Lab</b>	<b>2</b>	<b>30</b>	<b>2</b>

1. MS word creation of documents letters invitations etc,
2. Create tables in MS-WORD
3. Perform mail merge using MS Word
4. MS Excel performing different formulas
5. creating charts in Excel
6. create presentation in power point
7. inserting, deleting slides in Power Point
8. Illustrate Animation in presentation

**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)

**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. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity))
5. 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))

**General**

1. Group Discussion
2. Visit to Software Technology parks / industries

**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. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
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

**I Year B.A. (CA) / B Com (CA) / B.Sc. (CA),**

**CBCS - SEMESTER- I**

**INFORMATION TECHNOLOGY**

**MODEL QUESTION PAPER**

**Time: 3 Hours**

**Max. Marks : 75**

**SECTION-A**

**Answer any FIVE of the following Questions:**

**(5 x 5= 25 Marks)**

1. Write characteristics of computers
2. Write any three input devices
3. Write about cache memory
4. Explain commercial software
5. Explain how to create and save documents in Word
6. Write about inserting pictures in a document
7. Briefly explain cell references in a formula in Excel
8. How will you insert and delete rows in Excel
9. Write about opening a presentation in Power Point
10. Explain how to view slide show

**SECTION - B**

**Answer any FIVE of the following Questions**

**(5 × 10 =50 Marks)**

11. Explain basic organization of a computer system
12. Write about classification of computers
13. Define Memory. Write about Primary memory units
14. Write about generations of programming languages
15. Write and explain the parts of Word window
16. Explain mail merge procedure in MS Word
17. Write in detail about features of Excel
18. What is a chart? Explain different types of charts
19. Explain the creation procedure of a presentation in Power Point
20. Define animation. Explain how to you add transition and animation to the slides

**Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit**



**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS(w.e.f. 2020-21 Admitted Batch)

**I Year B.A. (CA) / B Com (CA) / B.Sc. (CA), SEMESTER- II**

**Discipline: COMPUTER APPLICATIONS**

**E-COMMERCE & WEB DESIGNING**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
II	C2	E-Commerce & Web Designing	4	60	3

**Learning Outcomes:**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

*B. Remembers and states in a systematic way (Knowledge)*

1. Understand the foundations and importance of E-commerce
2. Define Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational
3. Describe the infrastructure for E-commerce
4. Discuss legal issues and privacy in E-Commerce
5. Understand the principles of creating an effective web page, including an in-depth consideration of information architecture

*B. Explains (Understanding)*

6. Recognize and discuss global E-commerce issues
7. Learn the language of the web: HTML

*C. Critically examines, using data and figures (Analysis and Evaluation)*

8. Analyze the impact of E-commerce on business models and strategy
9. Assess electronic payment systems
10. Exploring a web development framework as an implementation example and create dynamically generated web site complete with user accounts, page level security, modular design using css

D. Working in ‘Outside Syllabus Area’ under a Co-curricular Activity(Creativity)

Use the Systems Design Approach to implement websites with the following steps:

- Define purpose of the site and subsections
- Identify the audience
- Design and/or collect site content
- Design the website theme and navigational structure
- Design & develop web pages including: Hyperlinks, Lists, Tables, Frames, Forms, Images, Behaviours

E. Build a site based on the design decisions and progressively incorporate tools and techniques covered

## **SYLLABUS**

<b>Unit</b>	<b>Details</b>
<b>I Unit I: Introduction:</b>	<b>Introduction to Internet:</b> Internet Terminology – History of the Internet – Advantages & disadvantages of Internet – How internet works <b>Electronic Commerce:</b> Definition, types, advantages and disadvantages, E-Commerce transaction on World Wide Web. Electronic Market-Online shopping, Three models of Electronic Market - E-Business.
<b>II Unit-II: E-payment System:</b>	Models and methods of e-payments (Debit Card, Credit Card, Smart Cards, e-money), Digital Signatures (Procedure, Working And Legal Position), Payment Gateways, Online Banking (Meaning, Concepts, Importance, Electronic Fund Transfer), Risks Involved in e-payments.
<b>III Unit-III: On-line Business Transactions:</b>	Meaning, Purpose, Advantages and Disadvantages of Transacting Online, E-Commerce Applications in Various Industries Like (Banking, Insurance, Payment of Bills), Benefits, Problems and Features, Online Services (Financial, Travel and Career), Online Learning, Online Shopping (Amazon, Flipkart, etc.)

**IV Unit-IV: Website designing**

**Introduction to HTML:** Basic HTML – HTML document structure – HTML tags – Basefont tag – title tag – body tag – Horizontal Rule Tag - Text formatting tags – Character tags - Character entities, **HTML Lists** : Ordered List , Unordered List & Definition List – Using colors – Using Images

**V Unit V: Website designing:**

**Hyperlinks:** Textual links, Graphical links, types of document links, anchor tag **HTML Tables** – table creations tags, Nested Tables, **Frames:** Frame introduction - frame creation tags – Nested Frames

**Learning Resources (E-commerce & Web Designing)**

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**References:**

- (1) E-commerce and E-business Himalaya publishers
- (2) E-Commerce by Kenneth C Laudon, PEARSON INDIA
- (3) Web Design: Introductory with MindTap Jennifer T Campbell, Cengage India
- (4) HTML & WEB DESIGN:TIPS& TECHNIQUES JAMSA, KRIS, McGraw Hill
- (5) Fundamentals Of Web Development by Randy Connolly, Ricardo Hoar, Pearson
- (6) HTML & CSS: COMPLETE REFERENCE POWELL,THOMAS, McGrawHill

**Online Resources:**

<http://www.kartrocket.com>

<http://www.e-commerceceo.com>

<http://www.fastspring.com>

<https://teamtreehouse.com/tracks/web-design>

**E-COMMERCE & WEB DESIGNING LAB**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>II</b>	<b>C2-P</b>	<b>E-Commerce &amp; Web Designing Lab</b>	<b>2</b>	<b>30</b>	<b>2</b>

1. Creation of simple web page using formatting tags
2. Creation of lists and
3. Creation of web page with text tags
4. Creation of tables with attributes
5. Creation of hyperlinks
6. Creation of hyperlinks and including images
7. Creation of forms
8. Creation of framesets

**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)

**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. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity))
5. 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))

**GENERAL**

Group Discussion

Visit to Software Technology parks / industries

**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. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
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

**I Year B.A. (CA) / B Com (CA) / B.Sc. (CA),**

**CBCS - SEMESTER- II**

**E-COMMERCE & WEB DESIGNING**

**MODEL QUESTION PAPER**

**Time: 3 Hours**

**Max. Marks : 75**

**SECTION-A**

**Answer any FIVE of the following Questions:**

**(5 x 5= 25 Marks)**

1. Define Internet. Write disadvantages of Internet
2. Write about e-business
3. Define e-payment system
4. Explain briefly the methods of e-payment system
5. Write the purpose of online business transaction
6. Write about online learning
7. Briefly explain HTML document structure
8. Write about Horizontal rule tag
9. Define Hyperlink
10. Define table. Explain table creation tags.

**SECTION - B**

**Answer any FIVE of the following Questions**

**(5 × 10 =50 Marks)**

11. Explain the working of Internet.
12. What is e-commerce? Write about the three models of e-market
13. Explain about Payment gateways
14. Write about various risks involved in e-payment system
15. Write and explain advantages of online transactions
16. Explain the features of online shopping with an example
17. Write in detail about text formatting tags in HTML
18. Write about lists in HTML
19. Explain different types hyperlinks used in a web page
20. Explain about frames in HTML

**Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit**

**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

**II Year B.A. (CA) / B Com (CA) / B.Sc. (CA), SEMESTER- III**

**Discipline: COMPUTER APPLICATIONS**

**PROGRAMMING WITH C & C++**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
<b>III</b>	<b>C3</b>	<b>Programming with C &amp; C++</b>	<b>4</b>	<b>60</b>	<b>3</b>

**Model Outcomes:**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

*C. Remembers and states in a systematic way (Knowledge)*

1. Develop programming skills
2. Declaration of variables and constants use of operators and expressions
3. learn the syntax and semantics of programming language
4. Be familiar with programming environment of C and C++
5. Ability to work with textual information (characters and strings) & arrays

*D. Explains (Understanding)*

6. Understanding a functional hierarchical code organization
7. Understanding a concept of object thinking within the framework of functional model
8. Write program on a computer, edit, compile, debug, correct, recompile and run it

*E. Critically examines, using data and figures (Analysis and Evaluation)*

9. Choose the right data representation formats based on the requirements of the problem
10. Analyze how C++ improves C with object-oriented features
11. Evaluate comparisons and limitations of the various programming constructs and choose correct one for the task in hand.

*D. Working in 'Outside Syllabus Area' under a Co-curricular Activity(Creativity)*

Planning of structure and content, writing, updating and modifying computer programs for user solutions

*E. Exploring C programming and Design C++ classes for code reuse (Practical skills\*\*\*)*

## **SYLLABUS**

<b>Unit</b>	<b>Details</b>
<b>I Introduction:</b>	Introduction - Structure of C program – C character set, Tokens: Constants, Variables, Keywords, Identifiers – C data types - C operators (arithmetic, relational, logical, increment and decrement) - Standard I/O in C (scanf, printf) - Conditional Control statements (if and Switch) Statements
<b>II Loops And Arrays:</b>	<b>Repetitive statements:</b> While, Do While and For Loops - Use of Break and Continue Statements – <b>Arrays:</b> Introduction – Types of arrays, one dimensional arrays - Declaration of one dimensional arrays – Accessing array elements – Storing values in an array – Two Dimensional Arrays Declaration of two dimensional arrays – Accessing array elements – Storing values in 2-D arrays
<b>III Strings and Functions:</b>	<b>Strings:</b> Definition, Declaration and Initialization of String Variables - String Handling Functions – <b>Functions:</b> Defining Functions - Function Call – passing parameters: Call By Value, Call By Reference – Recursion
<b>IV Classes and Objects</b>	Introduction to OOP and its basic features - C++ program structure - Classes and objects - Friend Functions- Static Functions –Constructor – Types of constructors – Destructors - Unary Operators
<b>v Inheritance:</b>	Inheritance - Types of Inheritance -Types of derivation- Public – Private - Protected Hierarchical Inheritance - Multilevel Inheritance – Multiple Inheritance - Hybrid Inheritance

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### **Learning Resources ( Programming with C & C++)**

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#### **Reference Books:**

1. Let Us C Yashavant Kanetkar
2. Mastering C by K R Venugopal and Sudeep R Prasad, McGraw Hill
3. E. Balagurusamy "Object oriented programming with C++
4. The C++ Programming Language Bjarne Stroustrup



5. R.Ravichandran "Programming with C++"
6. Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden
7. C++ Primer Stanley B. Lippman, Josée Lajoie, Barbara E. Moo

**Online Resources:**

<https://www.tutorialspoint.com/cprogramming/index.html>

<https://www.learn-c.org/>

<https://www.programiz.com/c-programming>

<https://www.w3schools.in/c-tutorial/>

<https://www.cprogramming.com/tutorial/c-tutorial.html>

<https://www.tutorialspoint.com/cplusplus/index.html>

<https://www.programiz.com/cpp-programming><http://www.cplusplus.com/doc/tutorial/>

<https://www.learn-cpp.org/>

<https://www.javatpoint.com/cpp-tutorial>

**PROGRAMMING WITH C & C++ LAB**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
<b>III</b>	<b>C3-P</b>	<b>Programming with C &amp; C++ Lab</b>	<b>2</b>	<b>30</b>	<b>2</b>

1. Write C programs for
  - a. Fibonacci Series
  - b. Prime number
  - c. Palindrome number
  - d. Armstrong number.
2. 'C' program for multiplication of two matrices
3. 'C' program to implement string functions
4. 'C' program to swap numbers
5. 'C' program to calculate factorial using recursion
6. 'C++' program to perform addition of two complex numbers using constructor
7. Write a program to find the largest of two given numbers in two different classes using friend function
8. Program to add two matrices using dynamic constructor
9. Implement a class string containing the following functions:
  - a. Overload + operator to carry out the concatenation of strings.
  - b. Overload == operator to carry out the comparison of strings.
10. Program to implement inheritance.

**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)

**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. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity))
5. 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))

**General**

Group Discussion

Visit to Software Technology parks / industries

**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. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
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

**II Year B.A. (CA) / B Com (CA) / B.Sc. (CA),**

**CBCS - SEMESTER- III**

**PROGRAMMING WITH C AND C++**

**MODEL QUESTION PAPER**

**Time: 3 Hours**

**Max. Marks : 75**

**SECTION-A**

**Answer any FIVE of the following Questions:**

**(5 x 5= 25 Marks)**

1. Write about constants used in C language
2. Explain briefly about switch statement
3. Write about break and continue statements
4. Explain two dimensional array declaration
5. Write about call by value method
6. Define recursive function
7. Briefly explain classes and objects
8. Write about friend function in C++
9. Define Inheritance. Explain hybrid inheritance
10. Explain about benefits of inheritance

**SECTION - B**

**Answer any FIVE of the following Questions**

**(5 × 10 =50 Marks)**

11. Explain the structure of C program with an example.
12. What is an operator? Write about various operators used in C
13. Explain about repetitive statements with an example
14. Define an Array. Write about declaration of arrays in C
15. Illustrate string handling functions used in C language
16. What is a function? Write about defining a function
17. Write in detail about features of Object Oriented Programming
18. Explain different types of constructors in C++
19. Explain about various types of inheritance.
20. Write C++ program to implement multiple inheritance

**Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit**

**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

**II Year B.A. (CA) / B.Sc. (CA), SEMESTER- IV**

**Discipline: COMPUTER APPLICATIONS**

**PROGRAMMING WITH JAVA**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
<b>IV</b>	<b>C4</b>	<b>Programming with Java</b>	<b>4</b>	<b>60</b>	<b>3</b>

**Model Outcomes:**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

A. *Remembers and states in a systematic way (Knowledge)*

1. Develop programming skills
2. Declaration of variables and constants use of operators and expressions
3. learn the syntax and semantics of programming language
4. Be familiar with programming environment of Java
5. Ability to work with textual information (characters and strings) & arrays

B. *Explains (Understanding)*

6. Understanding a functional hierarchical code organization
7. Understanding a concept of object thinking within the framework of functional model
8. Write program on a computer, edit, compile, debug, correct, recompile and run it

C. *Critically examines, using data and figures (Analysis and Evaluation)*

9. Choose the right data representation formats based on the requirements of the problem
10. Analyze how Java improves with object-oriented features
11. Evaluate comparisons and limitations of the various programming constructs and choose correct one for the task in hand.

D. Working in 'Outside Syllabus Area' under a Co-curricular Activity (Creativity)

Planning of structure and content, writing, updating and modifying computer programs for user solutions

E. Exploring programming and Design with Java classes for code reuse (Practical skills\*\*\*)

## **SYLLABUS**

<b>Unit</b>	<b>Details</b>
<b>I</b>	<b>Fundamentals Of Object Oriented Programming:</b> Introduction, Object Oriented paradigm, Basic Concepts of OOP <b>Overview of Java Language:</b> Introduction, Java features, Java program structure, Java Virtual Machine – Java versus C++
<b>II</b>	<b>Basics of Java:</b> Identifiers – literals: integer literals - character literals – Floating point literals – string literals. Operators:- Arithmetic operators, relational operators, assignment operators, conditional operator. – Variables, Keywords, Data types, <b>Input and Output in Java:</b> Reading Input with Java.util.Scanner Class, Displaying Output with System.out.println( )
<b>III</b>	<b>Java Control structures:</b> if, if..else statement – switch statement — while statement – do..while statement – for loop – continue statement - break statement <b>Arrays:</b> Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, creating a two-dimensional array
<b>IV</b>	<b>Classes, Objects &amp; Methods:</b> Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods
<b>V</b>	<b>Inheritance:</b> Introduction, Types of inheritance, Overriding methods, Final variables and methods, Final classes, Abstract methods and classes <b>Threads:</b> Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread

### **Reference books:**

1. Programming with Java by E.Balagurusamy
2. Programming in Java by Sachin Malhotra, OXFORD University Press
3. Java complete Reference by Herbert Schildt
4. John R. Hubbard, Programming with Java, Second Edition, Schaum"s outline Series, TATA McGraw-Hill Company.

**PROGRAMMING WITH JAVA LAB**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>IV</b>	<b>C4-P</b>	<b>Programming with Java Lab</b>	<b>2</b>	<b>30</b>	<b>2</b>

1. Program to find factorial of a number
2. Program to find simple interest
3. Program to convert temperature from Celsius to Fahrenheit
4. Program to search an element in an array
5. Program to find addition of two matrices
6. Program to demonstrate constructor
7. Program to implement method overloading
8. Program to implement single inheritance
9. Program to implement thread

**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)

**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. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity))
5. 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))

**General**

Group Discussion

Visit to Software Technology parks / industries

**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. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
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

**II Year B.A. (CA) / B.Sc. (CA)**

**CBCS - SEMESTER- IV**

**PROGRAMMING WITH JAVA**

**MODEL QUESTION PAPER**

**Time: 3 Hours**

**Max. Marks : 75**

**SECTION-A**

**Answer any FIVE of the following Questions:**

**(5 x 5= 25 Marks)**

1. Differentiate Java and C++
2. Explain briefly about JVM
3. Define variable. Describe the declaration of variables in Java
4. Write the importance of conditional operator
5. Write about for loop with an example
6. How do create an array in Java?
7. Define class. Briefly explain classes in Java
8. Write about creating objects in Java
9. Define Inheritance. Explain with an example
10. Explain about method creating a thread

**SECTION - B**

**Answer any FIVE of the following Questions**

**(5 × 10 =50 Marks)**

11. Explain the structure of Java program with an example.
12. Write the basic concepts of OOP
13. Explain about data types used in Java
14. Explain how do you input data in Java with an example
15. Illustrate the conditional control statements
16. What is an array? Explain the declaration of arrays in Java
17. Explain about accessing class members in Java with an example program
18. Write about static members in Java
19. Explain about various types of inheritance.
20. Explain thread life cycle

**Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit**



**PROGRAMME: THREE-YEAR DEGREE**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

**II Year B.A. (CA) / B Com (CA) / B.Sc. (CA), SEMESTER- IV**

**Discipline: COMPUTER APPLICATIONS**

**DATABASE MANAGEMENT SYSTEM**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C5	Database Management System	4	60	3

**Model Outcomes for Database Management System**

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

*A. Remembers and states in a systematic way (Knowledge)*

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including E-R diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

*B. Explains (Understanding)*

5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
6. Perform PL/SQL programming using concept of control statements

*C. Critically examines, using data and figures (Analysis and Evaluation)*

7. Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model

*D. Working in 'Outside Syllabus Area' under a Co-curricular Activity (Creativity)*

Design and implement a small database project

*E. Construct simple and moderately advanced database queries using Structured Query Language (SQL) (Practical skills)*

## **SYLLABUS**

<b>Unit</b>	<b>Details</b>
<b>I</b>	<b>Overview of Database Management System</b> Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System, services of database system
<b>II</b>	<b>File-Based System</b> File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, DBMS Vendors and their products.
<b>III</b>	<b>Entity-Relationship Model:</b> Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, CODD's Rules, Relational Data Model, Concept of Relational Integrity.
<b>IV</b>	<b>Structured Query Language</b> Introduction, SQL Literals, SQL operators, Commands in SQL, Data types in SQL, Data Definition Language (DDL) commands, Table Modification, Table Truncation, Selection Operation, Projection Operation, Aggregate Functions, Data Manipulation Language commands, Imposition of Constraints, Set Operations.
<b>V</b>	<b>PL/SQL:</b> Introduction, Structure of PL/SQL, Data Types of PL/SQL, PL/SQL operators, Steps to Create a PL/SQL Program, Control Structures: conditional control statements, Iterative Control statements

### **Learning Resources (Database Management System)**

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#### **References:**

1. Paneerselvam: Database Management system, PHI.
2. MARTIN, Database Management-Prentice Hall of India, New Delhi.
3. Bipin C.Desai, 'An Introduction to Database System', Galgotia Publications
4. Korth, Database Management System.
5. Navathe, Database Management System.
6. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management System
7. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB publications

**Online resources:**

[http:// www.onlinegdb.com/](http://www.onlinegdb.com/)

[http:// www.tutorialspoint.com/](http://www.tutorialspoint.com/)

<http://learnsql.com>

<https://www.codecademy.com/learn/learn-sql/>

<https://www.w3schools.com/sql/default.asp>

**DATABASE MANAGEMENT SYSTEM LAB**

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C5-P	Database Management System Lab	2	30	2

1. Create a table with constraints so that invalid data should not be entered into the table
2. Create the employee table as shown below and generate queries  
Employee (empno, ename, job, joindate, salary, comm, deptno)
  - i. Display all the rows of employee table
  - ii. List out employee names and their jobs of all employees
  - iii. List employee details who are working as CLERK
  - iv. List employee details whose salary is more than 2500
  - v. Display employee details who is salary between 3000 and 5000
  - vi. Display all employee names in alphabetical order
  - vii. Count number of rows are there in employee table
  - viii. Find sum and average salaries of all employees
  - ix. Find job wise number of employee working and their total salaries
  - x. Find in which job more than 3 employees working
4. Write a PL/SQL program to Find Biggest of Three numbers.
5. PL/SQL program to find whether a number is positive, negative or zero
6. PL/SQL program to find factorial of a number
7. PL/SQL program to calculate simple interest
8. PL/SQL program to retrieve data from a table and display them

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**General**

1. Group Discussion
2. Visit to Software Technology parks / industries

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8. Viva voce interviews.
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10. Peers and self-assessment, outputs from individual and collaborative work

**II Year B.A. (CA) / B Com (CA) / B.Sc. (CA)**

**CBCS - SEMESTER- IV**

**DATABASE MANAGEMENT SYSTEM**

**MODEL QUESTION PAPER**

**Time: 3 Hours**

**Max. Marks: 75**

**SECTION-A**

**Answer any FIVE of the following Questions:**

**(5 x 5= 25 Marks)**

1. Define data and Information
2. Write objectives of database management system
3. Write various products of DBMS
4. Write about file oriented approach
5. Illustrate the degree of relationship in ER model
6. Write about type of entities in ER model
7. Explain SQL literals
8. How do you delete the data in a table
9. Write PL/SQL program structure
10. Write if statement in PL/SQL with an example

**SECTION - B**

**Answer any FIVE of the following Questions**

**(5 × 10 =50 Marks)**

11. Define DBMS. Write evolution of database management system
12. Write about classification of Database management system
13. Explain the advantages of database system
14. Write about components of database system
15. Write about Codd's rules
16. Explain the relationship integrity principles
17. Write about types of SQL commands
18. Explain set operators with an example in SQL
19. Write about PL/SQL data types
20. What are iterative statements? Explain

**Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit**