

BIDAR UNIVERSITY BIDAR



SYLLABUS FOR UNDERGRADUATE BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.Sc.) STATE EDUCATION POLICY (SEP-2024)

(SYLLABUS WITH EFFECT FROM ACADEMIC YEAR 2024-25 & ONWARDS)

Submitted by
Chairman
Board of Studies (UG)
Bidar University Bidar

Approved the Syllabus by BOS (UG) on dated 09-09-2025

Signature
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Curriculum Structure for B.Sc. Computer Science w. e. f 2025-26

Category	Course Code	Title of the Paper	Marks			Hours/ Week	Credits	Duration of Exams (Hrs.)
			IA	Semester End Exam (SEE)	Total			
SEMESTER III								
DSC03	SEPBSCCST03	Database Management System	20	80	100	4	4	3
	SEPBSCCSP03	Database Management System Lab	10	40	50	4	2	3
	Elective-1 DSCE-1T	a) Software Testing	10	40	50	2	2	2
		b) IOT						
TOTAL: HOURS/CREDIT					200	10	8	
SEMESTER IV								
	Skill-1P	R Programming	10	40	50	2	2	2
DSC04	SEPBSCCST04	Java Programming	20	80	100	4	4	3
	SEPBSCCSP04	Java Programming Lab	10	40	50	4	2	3
	Elective-2 DSCE-2T	a) Big data Analytics	10	40	50	2	2	2
		b) Cloud Computing						
TOTAL: HOURS/CREDIT					250	12	10	

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Year	II	Course Code: SEPBSCCST03		Credits	04
Semester	III	Course Title: Database Management System		Hours	60
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 20		Summative Assessment Marks: 80	Duration of SEE: 3 hrs		
Course Objectives	After completing this course satisfactorily, a student will be able to: 1. Describe the fundamental elements of relational database management systems. 2. Explain the basic concepts of relational data model, entity- relationship model, relational database design, relational algebra and SQL. 3. Design ER-models to represent simple database application scenarios. 4. Design the ER-model to relational tables, populate relational. 5. Construct the database design by normalization, Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.				
Unit No.	Course Content			Hours	
UNIT I	Database Concepts; Database, Database Management System (DBMS), Characteristics of database approach, Advantages and Disadvantages of using the DBMS, DBMS users, Data Models, Schemas and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces.			15	
UNIT II	The Entity Relationship Model: Entities, Attribute, Relationships, Connectivity and Cardinality, Weak Entities, Composite Entities, Entity Super Types and Subtypes, E-R Diagrams, Naming Conventions and Design Issues, Specialization and Generalization.			10	
UNIT III	Relational Model: Concepts, Constraints and Relational Database Schemas, Update Operations, Relational Algebra Operations, Relational Calculus, Relational Database Design using ER to relational Mapping.			10	
UNIT IV	Relational Query Languages: SQL Data Definition and Data Types, Specifying Constraints, Queries in SQL, DDL, DCL, DML, TCL.			10	
UNIT V	Relational Database Design: Functional Dependencies, Normal Forms-First, Second, Third, Boyce-Codd Normal Forms, Fourth Normal Form Backup and Recovery: Database backups, Importance of Backups, Causes of Failures, Database Recovery, Recovery Facilities, Recovery Techniques			15	

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Recommended Learning Resources

Reference Books:

1. Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems (7th Edition)", Pearson.
2. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications.
3. C. J. Date, "An Introduction to Database Systems", Pearson.

E-Resources:

Websites:

1. Tutorials Point: DBMS Tutorial - Comprehensive tutorials, examples, and quizzes.
2. GeeksforGeeks: DBMS - Tutorials, examples, and practice problems.
3. W3Schools: SQL Tutorial - Learn SQL basics and advanced concepts.
4. DatabaseStar: DBMS Tutorial - Tutorials, examples, and quizzes.
5. Studytonight: DBMS Tutorial - Comprehensive tutorials and examples.

Online Courses:

1. Coursera - University of Colorado's "Database Management Systems" course.
2. edX - Microsoft's "Database Management Systems" course.
3. Udemy - "Database Management Systems" course.
4. DataCamp - "Introduction to Database Management" course.

E-books:

1. "Database System Concepts" by Abraham Silberschatz (PDF).
2. "Database Management Systems" by Raghu Ramakrishnan (PDF).
3. "Fundamentals of Database Systems" by Ramez Elmasri (PDF).

YouTube Channels:

1. Database Management System by Neso Academy.
2. DBMS Tutorial by Free Code Camp.
3. Database Management System by Telusko.

Practice Platforms:

1. LeetCode - Database problems.
2. HackerRank - Database challenges.
3. SQL Fiddle - Practice SQL queries.

Blogs:

1. Database Journal.
2. DBMS Blog.
3. Database Trends and Applications.

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Year	II	Course Code: SEPBSCCSP03	Credits	02
Semester	III	Course Title: Database Management System Lab	Hours	50
Course Pre-requisites, if any		NA		
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 3 hrs	

PART-A:

1. Implementation of DDL commands of SQL with suitable examples.
 - Create table
 - Alter table
 - Drop Table
2. Implementation of DML commands of SQL with suitable examples.
 - Insert
 - Update
 - Delete
3. Implementation of different types of function with suitable examples.
 - Number function
 - Aggregate Function
 - Character Function
 - Conversion Function
 - Date Function
4. Implementation of different types of operators in SQL.
 - Arithmetic Operators
 - Logical Operators
 - Comparison Operator
5. Implementation of different types of Set operators in SQL.
6. Implementation of different types of Joins.
 - Inner Join
 - Outer Join
 - Natural Join etc.
7. Study and Implementation of
 - Group By & having clause
 - Order by clause
 - Indexing
8. Study & Implementation of
 - Sub queries
 - Views
9. Study & Implementation of different types of constraints.
10. Study & Implementation of Rollback, Commit, Save point.

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Instructions:

1. A certified journal is mandatory for every student to appear for the practical examination.

Year	II	Course Code: DSCE-1T(a)		Credits	2
Semester	III	Course Title: Software Testing		Hours	30
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 2 hrs.		
Course Objectives		After completing this course satisfactorily, a student will be able to: - To study the testing fundamentals and testing design strategies. - To expose the criteria for test cases. - To learn the levels of testing and test planning concepts.			
Unit No.	Course Content			Hours	
UNIT I	Definitions of Errors, Defects, Failures, Testcases, Tester's Role in a software Development organization, V Shaped Software Life Cycle model, Verification and Validation, Levels of testing.			15	
UNIT II	Functional Testing/Black-Box Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, White Box Testing Techniques, Cyclomatic Complexity, Graph Matrices, Control Flow Graph.			15	
Recommended Learning Resources					
Reference Books:					
1. Roger S. Pressman, "Software Engineering A Practitioner's Approach", MC Graw Hill (Seventh Edition).					
2. Yogesh Singh, "Software Testing", Cambridge University Press 2011.					
3. Renu Rajani, "Software Testing Effective Methods, Tools and Techniques".					
E-Resources:					
Online Courses and Tutorials: - Platforms like Coursera, Udemy, edX: Offer structured courses covering various aspects of software testing, from foundational concepts to advanced topics like test automation, performance testing, and security testing. - Specialized Testing Platforms: Websites like uTest University provide courses specifically tailored to different testing domains and levels of expertise. - YouTube Channels: Many channels, such as those by Ministry of Testing or edureka! offer free video tutorials and explanations on software testing concepts and tools.					
Blogs and Articles: Software Testing Blogs: Websites like Software Testing Help, Ministry of Testing Articles, and Develop Sense provide in-depth articles, guides, and insights on best practices, emerging trends, and practical tips in software testing.					

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- **Community-Driven Platforms:**
DZone and similar platforms feature articles and tutorials contributed by a community of software testing professionals.

Communities and Forums:

- **Online Forums and Discussion Boards:** Platforms like The Club by Ministry of Testing, Testing Tech News, and various Slack channels (e.g., Ministry of Testing, Women in Testing) facilitate discussions, knowledge sharing, and networking among testers.
- **Social Media Groups:** LinkedIn groups and other social media communities dedicated to software testing offer opportunities to connect with peers and stay updated on industry news.

Tools and Templates:

- **Software Testing Tool Websites:** Resources like Ranorex and others provide information and tutorials on using specific test automation tools.
- **Software Testing Templates:** Websites often offer downloadable templates for test plans, test cases, bug reports, and other testing documentation.

Certification and Study Guides:

- **ISTQB Study Guides:** Resources for preparing for industry-recognized certifications like ISTQB Certified Tester Foundation Level (CTFL).
- **Certification-Specific Study Materials:** Guides and practice exams for other certifications like CSTE and CSQA.

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Year	II	Course Code: DSCE-1T(b)		Credits	2
Semester	III	Course Title IOT		Hours	30
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 2 hrs.		
Course Objectives		After completing this course satisfactorily, a student will be able to: • Able to understand the application areas of IOT · • Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks · • Able to understand building blocks of Internet of Things and characteristics.			
Unit No.	Course Content			Hours	
UNIT I	IOT Definition, IOT Key Features, IOT Advantages, IOT Disadvantages, Applications of IOT, IOT Categories, Baseline Technologies-M2M, Cyber Physical systems, Sensor- Characteristics of Sensors, Classification of Sensors, Actuator-Types of Actuators.			15	
UNIT II	IOT Components, Service Oriented Architecture of IOT, Challenges of IOT, IOT Networking-Connectivity Terminologies, Multihoming, IOT protocols-IPV4, IPV6, MQTT, SMQTT, COAP.			15	
Recommended Learning Resources					
Reference Books:					
1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", 1stEdition, Pearson Education (Cisco Press Indian Reprint). (ISBN: 978-9386873743).					
2. Srinivasa KG, "Internet of Things", CENGAGE Leaning India, 2017.					
E-Resources:					
Online Courses and Platforms:					
• Coursera, edX, Udemy, Udacity: These platforms offer a wide range of IoT courses, from introductory to specialization levels, covering topics like IoT fundamentals, sensor technology, cloud platforms, and data analytics. • NPTEL: Offers introductory courses on Industry 4.0 and the Industrial Internet of Things. • FutureLearn: Provides a course on the rise of connected devices in IoT. • Pluralsight: Offers a course focused on IoT security. • ThingsBoard: An open-source platform that provides a comprehensive environment for developing and deploying IoT solutions, including dashboards, data visualization, and device management. • IIT Delhi Central Library: Provides access to various e-resources related to IoT, including bibliographic databases, full-text resources, standards, and e-journals. • DigiKey: Features an IoT resource center with information on various aspects of IoT, including gateways, sensors, wireless modules, and connectivity solutions.					

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Year	II	Course Code: Skill-1		Credits	2
Semester	IV	Course Title: R Programming		Hours	30
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 2 hrs.		
Course Objectives		After completing this course satisfactorily, a student will be able to: - Explore fundamentals of statistical analysis in R environment. - Describe key terminologies, concepts and technique employed in statistical Analysis. - Define calculate, Implement Probability and Probability Distribution to solve a wide variety of problems.			
Unit No.	Course Content			Hours	
UNIT I	Introduction of the language, numeric, arithmetic, assignment and vectors, Matrices and Arrays, Non-numeric. Values, Lists and Data Frames, Special Values, Classes and Coercion, Basic Plotting.			15	
UNIT II	Reading and Writing files, Programming, Calling Functions, Conditions and Loops: stand-alone statement with illustrations in exercise 10.1, stacking statements, coding loops, writing Functions, Exception, Timings and Visibility.			15	
Recommended Learning Resources					
Reference Books:					
- Tilman M. Davies. “The book of R: A first course in programming and statistics”, San Francisco, 2016. - Vishwas R. Pawgi, “Statistical Computing using R Software”, Niraliprakashan publisher. Edition 2022.					
E-Resources:					
1. Online Courses and Platforms: Coursera, edX, DataCamp, Udemy, LinkedIn Learning, Pluralsight: These platforms offer structured courses on R programming, ranging from beginner introductions to advanced topics in data science, statistics, and machine learning. Many provide interactive exercises and projects. Dataquest: Offers a guided learning path with hands-on coding exercises for R.					
2. Tutorials and Documentation: Quick-R: A comprehensive website with tutorials and examples on various R functionalities. RStudio Cheat Sheets: Provides concise reference guides for popular R packages like dplyr, tidyr, and ggplot2. CRAN (The Comprehensive R Archive Network): The official repository for R packages and documentation, including manuals and introductory materials. GitHub Repositories: Many developers and educators maintain repositories with R learning resources, tutorials, and code examples (e.g., iamericfletcher/awesome-r-learning-resources).					
3. Books and eBooks: "R in a Nutshell" by Joseph Adler: Useful for those with prior programming experience. "A First Course in Statistical Programming with R" by W. John Braun and Duncan J. Murdoch: Focuses on statistical programming concepts. "The Art of R Programming" by Norman Matloff: A good introduction to programming for					

beginners using R.

4. Video Resources:

YouTube Channels: Channels like Simplilearn, freeCodeCamp, StatQuest with Josh Starmer, and TidyX offer free video tutorials and explanations on R programming and data analysis.

5. Community and Support:

R-help mailing list: For seeking assistance and discussing R-related issues.

Stack Overflow: A popular forum for asking and answering programming questions, including R.

Integrated Development Environments (IDEs):

RStudio: The most widely used IDE for R, offering a user-friendly interface for coding, debugging, and project management.

Jupyter Notebook, Visual Studio Code, Emacs & ESS: Other IDEs and text editors that can be configured for R development.

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Year	II	Course Code: SEPBSCCST04		Credits	4
Semester	IV	Course Title: Java Programming		Hours	60
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 20		Summative Assessment Marks: 80	Duration of SEE: 3 hrs.		
Course Objectives	After completing this course satisfactorily, a student will be able to: - To learn the syntax and semantics to write Java programs. - To understand the fundamentals of object-oriented programming in Java. - To familiarize with the concept of inheritance, polymorphism packages and interfaces. - Skill to write Java application programs using OOP principles and proper program structuring. - Ability to create packages and interfaces. - Ability to implement error handling techniques using exception handling.				
Unit No.	Course Content			Hours	
UNIT-I	Introduction to Java: Features of Java- Object Oriented Concepts – Data Types – Variables – Arrays – Operators – Control Statements, Input and output- Scanner and System class – print(), and println() methods.			10	
UNIT-II	Classes- Objects: Overloading methods – Access Control – Static and fixed methods Inner Classes –String Class – Overriding methods- Using Super – Abstract Class – Type Wrapper Classes for primitive types- Auto boxing and auto Unboxing-Recursion.			10	
UNIT-III	Packages: Access Protection- Importing packages- Interfaces- Exception Handling- Throw and Throws Thread- Synchronization -Runnable Interface- Inter thread Communication- Multithreading-file streams- Sequential file, Random file.			10	
UNIT-IV	GUI Components: Common GUI Event type and Listener Interfaces – JoptionPane - JLabel, Jtextfield, JButton, JCheckBox, JTextarea, JComboBox, JList, Jpanel. MouseEvent Handling - Adapter Classes – Key Event Handling. Layout Manager- Flow Layout, Border Layout, Grid Layout, Graphics contexts and graphics objects color control- Font control-			15	
UNIT-V	Applet: Applet Life Cycle, Graphics in Applet, Drawing lines, rectangles and ovals- jslider-using menus with frames Event Handling in Applet, JDBC Drivers, DB Connectivity Steps for MS-Access.			15	
Recommended Learning Resources					
Reference Books:					
1. M.T. Somashekara, D.S. Guru, K.S. Manjunatha, "Object Oriented Programming with JAVA",PHI Publication. 2. E Balagurusamy, "Programming with Java", Mc Graw Hill Publication(7 th Edition). 3. Herber Schildt, "The Complete Reference", Indian Publication.					

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E-Resources:

Beginner-Friendly Resources

- **Official Java Documentation:** Oracle's Java tutorials are the best starting point for learning the basics. (Visit [Java Tutorials](#))
- **Codecademy:** Offers interactive lessons for beginner-level Java. Their hands-on approach makes it easier to grasp concepts. ([Codecademy Java](#))
- **YouTube Channels:** Look for free tutorials on channels like "Programming with Mosh" and "Derek Banas."

Intermediate to Advanced Learning

- **Head First Java** by Kathy Sierra & Bert Bates: A fantastic book for learners who want a more engaging, story-driven approach.
- **Java Design Patterns:** For mastering design principles and patterns in Java.
- **GeeksforGeeks&Tutorialspoint:** Great platforms for exploring advanced topics and understanding Java frameworks.

Practice Platforms

- **HackerRank&LeetCode:** Put your coding skills to the test with these competitive programming sites.
- **CodeGym:** A gamified way to learn Java by completing tasks and building projects.
- **JetBrains Academy:** Offers hands-on projects to develop your Java skills.

Communities and Forums

- **Stack Overflow:** A fantastic resource for troubleshooting and sharing knowledge.
- **Reddit:** Subreddits like [r/learnjava](#) and [r/javahelp](#) have active members ready to assist.

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Year	I	Course Code : SEPBSCCSP04	Credits	2
Semester	II	Course Title : Java Programming Lab	Hours	50
Course Pre-requisites, if any		Knowledge of Java Programming.		
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 3 hrs.	

PART - A:

1. Java program to perform arithmetic operations
2. Java program to read n Subject marks and display maximum and average marks
3. Java program to find largest of three numbers
4. Java program to print first n terms of Fibonacci sequence
5. Java program to swap two numbers without using third variable.
6. Java program to find sum of first n even numbers divisible by 3.
7. Java program to check given number is Armstrong or not
8. Java program to read and display student information using class.
9. Java program on constructor.
10. Java program on method overloading.

PART - B:

1. Java program to calculate area and volume of room using single inheritance.
2. Java program on method overriding.
3. Java program on multiple inheritances using interface.
4. Java program on mouse event handling.
5. Java program to show the use of some GUI components.
6. Java program on multithreading.
7. Java program on exception handling.
8. Java program to create and throw user defined exception.
9. Java program to write bytes to a file.
10. Java program to write and read data with random access

Instructions:

1. A certified journal is mandatory for every student to appear for the practical examination.
2. The student has to execute a minimum of eight programs from each part to complete the lab course.

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Year	II	Course Code: DSCE—2T(a)		Credits	2
Semester	IV	Course Title: Big Data Analytics		Hours	30
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 2 hrs.		
Course Objectives		After completing this course satisfactorily, a student will be able to: • Understand the Big Data Platform and its Use cases. • Identify Big Data and its Business Implications. • List the components of Hadoop and Hadoop Eco-System.			
Unit No.		Course Content			Hours
UNIT I		Big data definition, History of big data, Applications of big data, Challenges of big data, Importance of big data, Types of big data.			15
UNIT II		Hadoop: What is Hadoop, Hadoop Ecosystem and components, Hadoop Architecture, Features of Hadoop, Hadoop Applications.			15
Recommended Learning Resources					
Text Books:					
1. Tom White “Hadoop: The Definitive Guide” Third Edit on, O’reily Media, 2012.					
2. Seema Acharya, Subhasini Chellappan, "Big Data Analytics" Wiley 2015.					

Reference Books:
1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007. 2. Jay Liebowitz, “Big Data and Business Analytics” Auerbach Publications, CRC press (2013)

E-Resources:
1. Online Courses and Platforms: Massive Open Online Courses (MOOCs): Platforms like edX, Coursera, and Udacity offer comprehensive courses on big data analytics, covering topics from introductory concepts to advanced techniques. • Specialized Training Programs: Many online learning platforms provide focused training programs on specific big data technologies and tools, such as Apache Hadoop, Apache Spark, and data visualization. • Academic Institutions: Universities and colleges offer online degree and certificate programs in big data analytics, providing a structured and in-depth learning experience. computers, according to Tableau. 2. Big Data Tools and Technologies: • Apache Hadoop: An open-source framework for storing and processing large datasets across clusters of Data Visualization Tools: Tools like Tableau, Power BI, and Qlik Sense help users visualize and explore big data to gain insights. 3. Data Science Tools and Libraries: • Python and R: Programming languages widely used for big data analysis, with numerous libraries and packages available for data manipulation, analysis, and machine learning. • Jupyter Notebooks: An interactive environment for creating and sharing documents that contain live code, equations, visualizations, and narrative text.

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Year	II	Course Code: DSCE-2T(b)		Credits	2
Semester	IV	Course Title: Cloud Computing		Hours	30
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 2 hrs.		
Course Objectives	After completing this course satisfactorily, a student will be able to: - To learn the basics of cloud computing, its models and Services. - To compare and contrast programming for cloud and their applications - To explain Cloud Resource Virtualization.				
Unit No.	Course Content			Hours	
UNIT I	Definition of Cloud Computing, History of Cloud Computing, Characteristics of Cloud Computing, Advantages of and Disadvantages of Cloud Computing, Types of Cloud-Public Cloud, Private Cloud, Hybrid Cloud, Community Cloud, Architecture of Cloud Computing.			15	
UNIT II	Cloud Computing Services- Infrastructure as a Service (IaaS), Platform as a Service(PaaS), Software as a Service(SaaS), Function as a Service(FaaS), Cloud Security, Cloud and Dynamic Infrastructure, Cloud adoption, Data Storage and Backup.			15	
Recommended Learning Resources					
Reference Books:					
1. Dan C Marinescu, "Cloud Computing Theory and Practice", Elsevier(MK) 2013.					
2. Rajkumar Buyya, James Broberg, Andrzej Goscinski, "Cloud Computing Principles and Paradigms", Willey 2014.					
3. John W Rittinghouse, James F Ransome, "Cloud Computing Implementation, Management and Security", CRC Press 2013					
E-Resources:					
Types of Cloud Computing E-Resources:					
Educational Platforms:					
Online courses, tutorials, and certifications offered by platforms like Coursera, edX, and Simplilearn provide structured learning paths on cloud computing concepts, technologies, and best practices.					
Cloud Provider Resources:					
Cloud providers like AWS, Azure, and Google Cloud offer extensive documentation, tutorials, and tools for their specific cloud services. These resources are essential for learning how to use their platforms effectively.					
Open-Source Tools and Repositories:					
Projects like Kubernetes, Docker, and various cloud-native tools provide open-source resources for developing, deploying, and managing cloud applications.					

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Instructions:

CIA (Continuous Internal Assessment) for Theory	
Assessment Type	Marks
1. Test 1	15
2. Assignment	05
1. Test 2	15
2. Seminar	05
Maximum Marks to be awarded	20

Award maximum 20 marks based on the average of two theories CIA.

Theory Examination Question Paper Pattern for Major Subjects of B. Sc. / BCA**Time: 3 Hours****Max Marks: 80**

Instructions to Candidates:

1. All Sections are Compulsory.
2. Draw neat and labeled diagrams wherever necessary.

Section-A		
Answer ALL the following Questions.		10 x 2 = 20
Q1	a	Question to be asked from Unit-I
	b	Question to be asked from Unit-I
	c	Question to be asked from Unit-II
	d	Question to be asked from Unit-II
	e	Question to be asked from Unit-III
	f	Question to be asked from Unit-III
	g	Question to be asked from Unit-IV
	h	Question to be asked from Unit-IV
	i	Question to be asked from Unit-V
	j	Question to be asked from Unit-V
Section-B		
Answer any SIX of the following Questions.		6 x 5 = 30
Q2	Question to be asked from Unit-I	
Q3	Question to be asked from Unit-I	
Q4	Question to be asked from Unit-II	
Q5	Question to be asked from Unit-II	
Q6	Question to be asked from Unit-III	
Q7	Question to be asked from Unit-III	
Q8	Question to be asked from Unit-IV	
Q9	Question to be asked from Unit-V	
Section-C		
Answer any THREE of the following Questions.		3 x 10 = 30
Q10	Question to be asked from Unit-I	
Q11	Question to be asked from Unit-II	
Q12	Question to be asked from Unit-III	
Q13	Question to be asked from Unit-IV	
Q14	Question to be asked from Unit-V	

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Instructions:

Continuous Internal Assessment for Practical	
Assessment Type	Marks
Test 1 on PART A	10
Test 2 on PART B	10
Maximum Marks to be awarded	10

Instructions:

1. A Certified Journal is mandatory for appearing the examination.
2. Students shall be given two programming assignments taking into consideration of duration of the time allotted to students for writing, typing and executing the programs.
3. Award maximum 10 marks based on the average of two practical CIA.

Note: Guidelines given by the university from time-to-time shall be followed for I. A.

Semester End Examination (SEE) Scheme of Evaluation for Lab Examination

Assessment Criteria	Marks
Writing of 2 Programs (Each from Part A & Part B)	15
Execution (Includes program code modification and execution result)	15
Journal	05
Viva-Voice	05
Total	40

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Instructions:

CIA (Continuous Internal Assessment) for Elective / Skill Papers of B.Sc. / BCA	
Assessment Type	Marks
1. Test 1	10
2. Test 2	10
Maximum Marks to be awarded	10

Award maximum 10 marks based on the average of two theories CIA.

Theory Examination Question Paper Pattern for Elective / Skill Papers of B.Sc. / BCA**Time: 2 Hours****Max Marks: 40**

Instructions to Candidates:

1. All Sections are Compulsory.
2. Draw neat and labeled diagrams wherever necessary.

Section-A		
Answer ALL the following Questions.		5 x 2 = 10
Q1	a	Question to be asked from Unit-I
	b	Question to be asked from Unit-I
	c	Question to be asked from Unit-I
	d	Question to be asked from Unit-II
	e	Question to be asked from Unit-II
Section-B		
Answer any SIX of the following Questions.		6 x 5 = 30
Q2	Question to be asked from Unit-I	
Q3	Question to be asked from Unit-I	
Q4	Question to be asked from Unit-I	
Q5	Question to be asked from Unit-I	
Q6	Question to be asked from Unit-II	
Q7	Question to be asked from Unit-II	
Q8	Question to be asked from Unit-II	
Q9	Question to be asked from Unit-II	

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